




County of Lassen
Department of Planning and Building Services

• Planning • Building Permits • Code Enforcement • Surveyor • Surface Mining

April 22, 2020

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TO: Big Valley Groundwater Basin Advisory Committee (BVAC)

FROM: Maurice L. Anderson, BVAC Secretary, 
Director, Lassen County Planning and Building Services Department

SUBJECT: May 6, 2020, meeting of the BVAC (see-attached agenda).

Zoning & Building
Inspection Requests
Phone: 530 257-5263

Summary:

The intent of this memorandum is to summarize information that will be presented at the May 6, 2020, meeting of the Big Valley Groundwater Advisory Committee (BVAC). Each individual subject on the attached May 6, 2020, BVAC agenda is introduced below. In addition, a section at the end of this memorandum reiterates the meeting process and schedule approved by the BVAC at the March 4, 2020, meeting.

COVID-19 Response:

In consultation with the Chair, Vice Chair, and Counsel, and consistent with California Governor Gavin Newsom's Executive Order N-29-20 issued on March 17, 2020, relating to the convening of public meetings in response to the COVID-19 pandemic, the May 6, 2020, meeting of the BVAC will be open to the public online or by telephone only (see the agenda for instructions). Committee members and limited staff may be together in one location at the Veterans Hall in Bieber. Committee members may also participate remotely to the same extent as if they were present.

Instructions for joining the webinar and/or participating by phone can be found on the attached agenda. A handout titled "GoToWebinar Instructions" is being developed and will be provided at a future date to all members of the project's "Interested Parties List" and posted on the project website: <https://bigvalleygsp.org/>.

It is important to note that, as of the date of this memorandum, the deadline for submittal of a GSP to the Department of Water Resources (DWR) has not been extended due to COVID-19 (the GSP remains due by January 31, 2022). Extension of the time allocated to develop a GSP will require legislative action (or perhaps, action by the Governor). As such, development of the GSP continues and this meeting has been scheduled accordingly. That said, staff has had discussions with the BVAC Chair and Vice Chair about ways in which an extension of the deadline may be requested. The Chair and Vice Chair (who are Supervisors for Lassen and Modoc Counties, respectively) are pursuing appropriate action through the Rural County Representatives of California (RCRC), California State Association of Counties (CSAC) or through a joint letter from each County.

Agenda Items:

The following is a summary of the information that will be presented at the meeting:

AGENDA SUBJECT #1 - Update on monitoring well drilling

At the March 4, 2020, meeting of the Big Valley Groundwater Basin Advisory Committee (BVAC), a report was provided by the project consultant (GEI, Incorporated) regarding groundwater monitoring in Big Valley. Pertinent hydrographs were displayed. In particular, the report focused on five monitoring well

clusters that were recently drilled by a sub-consultant of GEI (Maggiora). GEI secured the well driller through funding provided by the two grants associated with this project (managed by Lassen County and Modoc County). Each cluster consists of three shallow wells separated by several hundred feet and one deep well in close proximity to one of the shallow wells. Further information can be found in the March 4, 2020, PowerPoint Presentation provided to the BVAC (which can be found on the project website at: <https://bigvalleygsp.org/>).

At the March 4, 2020, meeting it was noted that one of the well clusters in Modoc County (Site 3 of attached “Map of Monitoring Well Locations”), near the intersection of County Road 87 and E Gouger Neck Road, was drilled too close to the road and could hinder road operations (e.g. snow removal). As such, a “fix” is being developed and agreed to by GEI, Maggiora, the Department of Water Resources (DWR), and Modoc County. Said “fix” is nearing completion, and is expected to be agreed to by pertinent parties prior to the May 6, 2020, meeting. GEI, will provide a report regarding said “fix.”

AGENDA SUBJECT #2 - Revised Draft Chapters 1 and 2

A public draft of Chapters 1 and 2 of the Groundwater Sustainability Plan was introduced at the March 4, 2020, meeting of the BVAC. Comment was received from the public and from BVAC members. Said Chapters were also available for approximately one month after the March 4, 2020, BVAC meeting on the project website. At the March 4, 2020, meeting, the BVAC directed staff to expand the background sections of the Chapters significantly. In particular, information was requested to be included regarding the objections Modoc and Lassen Counties had previously submitted to DWR regarding the ranking process and the data used, arguing that the basin should not be ranked as a “medium priority” basin. Information was also added regarding the request by Lassen County to modify the basin boundary to incorporate recharge areas (this request was disapproved by DWR). The consultant and GSA staff have edited said Chapters as directed.

The BVAC will determine if Revised Draft Chapters 1 and 2 are in a state of development where they can be temporarily “set aside” until the entire draft GSP is developed. At a future date, prior to reporting to the two Groundwater Sustainability Agencies (Lassen and Modoc Counties), the BVAC will consider the entire GSP, once a complete draft of the document is prepared. As a reminder, the review process and proposed schedule presented at the March 4, 2020, meeting has been updated and is attached to this memorandum.

AGENDA SUBJECT #3 - Introduce Public Chapter 3

A Public Draft of Chapter 3 will be presented. Comments will be received from the public, BVAC members and other interested parties. Following the meeting, said Chapter will be posted on the project website at: <https://bigvalleygsp.org/>

Additional comments may be submitted for approximately 30 days after the May 6, 2020, meeting. The project consultant and GSA staff will make appropriate edits to the Public Draft and a “Revised Draft Chapter 3” will be presented at the July 1, 2020, meeting of the BVAC. If appropriate said Chapter can then be “set aside” by the BVAC until the entire GSP is prepared for review (at which time additional comments could be submitted). Again, see the attached “GSP Process and Schedule” for information regarding the review process.

AGENDA SUBJECT #4 - Soils Data and Future Soils Analysis

A preliminary soils map and report is attached to this memorandum. Information will be presented on the data collected to this point and future soils analysis will be discussed.

AGENDA SUBJECT #5 - Sustainability Indicators and Locally Defined Undesirable Results

To provide an example, information regarding sustainability indicators and undesirable results used in GSPs prepared for other basins was included in the March 4, 2020, BVAC packet. Sustainability indicators and locally defined undesirable results will be included in the GSP for the Big Valley Groundwater Basin. At the March 4, 2020, BVAC meeting there was further discussion (see the Power Point presented at the March 4, 2020, meeting on the project website: <https://bigvalleygsp.org/>).

This discussion is pertinent to a GSP Chapter that will be formally introduced at a future BVAC meeting. However, this is a significant topic, and, as such, additional discussion may occur at the May 6, 2020, meeting.

GSP Review Process and Schedule:

A process was presented at the March meeting (“GSP Development Process Chart”) and approved by the BVAC. In summary, new Groundwater Sustainability (GSP) material will be presented at each meeting as a “Public Draft Chapter.” The BVAC will review said draft at a meeting and provide direction if needed. The Public Draft Chapter will also be available for public comment for at least a month following the BVAC meeting at which it was introduced.

At the March 4, 2020, BVAC meeting, a tentative schedule was proposed and adopted (attached – titled “GSP Process and Schedule”) for development of the GSP. Unless action is taken by the State of California (the legislature or perhaps the Governor) to extend the deadline, this schedule will continue to be operative. If for any reason, more time is allocated to submit a GSP to DWR, the BVAC, BVAC Secretary and staff will revise the schedule accordingly.

MLA:gfn

Enclosures: May 6, 2020, BVAC Agenda
 GSP Development Process Chart
 GSP Process and Schedule
 Draft March 4, 2020, BVAC Meeting Minutes
 Map of Monitoring Well Locations
 Revised Draft Chapters 1 and 2 with Appendices
 Comment Matrix – Chapters 1 and 2
 Public Draft Chapter 3
 Memorandum from GEI: Introduction to Hydrologic Soils Maps

s/pla/admin/files/1200/52/04/03/5-6-20 staff report

AGENDA
BIG VALLEY GROUNDWATER BASIN ADVISORY COMMITTEE (BVAC)
Public participation via webinar or conference call only
[Veterans Memorial Hall, 657-575 Bridge Street, Bieber, CA 96009]
May 6, 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)

Pursuant to California Governor Gavin Newsom's Executive Order N-29-20 issued on March 17, 2020, relating to the convening of public meetings in response to the COVID-19 pandemic, THIS MEETING WILL BE OPEN TO THE PUBLIC ONLINE OR BY TELEPHONE ONLY (see the following instructions). Committee members and limited staff may be together in one location at the above address. Committee members may also participate remotely to the same extent as if they were present. Participation by the public and consultants will be available by the following methods only:

- To listen to the meeting in real time, please **call the following number at the time indicated on the agenda: +1 (213) 929-4232**. When prompted, enter the following access code: 718-875-787#
NOTE: By dialing this number only (and not connecting by webinar as detailed below), you will be in a "listen only mode" and will not be able to provide comment. You will only be able to participate in the meeting if you have obtained an "Audio PIN" through the webinar, as detailed below.
 - **The following is the internet link to register for the GoToWebinar meeting:**
<https://attendee.gotowebinar.com/register/5232841225288092430>
A link to the webinar will be emailed to you after you register. When you join the meeting via this link, you will be given an "Audio PIN" under your GoToWebinar settings menu. If you are using your computer's audio, you will not need to enter the PIN; however, if you dial in by phone as your means of audio, you will be prompted to enter your PIN at the start of the call to allow for identification and participation.
 - You may also **submit comment in writing** before or after the meeting on the project website at <https://bigvalleygsp.org/> or to the Lassen County Planning and Building Services Department at 707 Nevada Street, Suite 5, Susanville, CA 96130.
 - The meeting (audio only) will be recorded and posted on the project website at: <https://bigvalleygsp.org/>. You may also call the Lassen County Planning and Building Services Department at (530) 251-8269 for information on how to obtain the recorded meeting audio.
 - More detailed instructions on how to participate by phone or by webinar ("GoToWebinar Instructions") will be available prior to the meeting on the project website at: <https://bigvalleygsp.org/>. You may also call the Lassen County Planning and Building Services Department at (530) 251-8269 for further instructions.
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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 (March 4, 2020)

SUBJECT #1:

Update on monitoring well drilling.

ACTION REQUESTED:

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

SUBJECT #2:

Present Revised Draft Chapters 1 and 2 of the Groundwater Sustainability Plan (GSP).

ACTION REQUESTED:

1. Receive report from the BVAC Secretary, Staff, and/or Consultant.
2. Accept and “set aside” Revised Draft Chapters 1 and 2 for future inclusion in Draft GSP.
3. Receive public comment.

SUBJECT #3:

Introduce and discuss draft text for Public Draft Chapter 3 of the GSP.

ACTION REQUESTED:

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

SUBJECT #4:

Present existing soils data and discuss next steps for soils analysis.

ACTION REQUESTED:

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

SUBJECT #5:

Continue discuss Sustainability Indicators and Locally Defined Undesirable Results.

ACTION REQUESTED:

1. Receive report from the BVAC Secretary, Staff, and/or Consultant.
2. 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**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:

657-575 Bridge Street, Bieber, 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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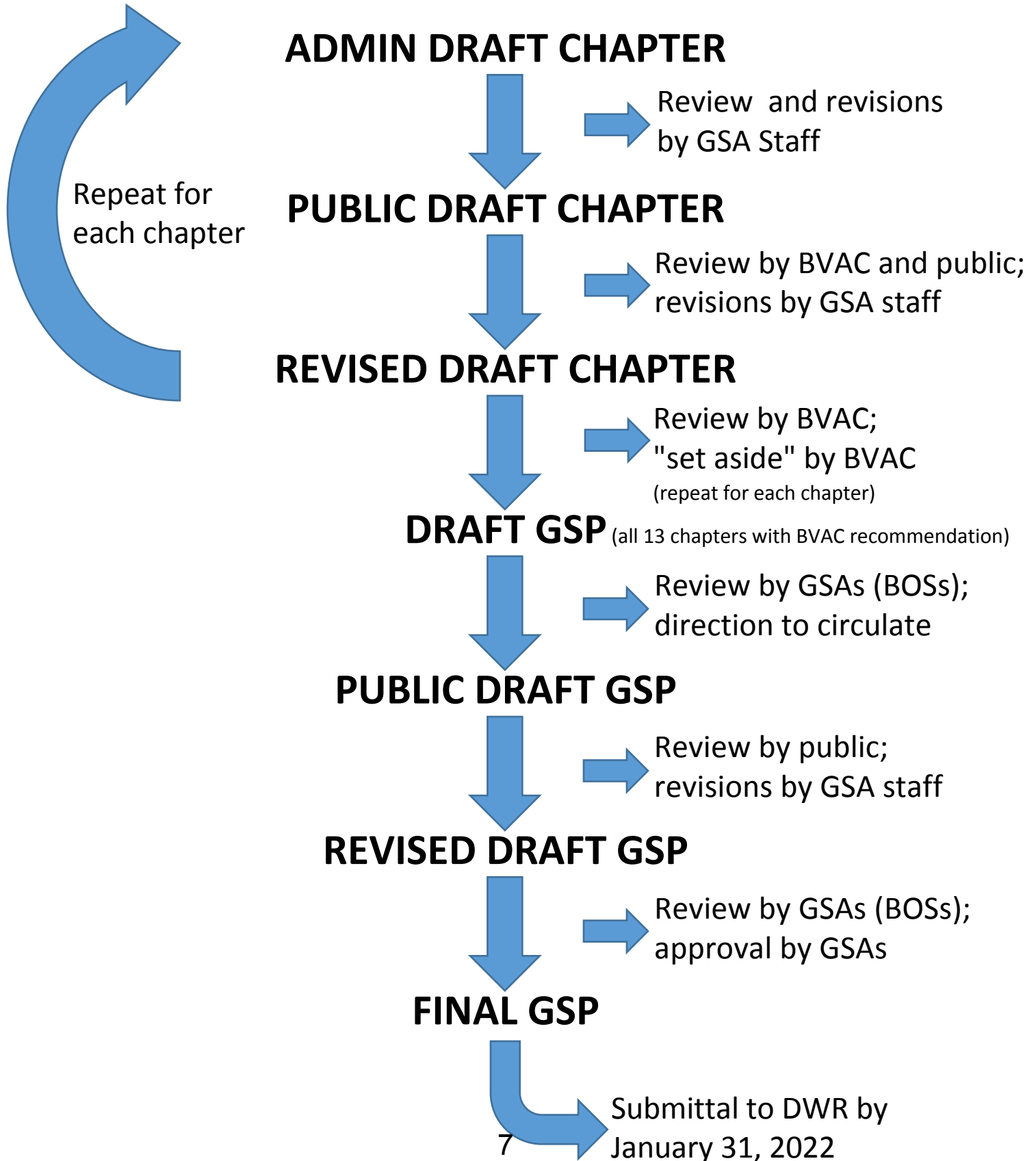
GSP Development Process Chart

DEPARTMENT OF PLANNING AND BUILDING SERVICES

707 Nevada Street, Suite 5 • Susanville, CA 96130-3912

(530) 251-8269 • (530) 251-8373 (fax)

www.co.lassen.ca.us



Tentative GSP Process and Schedule

Proposed to the Big Valley Groundwater Advisory Committee (BVAC) Updated May 6, 2020

This document provides 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. 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 above mentioned Chapters, will be discussed at meetings prior to the date on which the associated Chapter is fully prepared and formally introduced. For example, monitoring, sustainability indicators and undesirable results have been discussed prior to 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.

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

Wednesday, March 4, 2020

4:00 PM

Adin Community Center
605 Highway 299
Adin, CA 96009

BVAC Convene in Special Session.

Present: Committee Members: Albaugh, Mitchell, Conner, Byrne, and Nunn.
Absent: Committee Member: Ohm

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 Alt. Board Representative Jeff Hemphill

BVAC Chairman Albaugh called the meeting to order at 4:04 p.m.

Flag Salute: Chairman Albaugh requested Tiffany Martinez lead the Pledge of Allegiance.

General Update by Secretary: None

Matters Initiated by Committee Members: Chairman Albaugh requested that everyone identify themselves at the podium prior to speaking and that the audience was to ask questions at any time. He also introduced David Fairman, GEI Consultants, and said that GEI is the BVAC consultant and does not work for DWR.

Correspondence (unrelated to a specific agenda item): None

Approval of Minutes (February 3, 2020)

A motion was made by Representative Byrne to approve BVAC meeting minutes from February 3, 2020. The motion was seconded by Representative Mitchell. The motion was carried by the following vote:

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

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.

The presentation to develop shared understanding of formation of Project Team was presented by Gaylon Norwood and Tiffany Martinez. G. Norwood gave a brief background from 2007 to where the Groundwater Sustainability Plan (GWP) is now. The GSP is due in January of 2022. A time-table was laid out in the presentation. T. Martinez discussed the grant award by DWR. She explained that only one county could apply to DWR for the grant and that Lassen County has the lead. Both Modoc and Lassen County had to form a Groundwater Sustainability Advisory (GSA) and both will work together to produce a GSP. Modoc County worked with CalNeva R&D to get a grant for Modoc County wells that were drilled. She also stated that the DWR grant that Lassen County received also allowed for some wells to be drilled in Lassen County. Modoc County has also requested more grant funding for Pitt River monitoring.

Public Comment: Julie Rehtin – information availability; Gary Moschamp – asked if there were any strings attached to the grants.

David Fairman from GEI stated all the information would be put on the GSP website. Tiffany Martinez stated that there is no match required on the grant funding.

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.

GEI consultant David Fairman presented information on what it will take to make a GSP. A GSP establishes a groundwater budget, minimum thresholds, and management actions to achieve sustainability. There are five groundwater indicators which determine sustainability: lowering of groundwater levels, reduction of groundwater storage, degraded water quality, land subsidence, depletion of interconnected surface water. D. Fairman reviewed all the Chapters in the GSP. D. Fairman went into an introduction of Chapter 13 of GSP to get committee to think of GSP outcomes and thus the resulting management actions. Discussion was held regarding chapters and if they can be changed over time and minimum groundwater thresholds which then turned into a discussion about monitoring groundwater and reporting.

Secretary Anderson questioned DWR regarding reporting and Chairman Albaugh expressed his concerns regarding reporting and if the requirements will be consistent over time. Ian Espinoza of DWR stated DWR is still developing report format. Bill Ehorn of DWR stated that DWR

does not have any templates out yet and that DWR has no plans to make the reporting more difficult in the future. Tiffany Martinez, addressing DWR staff Espinoza and Ehorn, requested that DWR keep the reporting format simple as the counties lack the funds to keep hiring consultants to do the work. Further discussion was held how reporting should be handled. D. Fairman said it is up to the GSAs to say whether reporting will be done in an aggregated format or as individuals. Rep. Kevin Mitchell was concerned with the State driving the price of water up. Vice-Chair Byrne stated that the State has to address that Modoc and Lassen counties can't afford the regulations that are being forced on the counties by the State. Representative Conner stated the community should push back against State regulations.

Public Comment: Gary Moschamp – Concerned with wells monitored for “sustainability”; Gary Moschamp – Concerned with individual reporting; Jeff Hemphill – GSAs won't be able to control water cost because DWR will dictate; Steve Babcock – Concerned with well site; Don Meyer – concerned with funding for groundwater recharging.

Discussion continued regarding GSP and groundwater recharge. DWR may have grants for implementation of groundwater recharge. Grants would not be available until after GSP is complete. Stacy Hafen from Northern CalNevea R&D stated that the Big Valley Basin ideas for recharging the groundwater need to get into the GSP so that grants can be applied for.

Committee members and audience continued to voice concerns regarding cost and government intrusion. Judy Talbott noted that the Boards of Supervisors should take all of their concerns and write letters to the state legislature as DWR is only acting on behalf of the state legislature.

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.

Tiffany Martinez discussed process to complete GSP and introduced charts. She noted that there will a 45 day public comment period for the final GSP. Gaylon Norwood said the chapter schedule is on the website. Draft chapters will be discussed at meetings, public can comment for approximately 30 days, and staff will then revise chapters as needed. These draft chapters will be set aside and the committee will move on to the next chapter(s). G. Norwood suggested that the committee have meetings every two months to accommodate public comment periods. The preferred way to receive public comment is on the web site but the public can comment at the meetings, write letters, email, or talk to staff. Lassen County staff member Nancy McAllister reviewed GSP chapter process diagram.

Change of meeting schedule

A motion was made by Representative Byrne to change the BVAC meetings from monthly to every two months. The motion was seconded by Representative Nunn. The motion was carried by the following vote:

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

The committee agreed to lengthen the time between meetings to two months. Time and locations rotation will be the same.

Public Comment: None

SUBJECT #4

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

ACTION REQUESTED:

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

GEI consultant D. Fairman introduced Chapters 1 and 2 of the Big Valley GSP. He was not expecting much public comment on Chapters 1 and 2 as they outline the facts of the basin. He walked everyone through the website with screen shots of the website. He pointed out how public comment can be made on the portal and where information resides on the website.

Chairman Albaugh had comments on chapters and details he wanted added:

- (1) 1.2 - Prove description of Lassen County basin,
- (2) Line 23 - Argued the DWR boundary definitions and the GSP needs to be more specific,
- (3) DWR criteria is subjective,
- (4) Ground irrigated acres needs to be differentiated from surface water irrigation,
- (5) 1.3 - Groundwater levels – DWR only used depleting wells,
- (6) DWR only monitoring wells on private land, not watershed land,
- (7) DWR doesn't respond to questions,
- (8) Chapter 2, Line 61 add GSA established because we have to, it is not voluntary,

Further discussion was held on public commenting. Vice-Chair Byrne wanted to be sure we satisfied the Brown Act. Gaylon Norwood pointed out that the packet the committee was given is in a public binder on the entrance table to meeting. Nancy McAllister said she could put packet on the website prior to the meeting. G. Norwood said staff will provide meeting packets at the door in the future.

Public Comment: Gary Moschamp – concerned with feedback to public comments and in what form will feedback be given; Bryan Hutchins – pointed out the water issues do not just affect agriculture; Julie Recktin – asked if maps available on website; Gary Moschamp wanted to know how well groundwater replenishment will work with state water claims, will it start law

suits?; Julie Recktin – Forest Service could be included in recharging and she objected to DWR boundaries; Jim Copp – Can we go outside basin for recharge water?

Further discussion was held on the criteria used in the establishment of water basin boundaries. Ian Espinoza said further studies could provide the means to redefine basin boundaries as more discoveries could happen. He also stated that recharge water could come from outside the basin.

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 (GEI).
2. Provide input on any missing information or inaccuracies.
3. Receive public comment.

GEI consultant D. Fairman presented an overview of basin monitoring system. Hydrographs were introduced. The graphs included the new wells as well as the older CASGEM program wells. DWR has been monitoring groundwater since the 1950s. There are some wells that are dedicated for monitoring only; they have no pump. The new wells are grouped. The deep well in the group measures the aquifer and the three shallow wells around the deep well measure the water flow direction. Fairman went over well sites and said that the county had the limitation of only putting wells on county owned property. GEI graph plotted the trend lines of water levels but acknowledged that graph should be corrected to include the fact that some wells have upward trends as noted by Chairman Albaugh. The committee expressed concerns with the wells near the roads becoming contaminated and with the well that was drilled too close to the road and needs to be fixed. Ian Espinoza said it would be prudent to keep DWR in the loop regarding this well because DWR financing might reject it. Representative Nunn stated that GEI needs to get the issue resolved.

Public Comment: Steve Babcock – Addressed that old wells are being used for monitoring; Gary Moschamp – Concerned with regulations affecting each individual well; Bryan Hutchins – Number of times a year wells will be monitored and when.

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 (GEI).
2. Provide input on any missing information or inaccuracies.
3. Receive public comment.

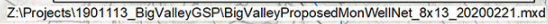
GEI consultant David Fairman gave examples of what constitutes sustainability goals and undesirable results. Each sustainability goal will have about a paragraph of write up in the GSP. Undesirable results will have more detail associated with it. The GSP will define what a “significant and unreasonable” result is. Discussion was held regarding the cost of undesirable results and the economics would naturally resolve the issue without a GSP. Bill Ehorn of DWR

clarified that the State Water Resources Board would take over if there is no GSP. The role of DWR is to administer program and help GSAs form a GSP and see them through. DWR has data to help create a GSP and is willing to talk on any of the topics.

Public Comment: Bryan Hutchins – Concerned with water cost increase; Jim Copp – brought up building a dam to recharge groundwater.

Matters Initiated by the General Public: None

Adjournment: There being no further business, Chairman Albaugh adjourned the meeting at 6:55 p.m.



Groundwater Sustainability Plan

Big Valley Groundwater Basin

April 2020

REVISED DRAFT



Prepared for:
Lassen and Modoc County Groundwater Sustainability Agencies

GEI 
Consultants

Consulting
Engineers and
Scientists



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

North Cal-Neva Resource Conservation and Development Council

Groundwater Sustainability Plan

REVISED DRAFT CHAPTERS 1-2

Big Valley Groundwater Basin

Submitted to:

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

Submitted by:

GEI Consultants, Inc.
2868 Prospect Park Drive
Rancho Cordova, CA 95670
916-631-4500

April 2020
Project 1901113

David Fairman, Senior Geologist

Rodney Fricke, Senior Geologist

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Appendices

Appendix A Background Information

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

Appendix C MOU Establishing the Big Valley Groundwater Advisory Committee

Abbreviations and Acronyms

Basin	Big Valley Groundwater Basin
BVGB	Big Valley Groundwater Basin
BVAC	Big Valley Groundwater Basin Advisory Committee
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	California Code of Regulations
DWR	Department of Water Resources
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
MOU	Memorandum of Understanding
SGMA	Sustainable Groundwater Management Act of 2014

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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 Background

In September 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 California Department of Water Resources (DWR) is tasked with prioritizing all 515 defined groundwater basins in the state as high, medium, low, and very low priority. Prioritization establishes which basins need to go through the process of developing a Groundwater Sustainability Plan (GSP). When SGMA was passed, basins had already been prioritized under the state's CASGEM program, and that existing ranking process was used as the initial priority.

DWR was required to develop its rankings based on the first seven criteria listed in **Table 1**. The 2014 ranking put the Big Valley Groundwater Basin (BVGB or Basin) in the Medium category as the lowest ranked basin in the state required to develop a GSP. Lassen County reviewed the 2014 ranking process and criteria that were used and found some potentially erroneous data. They made a request to DWR for the raw data that was used, which they were eventually provided, and verified the error that would have put the BVGB into the Low category. However, because the comment period for these rankings had already expired in 2014 (prior to the passage of SGMA), DWR would not revise their ranking. A letter from DWR regarding this issue is included in **Appendix A**.

Table 1-1 Big Valley Groundwater Basin Prioritization

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, habitat, and "other information determined to be relevant"
Total Score	13.5	20.5	14.5	Medium priority each year

In 2016, Lassen County submitted a request for a basin boundary modification as allowed under SGMA. The request was to extend the boundaries of the BVGB to the boundary of the watershed. The purpose of the proposed modification was to enhance management by including the volcanic areas surrounding the valley sediments, including federally managed timberlands and rangelands, that have an impact on groundwater recharge. The modification was proposed on a scientific basis but was denied by DWR because the request "...did not include sufficient detail and/or required components necessary...and evidence was not provided to substantiate the connection [of volcanic rock] to the porous permeable alluvial basin, nor were conditions presented that could potentially support radial groundwater flow as observed in alluvial basins." Lassen County's basin boundary modification request and DWR's denial are included in

Appendix A.

In 2018, DWR released an updated draft basin prioritization based on the eight components shown in **Table 1** using slightly different data and methodology than previously used. For this prioritization, Big Valley's score increased from 13.5 to 20.5, primarily because of an addition of 5 ranking points awarded under the category of "other information determined to be relevant" by DWR. DWR's justification for the five points was poorly substantiated as "Headwaters for Pit River/Central Valley Project – Lake Shasta". Lassen and Modoc Counties sent a joint comment letter questioning DWR's justification and inconsistent assessment of these five points as well as their methodology for awarding the same number of points for water level and water quality impacts to basins throughout the state regardless of the severity of the impacts. The letter is included in **Appendix A.**

In 2019, DWR released their final prioritization with the BVGB score reduced to 14.5, but still ranked as Medium priority and subject to the development of a GSP. DWR's documentation of the 2019 prioritization is included in **Appendix A.** Additional information can be viewed on their website (DWR 2019).

Meanwhile, throughout this time, Lassen and Modoc Counties began moving forward to comply with the SGMA mandate through a public process that established them as the Groundwater Sustainability Agencies (GSAs) in 2017. The establishing resolutions forming the GSAs adopted findings that it was in the public interest of both counties to maintain local control by declaring themselves the GSA for the respective portion of the basin. The Water Resources Control Board would become the regulating agency if the counties did not agree to be the GSAs since there were no other local agencies in a position or qualified to assume GSA responsibility. The Counties obtained state grant funding to develop the GSP in 2018 and began the GSP development process and associated public outreach in 2019.

1.2 Purpose of the Groundwater Sustainability Plan

Satisfying the requirements of SGMA generally requires four activities:

1. Formation of at least one GSA to fully cover a basin. Multiple GSAs are acceptable and Big Valley has two GSAs.
2. Development of a GSP that fully covers the basin.
3. Implementation of the GSP and management to achieve quantifiable objectives.
4. Regular reporting to 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.

1.3 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.

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

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

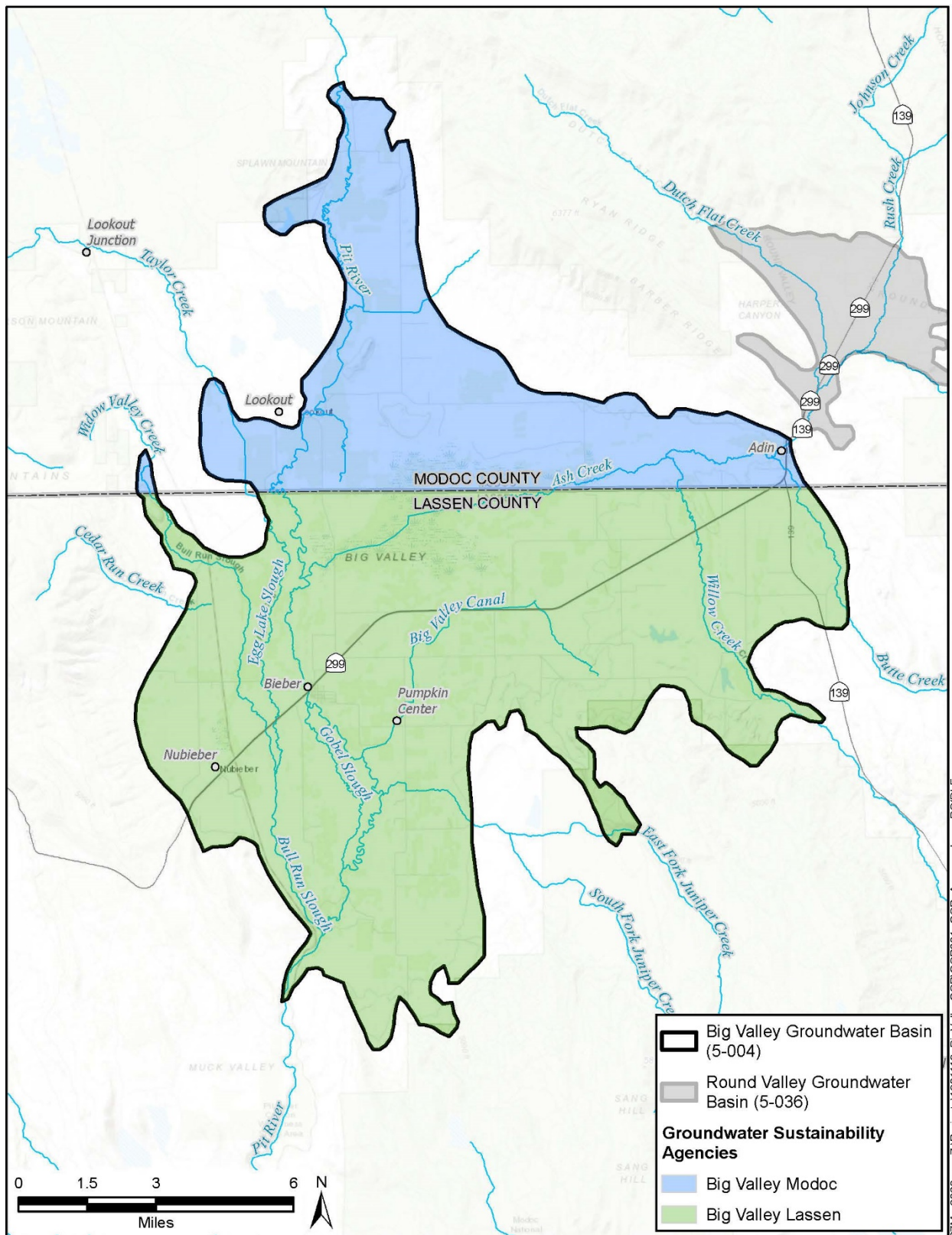


Figure 1-1 Big Valley Groundwater Basin, Surrounding Basins, and GSAs

2. Agency Information (§ 354.6)

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

2.1 Agency Names and Mailing Addresses

The following contact information is provided for each GSA pursuant to California Water Code §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

2.2 Agency Organization and Management Structure

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

- One member of the Lassen County Board of Supervisors selected by said Board
- One alternate member of the Lassen County Board of Supervisors selected by said Board
- One member of the Modoc County Board of Supervisors selected by said Board
- One alternate member of the Modoc County Board of Supervisors selected by said Board
- Two public members selected by the Lassen County Board of Supervisors. Said members must either reside or own property within the Lassen County portion of the Big Valley Groundwater Basin
- Two public members selected by the Modoc County Board of Supervisors. Said members must either reside or own property within the Modoc County portion of the Big Valley Groundwater Basin

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

2.3 Contact Information for Plan Manager

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

Gaylon Norwood
Assistant Director
Lassen County Department of Planning and Building Services
707 Nevada Street, Suite 5
Susanville, CA 96130
(530) 251-8269
gnorwood@co.lassen.ca.us

2.4 Authority of Agencies

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

2.4.1 Memorandum of Understanding

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

2.5 References

California Department of Water Resources (DWR), 2019. Basin Prioritization Website.
Available at: <https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization>.

Appendix A

Background Information

- Letter from DWR re: 2014 basin prioritization adjustment denial
- Letter to DWR re:Basin Boundary Modification – Big Valley, Bulletin 118 Basin 5-4
- DWR Table 1. 2016 Final Basin Boundary Modifications
- Correspondence with DWR re: 2018 basin prioritization
- DWR SGMA 2019 Basin Prioritization Process and Results

DEPARTMENT OF WATER RESOURCES

NORTHERN REGION OFFICE
2440 MAIN STREET
RED BLUFF, CA 96080-2356



April 15, 2016

Mr. Richard Egan, Administrative Officer
County of Lassen
Administrative Services
221 S. Roop Street, Suite 4
Susanville, California 96130

Dear Mr. Egan

This letter is in response to your request for information regarding the number of irrigated acres reported in the Big Valley Basin prioritization dataset.

As part of the California Statewide Groundwater Elevation Monitoring (CASGEM) Program legislation, and pursuant to the California Water Code, Section 10933, the Department of Water Resources (DWR) is required to prioritize California's 515 groundwater basins. CASGEM directs DWR to consider, to the extent available, all of the data components listed below:

1. The population overlying the basin
2. The rate of current and projected growth of the population overlying the basin
3. The number of public supply wells that draw from the basin
4. The total number of wells that draw from the basin
5. The irrigated acreage overlying the basin
6. The degree to which persons overlying the basin rely on groundwater as their primary source of water
7. Any documented impacts on the groundwater within the basin, including overdraft, subsidence, saline intrusion, and other water quality degradation
8. Any other information determined to be relevant by DWR (subsequently modified in 2014 to include adverse impacts on local habitat and local streamflow)

In response to the CASGEM legislation, each groundwater basin was prioritized with the best available data and statistically given one of the following rankings: very low, low, medium, or high. To calculate the total irrigated acreage for the initial prioritization, DWR relied on a land survey using detailed analysis units (DAU). Because the DAUs cover a different area than the groundwater basin, DWR estimated the proportion of overlap. For the Big Valley Basin, DWR estimated the irrigated acres for Big Valley groundwater basin based on the proportional amount of irrigated lands in the DAU and additional information gleaned from satellite imagery, ultimately arriving at a figure of 34,129 acres. Recognizing this method was an estimate, all of the groundwater basins were further analyzed by using their actual basin areas for the ranking. This step would have reduced the estimated value of irrigated acreage for the Big Valley basin to 25,545 acres but, for some reason, that did not occur and the value remained at 34,129 acres based on the estimated proportion from the DAU.

On the other hand, the portion of land in the basin identified as partially irrigated land or meadow pasture, which should have been included in the irrigated acreage calculation, was inadvertently omitted. Including this additional area of 26,260 acres brings the total irrigated acreage for the basin to over 51,800 acres.

DWR completed the initial draft basin prioritization in December of 2013. Public outreach for the draft basin prioritization consisted of three public workshops throughout the State and a statewide Webinar where DWR explained the basin prioritization process and requested feedback and comments. The public outreach for basin prioritization was followed by a three-month window where local agencies and water resource managers were encouraged to provide comments and information. During this time, DWR received and addressed a number of comments and data, and made adjustments to the basin prioritizations accordingly, but DWR did not receive any comments regarding the irrigated lands estimate for the Big Valley Basin. The basin prioritization was finalized in June 2014.

In September 2014, the Sustainable Groundwater Management Act (SGMA) was passed requiring all CASGEM medium and high priority basins to comply with the new SGMA law. SGMA also directed DWR to develop regulations to allow local agencies to revise their groundwater basin boundaries to help improve sustainable groundwater management, to update the basin prioritization once the basin boundaries have been modified, and to consider a new SGMA requirements for data component number eight on the previous page that includes adverse groundwater impacts on local habitat and local stream flows during the next basin prioritization update. (See the list of data components shown on the previous page.) The basin boundary regulation was adopted on October 21, 2015, and the solicitation for groundwater basin boundary changes ended in March 31, 2016. The 2016 basin boundary modifications will change basin areas and the number of basins, which could result in ranking changes for some basins. In addition, DWR is currently working with agencies and local water managers to identify the best available data, to gather and update many of the individual basin prioritization data components, and to improve the overall quality of the basin prioritization. Improvements to the basin prioritization data will include the following updated information:

1. Population and population growth will be recalculated for each of the modified basins, with new ranking breakpoints as necessary.
2. Public Supply Wells will be reprocessed for all basins with the assistance of California State Water Resources Control Board, Division of Drinking Water, employing additional selection criteria, with new ranking breakpoints as necessary.
3. The number of Total Wells will be reprocessed for all basins using DWR's Online System for Well Completion Reports (OSWCR), employing production well selection criteria, with new ranking breakpoints as necessary;
4. Groundwater Reliance (Groundwater Use and percent of total supply) and Irrigated Acreage will be updated for all basins using the latest land use surveys (possibly 2015 statewide) and 2014 water year information.
5. Existing groundwater-related impacts will be reviewed and updated.
6. Potential adverse impacts to local habitat and streamflow due to groundwater extraction will be identified, and a process will be established for ranking these impacts.

DWR plans to begin public outreach for the updated draft basin prioritization in fall 2016, with the final basin prioritization update occurring between December 2016 and February 2017. Unfortunately, it is not possible to reprioritize individual basins outside of this process. Because the individual basin priority is dependent on the relative statewide distribution of each data component, there is no way to predict how the updated prioritization would affect the ranking of any particular basin. Even for those basins where it is known that individual data components have been changed due to improved data, the overall basin priority may remain the same, or even increase due to new SGMA requirements for data component number eight and improvements to the other seven data components. DWR is using new data to estimate irrigated acreage in the Big Valley Basin and, as noted above, the newer data, which was provided to Lassen County Administrative Office, supports a higher value (approximately 51,000 acres).

In closing, I encourage you to visit DWR's basin prioritization website at the following address: http://www.water.ca.gov/groundwater/casgem/basin_prioritization.cfm. The website contains all of the groundwater basin ranking results, as well as the methodology used in the statistical analysis. If you have additional question concerning basin prioritization or if you might possibly have additional data associated with components one through eight (shown on the first page of this letter) that you would like DWR to consider during the next basin prioritization update, please contact Roy Hull, Engineering Geologist, at (530) 529-7337.

If you have any questions or need additional information, please contact me at (530) 528-7403.

Sincerely,



William Ehorn, Chief
Regional Planning Branch

cc: Scott Morgan, DWR Legal

County of Lassen
ADMINISTRATIVE SERVICES



ROBERT F. PYLE

District 1

JIM CHAPMAN

District 2

JEFF HEMPHILL

District 3

AARON ALBAUGH

District 4

TOM HAMMOND

District 5

CERTIFIED MAIL/ RETURN RECEIPT

7015 0640 0005 0681 0168; 7015 0640 0005 0681 0175

March 18, 2016

Regional Planning Branch
Department of Water Resources
901 P Street, Room 213
Sacramento, CA 94236

Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236

RE: Basin Boundary Modification - Big Valley, Bulletin 118 Basin 5-4

To Whom It May Concern:

This letter is intended to supplement a request by Lassen County to modify Bulletin 118 Basin 5-4 (Big Valley) as permitted under water code, section 340. The adjustment request is External and Scientific and primarily correlates to unmanaged (in terms of contemplating groundwater recharge) portions of the watershed directly impacting recharge in Big Valley.

Summary

The proposed boundary adjustment does not examine, or seek to alter, the extent of water-bearing formations identified in the Bulletin 118 Hydrogeologic analysis. Fundamentally (because Big Valley has been designated as medium priority by the Department of Water Resources), this request is an attempt by Lassen County to ensure management of Big Valley, as required by the Sustainable Groundwater Management Act (SGMA), is successful. Lassen County considers the proposed boundary adjustment to be a critical step toward effective and sustainable management because it empowers the Groundwater Sustainability Agency (GSA) with the ability to identify, consider, and mitigate potential impacts to basin recharge, originating in the basins watershed.

Description

Watershed and subwatershed hydrologic unit boundaries created by the Natural Resource Conservation Service (NRCS) form the proposed perimeter of the basin, after the adjustment. This data set was designed by the NRCS to be used as a tool for water-resource management and planning activities. The original dataset boundaries were adjusted by Lassen County at two

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County Administration Office
221 S. Roop Street, Suite 4
Susanville, CA 96130
Phone: 530-251-8333
Fax: 530-251-2663

points to exclude subwatershed boundaries providing recharge for two or more Bulletin 118 basins.

The NRCS data (table 1 below) assign 9 subwatershed basins to Big Valley totaling approximately 380 square miles. However, an adjustment of roughly 200 acres was applied to the Butte Creek subwatershed polygon, in order to include a portion of the Big Valley basin that had been assigned to the Bulletin 118 Basin 5-36 (Round Valley) watershed.

Table 1: Watershed data

OBJECTID	ACRES	HU_10_NAME	HU_12_NAME	HU_12_TYPE	STATES	SHAPE_Length	SHAPE_Area	
99800	31362	Blacks Canyon-Pit River	Roberts Reservoir-Pit River	S	CA	0.663846	0.013641	1
99589	11815	Juniper Creek	Deer Spring-Juniper Creek	S	CA	0.534262	0.005124	1
99607	9327	Butte Creek-Ash Creek	Hot Springs Slough	U	CA	0.284423	0.004047	1
99624	51531	Widow Valley Creek-Pit River	Bull Run Slough-Pit River	S	CA	0.878017	0.022349	1
99640	24868	Butte Creek-Ash Creek	Butte Creek	S	CA	0.594983	0.01079	1
99641	26769	Willow Creek	Lower Willow Creek	S	CA	0.682247	0.011607	1
99681	20256	Widow Valley Creek-Pit River	Widow Valley Creek	S	CA	0.493075	0.008799	1
99704	43355	Butte Creek-Ash Creek	Big Swamp-Ash Creek	S	CA	0.883789	0.018833	1
99746	24340	Taylor Reservoir	Taylor Creek	S	CA	0.723431	0.010581	1

The proposed boundary will include roughly 50,000 acres of federally managed timberland, 40,000 acres of privately managed timberland, and 60,000 acres of private and public range/grassland currently outside of the Big Valley (Bulletin 118) perimeter. Presently, management of these lands encompassing the Big Valley watershed does not actively consider implications to groundwater recharge. Lassen County contends that effective management of a groundwater basin must consider connectivity of groundwater/ surface water systems. The most basic form of combined groundwater surface water management seeks to ensure sustainable groundwater supplies, by managing and maintaining watersheds and thereby promoting desirable streamflow.

Watershed development to enhance groundwater would promote the use of natural resources, while mitigating the detrimental impacts of land-use activities on soil and water. This proposed adjustment and management approach recognizes that soil, water, and land use occurring in the upland watersheds, are all fundamentally connected to groundwater basins. Some components of watershed development and its role to groundwater are listed in Table 2 below.

Table 2 Common Components of watershed development and its role.

Activity	Objective	Impact
Check dams	Stop/slow down water runoff in gullies	Recharge of groundwater and nearby wells. Creations of open water bodies
Ponds	Groundwater recharge water for cattle	Recharge of groundwater. Creation of big open water bodies
Gully plugs, Gabions	Primarily to trap sediment/silt in gullies and to stabilize	Keeps sediment out of downstream areas. Increased water infiltration due to slowing down water

The intended impact of this proposal, to adjust the Big Valley basin boundary, is to ensure that watershed development is a function of the GSA through an adopted Groundwater Sustainability Plan (GSP). A coordinated management approach, which includes watershed development aimed at increasing groundwater recharge and overall water resource availability, will be necessary to ensure successful implementation of a GSP.

Lassen County has been in contact with Modoc County, the only other Local Agency with jurisdiction over Big Valley, and they are aware of this request. Please contact the Department of Planning and Building Services at (530) 251-8269, if there are any questions.

Sincerely,



FOI:

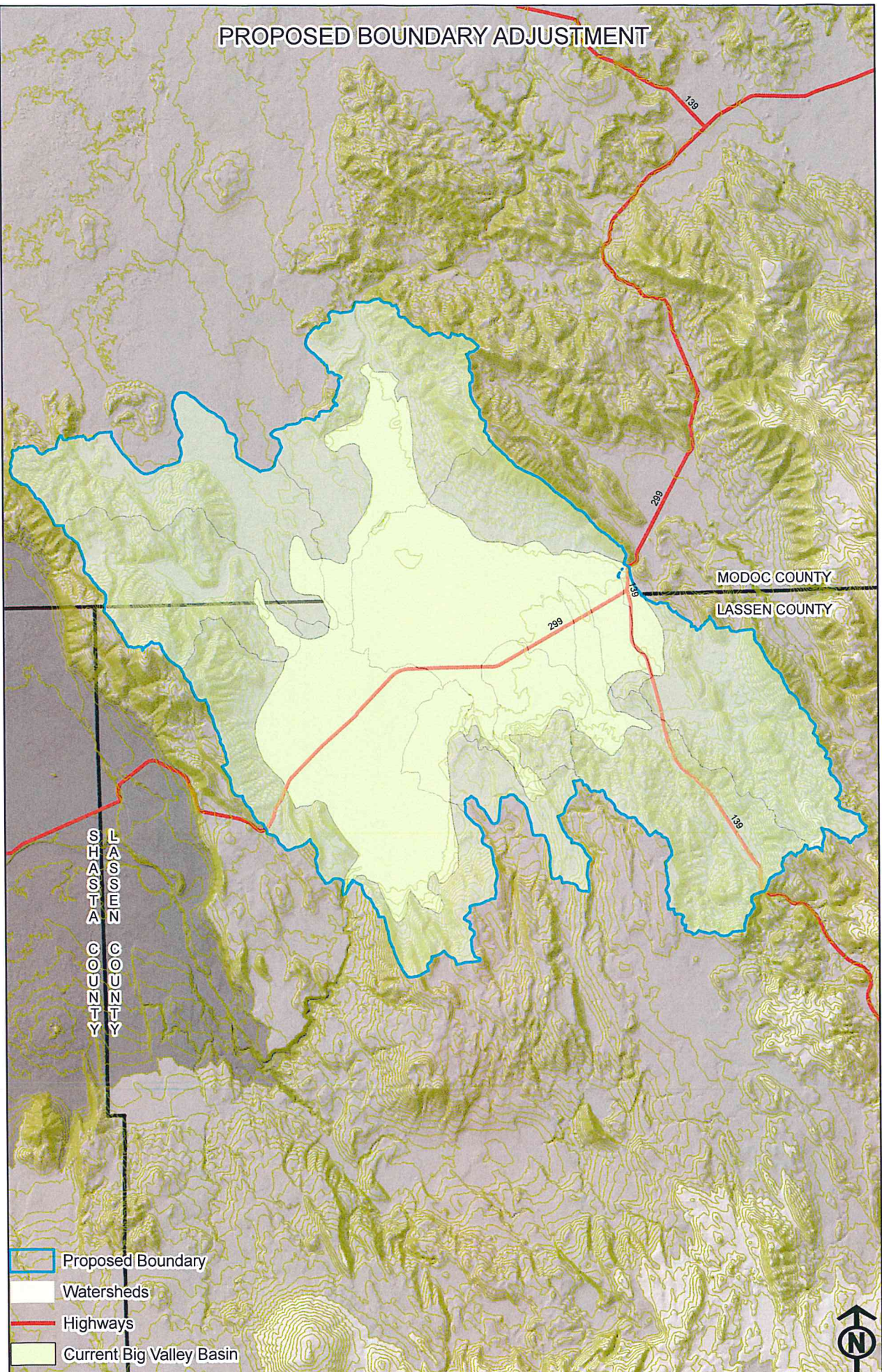
Richard Egan
County Administrative Officer

RE:MLA:mm

Cc: Supervisor Chapman, Chairman District 2; Supervisor Pyle, District 1; Supervisor Hemphill, District 3; Supervisor Albaugh, District 4; Supervisor Hammond, District 5; Bob Burns, County Counsel; Richard Egan, County Administrative Officer.

S:\PLA\Admin\FILES\1252\Response to denial of Big Valley boundary adjustment

PROPOSED BOUNDARY ADJUSTMENT



SHASTA
COUNTY

MODOC COUNTY

LASSEN COUNTY

Table 1. 2016 Final Basin Boundary Modifications

Basin/Subbasin	Request Agency	Lead Region Office	Short Description	Modification Type	Recommendation	Regulatory Basis for Denial Article 6	Summary Draft Decisions
1-02.01 KLAMATH RIVER VALLEY - TULELAKE	Tulelake Irrigation District	NRO	Tulelake Irrigation District (TID) is exploring a modification to the Tule Lake...	Scientific External	Approved		This request was approved because it met the technical requirements of the regulation and provided the necessary supporting documentation, technical studies, local outreach and/or notification.
5-04 BIG VALLEY	Lassen County	NRO	Watershed and subwatershed hydrologic unit boundaries form the proposed perimeter...	Scientific External	Denied	345.2(c) and (d)	This request did not include sufficient detail and/or required components necessary to support approval of the request. The proposed modification included volcanic rock geologic units (not alluvial basin material) and evidence was not provided to substantiate the connection to the porous permeable alluvial basin, nor were conditions presented that could potentially support radial groundwater flow as observed in alluvial basins.
5-21.52 SACRAMENTO VALLEY - COLUSA, 5-21.51 SACRAMENTO VALLEY - CORNING	Tehama County Flood Control & Water Conservation District	NRO	Jurisdictional Consolidation of the Tehama County portion of the Colusa Subbasin...	Jurisdiction Consolidation	Approved		This request was approved because it met the technical requirements of the regulation and provided the necessary supporting documentation, technical studies, local outreach and/or notification.
2-9.04 SANTA CLARA VALLEY - EAST BAY PLAIN, 2-9.01 SANTA CLARA VALLEY - NILES CONE	Alameda County Water District	NCRO	Request to correct the boundary of the Niles Cone Groundwater Basin (Niles Cone...	Jurisdiction Internal	Approved, as modified		This request was approved with minor modifications to the eastern boundary to align with the lateral extent of alluvium. The request for jurisdictional modification was supported by sufficient technical information and necessary affected local agencies provided letters in support of the modification.
3-03.01 GILROY-HOLLISTER VALLEY - LLAGAS AREA	Santa Clara Valley Water District	NCRO	Modify eastern Llagas Subbasin boundary to match extent of water-bearing sediment...	Scientific External	Approved		This request was approved because it met the technical requirements of the regulation and provided the necessary supporting documentation, technical studies, local outreach and/or notification.
5-21.60 SACRAMENTO VALLEY - NORTH YUBA	Yuba County Water Agency	NCRO	Subdivision of the North Yuba Subbasin along the Butte-Yuba county line	Jurisdiction Subdivision	Approved, as modified		The modification request was originally submitted as a jurisdictional subdivision, however, during the review of the request it was revealed that the Department introduced a significant error in the basin boundary sometime between 2003 and 2014, resulting in a portion of Butte County being applied to the North Yuba subbasin. The Department corrected the error during this modification submission period.
5-21.61 SACRAMENTO VALLEY - SOUTH YUBA, 5-21.64 SACRAMENTO VALLEY - NORTH AMERICAN	Placer County	NCRO	Request to adjust the subbasin boundary to align with the Yuba / Placer county ...	Jurisdiction Internal	Approved		This request was approved because it met the technical requirements of the regulation and provided the necessary supporting documentation, technical studies, local outreach and/or notification.
5-21.67 SACRAMENTO VALLEY - YOLO, 5-21.52 SACRAMENTO VALLEY - COLUSA, 5-21.68 SACRAMENTO VALLEY - CAPAY VALLEY, 5-21.66 SACRAMENTO VALLEY - SOLANO	Yolo County Flood Control And Water Conservation District	NCRO	County Basin Consolidation of four subbasins within Yolo County to existing County...	Jurisdiction Internal, Jurisdiction Consolidation	Approved, as modified		The request was approved as a county consolidation of basins within Yolo County with additional internal jurisdictional modifications. The internal jurisdictional modifications included exclusion of some local agency areas within Yolo County which remained in the Solano subbasin. There were also minor jurisdictional modifications applied to the eastern edge of the proposed subbasin and coincident boundaries of Sutter, North American and South American subbasins to align the boundary along county boundaries rather than along hydrologic features.
5-22.01 SAN JOAQUIN VALLEY - EASTERN SAN JOAQUIN, 5-22.16 SAN JOAQUIN VALLEY - COSUMNES	Eastern San Joaquin County Groundwater Basin Authority	NCRO	A boundary modification to merge a portion of the Cosumnes Subbasin into the Ea...	Jurisdiction Internal	Approved		This request was approved because it met the technical requirements of the regulation and provided the necessary supporting documentation, technical studies, local outreach and/or notification.



OFFICE OF COUNTY COUNSEL

ROBERT M. BURNS

Lassen County Counsel

221 SOUTH ROOP STREET, SUITE 2
SUSANVILLE, CA 96130-4339

☎ (530) 251-8334
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January 3, 2019

Trevor Joseph
Department of Water Resources
Sustainable Groundwater Management Office
P.O. Box 942836
Sacramento, CA 94236-0001

Re: 2018 SGMA Basin Prioritization Process and Results

Dear Mr. Joseph:

On August 8, 2018, a letter (attached) was sent to the Department of Water Resources (DWR) from both the Lassen County and Modoc County Board of Supervisors regarding the 2018 priority rankings for California groundwater basins. The letter was also submitted through the 2018 SGMA Basin Prioritization Public Comment Portal. The letter requested reconsideration of scores given to the Big Valley Groundwater Basin for Components 7 and 8, as well as further justification and clarification of the methodologies used.

In emails dated November 2, 2018 (attached), Ian Espinoza, DWR Engineering Geologist, informed Gaylon Norwood, Lassen County Assistant Planning Director, that all comments received would be considered and that he was not aware of any response to the Boards' comments prepared by DWR. Mr. Espinoza also informed Mr. Norwood that DWR is not obligated to respond to comments, but that an updated process will be applied to all basins if comments concerning the process used in the 2018 SGMA Basin Prioritization are determined to be appropriate.

If it has been determined as appropriate by DWR to apply any updated processes to basin rankings based on comments received, please inform Lassen County on how to obtain information on these changes and their results. However, regardless of any change to process, Lassen County is still requesting justification and/or clarification as to methods used to arrive at the priority rankings. As considerable time was spent evaluating the 2018 ranking system and preparing comments and questions for DWR, it is Lassen County's position that a response by DWR addressing said questions is warranted.

Therefore, in accordance with and pursuant to the California Public Records Act, please consider this letter as a request for all documents prepared by DWR related to the prioritization of the Big Valley Groundwater Basin as a medium priority basin, as well as any documents related to subsequent reconsideration or affirmation of this decision. We look forward to your response within the next ten days.

Sincerely,

A handwritten signature in black ink, appearing to read 'RMB', with a long, sweeping horizontal line extending to the right.

Robert M. Burns
County Counsel

cc: Lassen County Board of Supervisors
Modoc County Board of Supervisors
Ian Espinoza, Department of Water Resources

County of Lassen
ADMINISTRATIVE SERVICES



CHRIS GALLAGHER
District 1
DAVID TEETER
District 2
JEFF HEMPHILL
District 3
AARON ALBAUGH
District 4
TOM HAMMOND
District 5

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AUG 15 2018

Lassen County Department of
Planning and Building Services

August 14, 2018

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221 S. Roop Street, Suite 4
Susanville, CA 96130
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Trevor Joseph
Department of Water Resources
Sustainable Groundwater Management Office
P.O. Box 942836
Sacramento CA 94236-0001

Dear Mr. Joseph:

This letter is in regard to the proposed ranking of the Big Valley Groundwater Basin as a medium priority basin pursuant to the Sustainable Groundwater Management Act (Part 2.74 of the California Water Code). The Lassen County Board of Supervisors has elected to be the Groundwater Sustainability Agency for the Lassen County portion of the basin and the Modoc County Board of Supervisors has elected to be the Groundwater Sustainability Agency for the Modoc County portion of the basin pursuant to said Act and has been designated as such. Lassen and Modoc County are working in a coordinated effort to comply with the Sustainable Groundwater Management Act by retaining local control for the benefit of our constituents.

This letter is to provide comments regarding the above ranking and present justification for consideration to reduce the 2018 Big Valley Groundwater Basin prioritization score.

The 2018 ranking considered the following additional criteria that were not previously considered for the 2014 prioritization (2018 SGMA Basin Prioritization Process and Results):

- The updated SGMA provision in component 8 that requires consideration of "...adverse impacts on local habitat and local stream flows";
- Other information from a sustainable groundwater management perspective in accordance with the provision "Any other information determined to be relevant by the Department...";
- Use of updated datasets and information in accordance with the provision "...to the extent data are available".

Based on the SGMA updates to component 8, the 2018 SGMA Basin Prioritization considered the following four new sub-components:

- Adverse impacts on local habitat and local streamflows

Choose Civility

- Adjudicated areas
- Critically overdrafted basins
- Groundwater related transfers

Lassen and Modoc County have carefully evaluated the information and data provided to establish the 2018 SGMA Basin Prioritization results. The datasets, methodologies, and documentation provided for this process are an improvement over the previous prioritization, and DWR made efforts to standardize the datasets and criteria used for nearly all the components including Component 7: Impacts. However, DWR did not make adequate consideration of the severity of the impacts for Component 7 and did not apply consistent methodologies and justification for Component 8. Particular inadequacies related to Big Valley's prioritization include:

Component 7 Impacts: Declining Groundwater Levels

Groundwater levels in Big Valley have remained stable in some areas and declined in others over the last 10 years. Declines have been as much as 30 feet, but have been rising since 2016. Prioritization points for declining groundwater level are appropriate in this basin, however the identical score was given to all basins in the state with documented water level declines. This includes critically overdrafted basins where water levels have declined hundreds of feet, chronically over the course of many decades. Evaluating Big Valley's water level declines on par with these basins does not adequately represent Big Valley's priority in the state and therefore we would like to request DWR reconsider the points associated with this portion of the scoring criteria.

Component 7 Impacts: Water Quality

This scoring appears to be based on 14 measurements that exceeded the Secondary MCL (maximum contaminant level) for iron and manganese at the two wells used to supply water to the town of Bieber. Although secondary MCLs are enforceable standards in California, they are *not* due to public health concerns but, due to nuisance and aesthetics such as taste, color, and odor. Iron and manganese are not typically concerns for agricultural use, which is the primary beneficial use in Big Valley. Iron and manganese are naturally occurring minerals that are prevalent in volcanic areas such as Big Valley. These water quality issues are therefore not due to mismanagement of the resource and conversely cannot be substantially addressed through better management. Again, DWR did not make adequate consideration of the severity of this issue, with Big Valley receiving the same number of points as areas of the state that have significant issues with salinity, nitrate, and toxic metals that have a much greater impact on beneficial uses and human health and have the potential to be better managed under SGMA.

Further we ask that DWR consider methodologies for Component 7 to account for the severity of each impact. If those methodologies cannot be developed, we ask that DWR use their discretion to adjust points in consideration of the low level of severity of these impacts for Big Valley.

Component 8b: Other Information Deemed Relevant by the Department

While DWR did apply their methodologies consistently for Components 1 through 7, they were not consistent with Component 8 and provided little justification in applying five (5) points to Big Valley Basin for:

Choose Civility

1. "Headwaters for Pit River/Central Valley Project - Lake Shasta"
2. "Extensive restoration project at Ash Creek State Wildlife Area has improved groundwater levels in immediate vicinity of project but declining groundwater levels over past 10 years persist outside of project area which includes numerous wetlands and tributaries to the Pit River."


This limited information about the application of DWR's discretion on these points begs numerous questions such as:

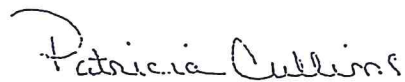
1. What headwaters does this refer to? Headwaters of the Pit River? Headwaters of the CVP? Headwaters of Lake Shasta?
2. What are DWR's concerns relative to Big Valley's position within the watershed?
3. What concerns does DWR have specific to Big Valley, given that there are numerous other groundwater basins within the Pit River, Lake Shasta, CVP and State Water Project watersheds that were not awarded these points?
4. Why are water levels in the vicinity of Ash Creek and other wetlands considered "other information deemed relevant"? Wasn't this information already considered in Component 7: Declining Groundwater Levels and Component 8a: Streamflow and Habitat?

Due to the need for further clarification on the preceeding questions regarding component 8b, both Lassen and Modoc GSAs would like to request the points associated with this portion of the scoring criteria be reconsidered.

Lassen and Modoc County understand the vast complexity of evaluating each basins data and information, however, we feel a further assessment of the 2018 SGMA Basin Prioritization score is desired by both GSAs. For the above reasons, Lassen and Modoc County GSAs would like to request an assessment of the questions regarding the basins data, detailed in this letter, to be reviewed for a potential lowering of the overall basin score. We appreciate the consideration of our comments and look forward to hearing from you.

Sincerely,


Chris Gallagher, Chairman
Lassen County Board of Supervisors


Patricia Cullins, Chair
Modoc County Board of Supervisors

Choose Civility

Gaylon Norwood

From: Espinoza, Ian@DWR <Ian.Espinoza@water.ca.gov>
Sent: Friday, November 02, 2018 1:58 PM
To: Gaylon Norwood
Cc: Boyt, Jessica@DWR; Ehorn, Bill@DWR
Subject: RE: comments on Big Valley prioritization

Hi Gaylon,

- DWR will consider all comments received, including comments submitted by Lassen County.
- I am not aware of a response from DWR regarding comments received on basin prioritization by Lassen County.

-Ian

From: Gaylon Norwood [mailto:GNorwood@co.lassen.ca.us]
Sent: Friday, November 2, 2018 1:13 PM
To: Espinoza, Ian@DWR <Ian.Espinoza@water.ca.gov>
Cc: Boyt, Jessica@DWR <Jessica.Boyt@water.ca.gov>; Ehorn, Bill@DWR <Bill.Ehorn@water.ca.gov>
Subject: RE: comments on Big Valley prioritization

Ian:

I want to confirm that I understand you correctly. I understand you to say that DWR did (is) consider(ing) all the comments, including the comments submitted by Lassen County. However, DWR is not obligated to respond to specific comments and did not prepare a specific written response to the comments submitted by Lassen County. Is this correct?

In simple language, I just need to know if there is a written response to our comments or not, I understand that you are not required to respond. If there is not a response, I will the Board know that. If there is a response, I would like to see it.

Thank you.

Sincerely,

Gaylon F. Norwood
Assistant Director of Planning
and Building Services
Lassen County
707 Nevada Street Suite 5
Susanville, CA 96130
(530) 251-8269
Fax: (530) 251-8373

From: Espinoza, Ian@DWR [mailto:Ian.Espinoza@water.ca.gov]
Sent: Friday, November 02, 2018 12:51 PM
To: Gaylon Norwood <GNorwood@co.lassen.ca.us>
Cc: Boyt, Jessica@DWR <Jessica.Boyt@water.ca.gov>; Ehorn, Bill@DWR <Bill.Ehorn@water.ca.gov>
Subject: RE: comments on Big Valley prioritization

Hello Gaylon,

DWR will consider comments received but is not obligated to respond to them. Please see the below excerpt from DWR's Basin Prioritization FAQ for more info on this process:

'DWR will consider all comments received during the public comment period while finalizing the 2018 SGMA Basin Prioritization results. DWR will evaluate any data provided during the public comment period to determine whether it is consistent with processes and datasets used in the evaluation, and may use the data received to enhance the prioritization analysis. Comments concerning the processes or scope of the datasets used in the 2018 SGMA Basin Prioritization will also be evaluated and if the suggested changes are determined to be appropriate, then the updated process or datasets will be applied to all basins.'

Please let me know if you have any questions,

Best,
Ian



Ian Espinoza
Engineering Geologist
Groundwater & Geologic Investigations Section
Department of Water Resources
2440 Main St.
Red Bluff, CA 96080
Phone: (530) 529-7330
Email: ian.espinoza@water.ca.gov

From: Boyt, Jessica@DWR
Sent: Friday, November 2, 2018 11:36 AM
To: Gaylon Norwood <gnorwood@co.lassen.ca.us>
Cc: Espinoza, Ian@DWR <Ian.Espinoza@water.ca.gov>
Subject: Re: comments on Big Valley prioritization

Ian,

Can you direct or help Gaylon on this.

Thanks

Get Outlook for Android

From: Gaylon Norwood <GNorwood@co.lassen.ca.us>
Sent: Friday, November 2, 2018 10:46:04 AM
To: Boyt, Jessica@DWR
Subject: comments on Big Valley prioritization

Jessica:

I'm hoping that you can help me or direct me to the appropriate person. I am being asked about comments the Lassen County Board of Supervisors submitted on the recent basin prioritization for Big Valley (basically it was already and it stayed a medium priority basin). I am being asked if there has been a response from DWR to the comments that Lassen

County submitted on the ranking. It does not appear that DWR has commented. If DWR is not going to comment, I just need to confirm this so I can let the Board know.

Thanks you and I really appreciate it.

Sincerely,

Gaylon F. Norwood

Assistant Director of Planning
and Building Services

Lassen County
707 Nevada Street Suite 5
Susanville, CA 96130
(530) 251-8269
Fax: (530) 251-8373

R000019-011519 - Public Records Request

Message History (3)

✉ On 2/6/2019 1:24:31 PM, CALIFORNIADWR Support wrote:

RE: PUBLIC RECORDS REQUEST of January 15, 2019, Reference # R000019-011519.

Dear Mr./Ms. Burns:

This is in response to your January 15, 2019 request, pursuant to the California Public Records Act, Government Code Section 6250 et seq. to the Department of Water Resources (DWR) regarding:

"Requesting all documents prepared by DWR related to the prioritization of Big Valley GW Basin as a medium priority basin, as well as any related to subsequent reconsideration or affirmation of this decision."

Please sign into the [Public Records Request Portal](#) to access your account. Use the reference number you were provided to retrieve the records which DWR has determined are fully responsive to your request.

Sincerely,

Public Records Act Team
Department of Water Resources

✉ On 1/23/2019 2:14:59 PM, CALIFORNIADWR Support wrote:

RE: PUBLIC RECORDS REQUEST of January 15, 2019., Reference # R000019-011519.

Dear Mr./Ms. Burns,

This is in response to your January 15, 2019 request pursuant to the California Public Records Act, Government Code Section 6250 et seq. to the Department of Water Resources (DWR) regarding:

"Requesting all documents prepared by DWR related to the prioritization of Big Valley GW Basin as a medium priority basin, as well as any related to subsequent reconsideration or affirmation of this decision."

It has been determined that DWR maintains records responsive to your request, however, DWR anticipates these records may require a significant amount of time to locate, assemble and review. DWR is presently collecting and reviewing these records and estimates that these materials can be made available by February 22, 2019.

Please note that every effort will be made to provide you with responsive records as soon as feasible.

Sincerely,

Public Records Act Team
Department of Water Resources

Comment ID	Comment summary	Final Project Comments
60a	See the attached letter from the Lassen County Board of Supervisors, who serve as the GSA for the Lassen County portion of the basin, and the Modoc County Board of Supervisors, who serve as the GSA for the Modoc County portion of the basin.	No Action, Not an actionable sub-comment
60b	Groundwater levels in Big Valley have remained stable in some areas and declined in others over the last 10 years. Declines have been as much as 30 feet, but have been rising since 2016. Prioritization points for declining groundwater level are appropriate in this basin, however the identical score was given to all basins in the state with documented water level declines. This includes critically overdrafted basins where water levels have declined hundreds of feet, chronically over the course of many decades. Evaluating Big Valley's water level declines on par with these basins does not adequately represent Big Valley's priority in the state and therefore we would like to request DWR reconsider the points associated with this portion of the scoring criteria.	Action - Used the same process used in the 2014 CASGEM BP; all declines are treated the same. No changes for basin.
60c	DWR did not make adequate consideration of the severity of this issue, with Big Valley receiving the same number of points as areas of the state that have significant issues with salinity, nitrate, and toxic metals that have a much greater impact on beneficial uses and human health and have the potential to be better managed under SGMA.	No Action - Process already accounts for differences between basins. All MCL levels are calibrated by the Waterboard to be equal. The BP process used different scores or points to represent magnitude and unique public wells (distribution) and are totaled. Component 7.d points assigned to the basin are based on total For more detailed information, please see reference document "Process and Results Document covering the SGMA 2018 Basin Prioritization" covering component 7.d (WQ) See comment 99b for more details on WQ
60d	1) What headwaters does this refer to? Headwaters of the Pit River? Headwaters of the CVP? Headwaters of Lake Shasta? 2) What are DWR's concerns relative to Big Valley's position within the watershed? 3) What concerns does DWR have specific to Big Valley, given that there are numerous other groundwater basins within the Pit River, Lake Shasta, CVP and State Water Project watersheds that were not awarded these points? 4) Why are water levels in the vicinity of Ash Creek and other wetlands considered "other information deemed relevant"? Wasn't this information already considered in Component 7: Declining Groundwater Levels and Component 8a: Streamflow and Habitat?	Action - Removed the comment and points. See also 99c
	Due to the need for further clarification on the preceding questions regarding component 8b, both Lassen and Modoc GSAs would like to request the points associated with this portion of the scoring criteria be reconsidered.	
99a	Groundwater levels in Big Valley have remained stable in some areas and declined in others over the last 10 years. Declines have been as much as 30 feet, but have been rising since 2016. Prioritization points for declining groundwater level are appropriate in this basin, however the identical score was given to all basins in the state with documented water level declines. This includes critically overdrafted basins where water levels have declined hundreds of feet, chronically over the course of many decades. Evaluating Big Valley's water level declines on par with these basins does not adequately represent Big Valley's priority in the state and therefore we would like to request DWR reconsider the points associated with this portion of the scoring criteria.	Action - Used the same process used in the 2014 CASGEM BP; all declines are treated the same. No changes for basin.
99b	This scoring appears to be based on 14 measurements that exceeded the Secondary MCL (maximum contaminant level) for iron and manganese at the two wells used to supply water to the town of Bieber. Although secondary MCLs are enforceable standards in California, they are not due to public health concerns but, due to nuisance and aesthetics such as taste, color, and odor. Iron and manganese are not typically concerns for agricultural use, which is the primary beneficial use in Big Valley.	Process 7.d was modified in Phase 1 to: 1) reduce the total WQ points a basin can earn from 5 down to 3 2) Must have GREATER THAN 3 points after adding 7.a + b + c + d to be assigned one component 7 priority point. 3) For those basin between 2,000 and 9,500 AF, WQ alone will not be enough to trigger document impacts and thus causing the basin to potentially be a medium or high priority. Other basins has the potential to reduce their component 7 priority points by one.
99c	While DWR did apply their methodologies consistently for Components I through 7, they were not consistent with Component 8 and provided little justification in applying five (5) points to Big Valley Basin	Action - Removed the comment and points.

[Response to Lassen County's 1/15/19 Public Records Request - Received from the California Department of Water Resources on 2/6/19 through the DWR "Public Records Request Portal"]

Comment ID	Comment summary	Final Project Comments
60a	See the attached letter from the Lassen County Board of Supervisors, who serve as the GSA for the Lassen County portion of the basin, and the Modoc County Board of Supervisors, who serve as the GSA for the Modoc County portion of the basin.	No Action, Not an actionable sub-comment
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60c	DWR did not make adequate consideration of the severity of this issue, with Big Valley receiving the same number of points as areas of the state that have significant issues with salinity, nitrate, and toxic metals that have a much greater impact on beneficial uses and human health and have the potential to be better managed under SGMA.	No Action - Process already accounts for differences between basins. All MCL levels are calibrated by the Waterboard to be equal. The BP process used different scores or points to represent magnitude and unique public wells (distribution) and are totaled. Component 7.d points assigned to the basin are based on total For more detailed information, please see reference document "Process and Results Document covering the SGMA 2018 Basin Prioritization" covering component 7.d (WQ) See comment 99b for more details on WQ
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99a	Groundwater levels in Big Valley have remained stable in some areas and declined in others over the last 10 years. Declines have been as much as 30 feet, but have been rising since 2016. Prioritization points for declining groundwater level are appropriate in this basin, however the identical score was given to all basins in the state with documented water level declines. This includes critically overdrafted basins where water levels have declined hundreds of feet, chronically over the course of many decades. Evaluating Big Valley's water level declines on par with these basins does not adequately represent Big Valley's priority in the state and therefore we would like to request DWR reconsider the points associated with this portion of the scoring criteria.	Action - Used the same process used in the 2014 CASGEM BP; all declines are treated the same. No changes for basin.
99b	This scoring appears to be based on 14 measurements that exceeded the Secondary MCL (maximum contaminant level) for iron and manganese at the two wells used to supply water to the town of Bieber. Although secondary MCLs are enforceable standards in California, they are not due to public health concerns but, due to nuisance and aesthetics such as taste, color, and odor. Iron and manganese are not typically concerns for agricultural use, which is the primary beneficial use in Big Valley.	Process 7.d was modified in Phase 1 to: 1) reduce the total WQ points a basin can earn from 5 down to 3 2) Must have GREATER THAN 3 points after adding 7.a + b + c + d to be assigned one component 7 priority point. 3) For those basin between 2,000 and 9,500 AF, WQ alone will not be enough to trigger document impacts and thus causing the basin to potentially be a medium or high priority. Other basins has the potential to reduce their component 7 priority points by one.
99c	While DWR did apply their methodologies consistently for Components I through 7, they were not consistent with Component 8 and provided little justification in applying five (5) points to Big Valley Basin	Action - Removed the comment and points.

[Response to Lassen County's 1/15/19 Public Records Request - Received from the California Department of Water Resources on 2/6/19 through the DWR "Public Records Request Portal"]

Sustainable Groundwater Management Act 2019 Basin Prioritization

Process and Results



State of California

California Natural Resources Agency

Department of Water Resources

Sustainable Groundwater Management Program

December 2019

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Sustainable Groundwater Management Act 2019 Basin Prioritization

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Acronyms and Abbreviations

Cal-SIMETAW	California Simulation of Evapotranspiration of Applied Water
CASGEM	California Statewide Groundwater Elevation Monitoring
DOF	California Department of Finance
DWR	California Department of Water Resources
GAMA	Groundwater Ambient Monitoring and Assessment
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
MCL	Maximum Contaminant Level
NHD	National Hydrography Dataset
OSWCR	Online System for Well Completion Reports
PLSS	Public Land Survey System
PWSS	Public Water System Statistics
SGMA	Sustainable Groundwater Management Act
SWRCB	State Water Resources Control Board
USGS	United States Geological Survey
WCR	Well Completion Report (DWR Form 188)

Contents

I. Purpose of Report

This report describes the background, process, and results of the Sustainable Groundwater Management Act (SGMA) 2019 Basin Prioritization. The California Department of Water Resources (DWR) is required to update California's groundwater basin prioritization in accordance with the requirements of SGMA and related laws¹.

II. Introduction

Bulletin 118 – Interim Update 2016 (California Department of Water Resources 2016a) defined 517 groundwater basins and subbasins in California. DWR is required to prioritize these 517 groundwater basins and subbasins as either high, medium, low, or very low. For the purposes of groundwater basin prioritization, basins and subbasins are processed equally and are referred to as basins in this report.

It is the policy of the State through SGMA that groundwater resources be managed sustainably for long-term reliability and multiple benefits for current and future beneficial uses. The State also recognizes that sustainable groundwater management is best achieved locally through the development, implementation, and updating of plans and programs based on the best available science.

DWR plays a key role in providing the framework for sustainable groundwater management in accordance with the statutory requirements of SGMA and other provisions within the California Water Code (Water Code). Other State agencies, including the State Water Resources Control Board (SWRCB) and California Department of Fish and Wildlife, play a role in SGMA implementation and are required to consider SGMA when adopting policies, regulations, or criteria, or when issuing orders or determinations, where pertinent².

III. Background

Groundwater basin prioritization was initially completed by DWR in response to legislation enacted in [California's 2009 Comprehensive Water Package](#)

¹ Water Code sections 10722.4 and 10933.

² Water Code Section 10720.9.

(California Department of Water Resources 2009), which established Part 2.11 of the Water Code requiring groundwater elevations be monitored seasonally in all groundwater basins identified in the *Bulletin 118 - 2003 Update*³ (California Department of Water Resources 2003a). Part 2.11 added general provisions to the Water Code that required DWR to identify the extent of groundwater elevation monitoring undertaken within each basin and directed DWR to prioritize basins for that purpose. In response to the new requirements of Part 2.11, DWR established the California Statewide Groundwater Elevation Monitoring (CASGEM) Program. In June 2014, the CASGEM Program released its prioritization for the groundwater basins identified in *Bulletin 118 - 2003 Update*. The CASGEM 2014 Basin Prioritization classified basins as high, medium, low, or very low based on the consideration of the eight components required in Water Code Section 10933(b).

In September 2014, Governor Brown signed into law three bills that formed SGMA.⁴ SGMA required DWR to update basin priority for each groundwater basin no later than January 31, 2015 and reassess the prioritization anytime DWR updates Bulletin 118 basin boundaries.⁵ DWR applied the CASGEM 2014 Basin Prioritization as the initial SGMA 2015 Basin Prioritization under SGMA, resulting in the designation of 127 high and medium priority basins (California Department of Water Resources 2014a).

In the fall of 2016, DWR completed and released groundwater basin boundary modifications. *Bulletin 118 – Interim Update 2016*, which included the final boundary modifications, was published on December 22, 2016. As a result of these modifications, updated basin prioritizations were required for the 517 groundwater basins identified in Bulletin 118. In May of 2018, DWR released the draft basin prioritization results for the 517 basins and held a 94-day public comment period. Simultaneously, local agencies requested a subsequent round of basin boundary modifications. This required DWR to prioritize the basins in two phases (referred to as SGMA 2019 Basin Prioritization Phase 1 and 2).

The SGMA 2019 Basin Prioritization Phase 1 focused on the basins that used the *Bulletin 118 – Interim Update 2016* basin boundary shapefile (California Department of Water Resources 2016b) and not affected by the 2018 basin boundary modifications. This phase allowed DWR to finalize in January 2019

³ Stats. 2009-2010, 7th Ex. Sess., c. 1 (S.B.6), § 1, eff. Feb. 3, 2010.

⁴ Stats.2014, c. 346 (S.B.1168), § 3, c. 347 (A.B.1739), § 18, c. 348 (S.B.1319), § 2, eff. Jan. 1, 2015.

⁵ Water Code sections 10722.4(b) and 10722.4(c)

the SGMA 2019 Basin Prioritization Phase 1 priorities that included 458 basins.

SGMA 2019 Basin Prioritization Phase 2 covers the remaining 57 basins that include the 53 basins that were modified and approved, as well as two that were not approved by DWR as part of the 2018 basin boundary modifications, plus two basins whose boundary modifications were from Assembly Bill 1944. All 57 basins of SGMA 2019 Basin Prioritization Phase 2 used the *Bulletin 118 – Update 2019* basin boundary shapefile (California Department of Water Resources 2019).

SGMA applies to all California groundwater basins and requires that high- and medium-priority groundwater basins form Groundwater Sustainability Agencies (GSAs) and be managed in accordance with locally-developed Groundwater Sustainability Plans (GSPs) or Alternatives to GSPs (Alternatives). High- and medium-priority basins that are identified in *Bulletin 118 – Interim Update 2016* as a critically overdrafted basin are required to submit a GSP by January 31, 2020. The remaining high- and medium-priority basins identified in January 2015 are required to submit a GSP by January 31, 2022. Basins newly identified as high- or medium-priority in the SGMA 2019 Basin Prioritization are required to form a GSA or submit an Alternative within two years from the date the basin’s priority is finalized and are required to submit a GSP five years from the same finalization date.

IV. SGMA 2019 Basin Prioritization

The SGMA 2019 Basin Prioritization process was conducted to reassess the priority of the groundwater basins following the 2016 basin boundary modification, as required by the Water Code.⁶ For the SGMA 2019 Basin Prioritization, DWR followed the process and methodology developed for the CASGEM 2014 Basin Prioritization, adjusted as required by SGMA and related legislation. DWR is required to prioritize basins for the purposes of SGMA,⁷ which was enacted, among other things, to provide for the sustainable management of groundwater basins. This entailed a reassessment of factors that had been utilized in the CASGEM program to prioritize basins based on groundwater elevation monitoring. SGMA also required DWR to continue to prioritize basins based on a consideration of the components specified in

⁶ Water Code Section 10722.4(c)

⁷ Water Code Section 10722.4(a)

Water Code Section 10933(b), but the list of components had been amended to include the italicized language:

1. The population overlying the basin or subbasin.
2. The rate of current and projected growth of the population overlying the basin or subbasin.
3. The number of public supply wells that draw from the basin or subbasin.
4. The total number of wells that draw from the basin or subbasin.
5. The irrigated acreage overlying the basin or subbasin.
6. The degree to which persons overlying the basin or subbasin rely on groundwater as their primary source of water.
7. Any documented impacts on the groundwater within the basin or subbasin, including overdraft, subsidence, saline intrusion, and other water quality degradation.
8. Any other information determined to be relevant by the department, **including adverse impacts on local habitat and local streamflows** [emphasis added].

DWR incorporated new data, to the extent data are available⁸, and the amended language of Water Code Section 10933(b)(8) (component 8) to include an analysis of adverse impacts on local habitat and local streamflows as part of the SGMA 2019 Basin Prioritization. Evaluation of groundwater basins at a statewide scale does not necessarily capture the local importance of groundwater resources within the smaller-size or lower-use groundwater basins. For many of California's low-use basins, groundwater provides close to 100 percent of the local beneficial uses. Thus, when reviewing the SGMA 2019 Basin Prioritization results, it is important to recognize the findings are not intended to characterize groundwater management practices or diminish the local importance of the smaller-size or lower-use groundwater basins; rather, the results are presented as a statewide assessment of the overall importance of groundwater resources in meeting beneficial uses.

The following information was deemed relevant and considered as part of component 8 for the SGMA 2019 Basin Prioritization based on SGMA:

- Adverse impacts on local habitat and local streamflows.
- Adjudicated areas.
- Critically overdrafted basins.
- Groundwater-related transfers.

⁸ Water Code Section 10933(b)

Additional information about how each of these components were analyzed can be found in the process section of this document.

V. Process

The CASGEM 2014 and SGMA 2019 Basin Prioritization used the basin's total priority points assigned to each of the eight components to determine the priority. Based on the total accumulated priority points, the basin was assigned a very low, low, medium, or high priority. Both prioritization processes included additional evaluations of the basins that could alter the points assigned and thus the priority.

The data sources, processes, and steps used to evaluate each of the eight components of Water Code Section 10933(b) for the SGMA 2019 Basin Prioritization are described below. Supplemental data submitted during the May 2018 Draft Basin Prioritization comment period was also considered before finalization.

Component 1: The population overlying the basin or subbasin⁹

Data Source

- 2010 United States Census population block data (California)

Process

Population density was analyzed for the SGMA 2019 Basin Prioritization using the same methods and data relative to the CASGEM 2014 Basin Prioritization. The 2010 United States Census population block data (United States Census Bureau 2010a and 2010b) was used to calculate the population overlying each groundwater basin using the following methods:

- For population blocks contained wholly within a basin boundary, all population in the block was included in the basin population total.
- For population blocks located partially within the basin, the proportion of the population included was equal to the proportion of the area of the block contained within the basin and was applied to the basin population total. For example, if 60% of the population block was

⁹ Water Code Section 10933(b)(1)

within basin boundaries, then 60% of the reporting block total population was attributed to the total population of the basin.

Step 1 – Calculate Basin’s Total Population: The basin’s total population was calculated by summing all the included population blocks per the two methods described above.

Step 2 – Calculate the Population Density: The basin’s 2010 population density was calculated by dividing the basin’s total population (Step 1) by the basin’s area (square miles – Appendix 1).

Table 1 lists the priority points and associated ranges of population density.

Table 1 Component 1: Priority Points and Ranges for Population Density

Priority Points	Population Density (people/square mile) 'x' = population density
0	$x < 7$
1	$7 \leq x < 250$
2	$250 \leq x < 1,000$
3	$1,000 \leq x < 2,500$
4	$2,500 \leq x < 4,000$
5	$x \geq 4,000$

Component 2: The rate of current and projected growth of the population overlying the basin or subbasin¹⁰

Data Source

- 2000 and 2010 United States Census population block data (California)
- California Department of Finance (DOF) current trend 2030 county population projections
- 2000 and 2010 county population estimates developed for the California Water Plan Update 2018 (California Department of Water Resources 2018a)

¹⁰ Water Code Section 10933(b)(2).

Process

Population growth was analyzed for the SGMA 2019 Basin Prioritization using the same methods and data relative to the CASGEM 2014 Basin Prioritization.

Part A: Estimating Basin and Non-Basin Population within each County

Step 1 – Calculate the 2000 and 2010 Basin Population: The 2000 (United States Census Bureau 2000a and 2000b) and 2010 population were estimated for all basins and portions of basins within each county using the methods described for component 1.

Step 2 – Calculate the 2000 and 2010 Non-Basin Area Population by County: For each county, the 2000 United States Census population block data (United States Census Bureau 2000a and b) and 2010 United States Census population block data were used to calculate the population overlying the non-basin area in each county:

- For population blocks contained wholly outside of a basin boundary and within the county, all population in the block was included in the non-basin population total for the county.
- For population blocks located partially outside of a basin boundary and within the county, the proportion of the population block contained outside of a basin was applied to the non-basin population total for the county. For example, if 40 percent of the reporting block total population was located outside of a basin boundary, 40 percent of the population was attributed to the total population of the non-basin area.
- For population blocks located outside of a basin boundary and partially outside of the county, the proportion of the population block contained within the county was applied to the non-basin population total. For example, if 60 percent of the population block was within county boundaries, then 60 percent of the reporting block total population was attributed to the total population of the non-basin area.

Step 3 – Calculate the Difference Between the 2000 and 2010 Population: The difference between the 2000 and 2010 population estimates for each of the basins, portions of basins, and non-basin areas was calculated within each county.

Step 4 – Calculate the Share of the Basin’s Population Growth: The total population difference for the county was determined by summing the values from Step 3. The share (percentage) of the basin’s population growth

over the 2000 to 2010 decade was calculated by dividing the total basin population difference by the total county population difference.

Step 5 – Calculate the Projected Population Change from 2010 to 2030: The DOF current trend 2030 population projection for the county was used to determine the total change in county population between 2010 estimates and 2030 population projections.

Step 6 – Calculate the 2030 Population Projection: Each basin and non-basin share percentage (Step 4) was multiplied by the total 2030 projected change (Step 5) to produce a 2030 population projection for each basin and non-basin area within the 58 counties. For most basins located within a single county, the 2030 population projection was considered complete. Some low-population basins required minor adjustments when the projected population resulted in a negative value. In these situations, the population was adjusted to zero and the initial basin's results were redistributed to the other basin and non-basin areas in the county. For basins located in more than one county, the 2030 population projections for each portion of a basin that crossed a county boundary were summed to produce a 2030 population projection for the entire basin.

Estimates of population growth obtained using the methods described above were evaluated and adjusted, as necessary, to conform with DOF current trend 2030 county projections per California Government Code Section 13073(c).

Part B: Determining the 2030 Population Growth (Percentage)

The projected percent growth within each basin was determined by subtracting the 2010 population estimate (component 1) from the 2030 population projection (Step 6 of Part A) and dividing the result by the 2010 populations estimate:

$$\text{Percent Growth} = \frac{((\text{Projected 2030 Basin Population} - \text{2010 Basin Population}) / \text{2010 Basin Population}) \times 100}$$

Part C: Determining the Priority Points for Population Growth

Using the percent growth calculated in Step 4 of Part A, the basin was assigned the preliminary priority points identified in Table 2. Before determining the priority points, additional analysis was completed to determine if the basin met the minimum requirements for population growth

as defined in the CASGEM 2014 Basin Prioritization process (California Department of Water Resources 2014b):

- Does the basin have zero 2010 population?
- Does the basin have less than or equal to zero percent growth?
- Is the basin's 2010 population (component 1) less than 1,000 people and does the basin have growth greater than zero?
- Is the basin's 2010 basin population less than or equal to 25,000 and is the basin's 2010 population density less than 50 people per square mile?

If the answer was 'yes' to any of the four questions above, the priority points for component 2 were recorded as zero. If the answer was 'no' to all four questions above, the priority points were applied to each basin based on the percentage of population growth. Table 2 lists the priority points and associated ranges of population growth percentage.

Table 2 Component 2: Priority Points and Ranges for Population Growth

Priority Points	Population Growth (percent) 'x' = Population growth percentage
0	$x \leq 0$
1	$0 < x < 6$
2	$6 \leq x < 15$
3	$15 \leq x < 25$
4	$25 \leq x < 40$
5	$x \geq 40$

Component 3: The number of public supply wells that draw from the basin or subbasin¹¹

Data Source

- SWRCB, Division of Drinking Water - Public Supply Database, March 2016
- Verified local public supply well location and use information received through public comment process

¹¹ Water Code Section 10933(b)(3).

Process

Public supply wells were analyzed for the SGMA 2019 Basin Prioritization using the same methods and updated data relative to the CASGEM 2014 Basin Prioritization.

The SWRCB public supply well database (State Water Resources Control Board 2016) was used to calculate the number of public supply wells that draw from the basin, as it is the only statewide dataset that includes records associated with supply water for the public. The SWRCB public supply well database was accessed during March 2016 for the SGMA 2019 Basin Prioritization process. Each record in the database contains fields for active and inactive systems, water source (groundwater or surface water), and testing location. Different records for the same public supply system can exist due to separate testing locations for water quality. In most cases, the only distinction is in the location name.

The public supply data was processed by taking the following steps:

Step 1 – Query the Public Supply Well Database for Active Wells: The individual public supply wells that draw from each basin were determined by querying the public supply well database for entries classified as 'active,' and 'groundwater,' and that contained the word 'well' in the location name. Only wells active as of the time the data was extracted (March 2016) were included in this analysis. The number of individual public supply wells determined in this manner is not intended to establish an absolute value for any given basin, but to provide a relative measure of such wells between basins.

Step 2 – Perform Quality Control of Public Supply Well Coordinates: Each record from Step 1 was reviewed to identify incomplete or blank coordinates. Incomplete coordinates did not include enough decimal places in the coordinates to reliably map. They were corrected, when possible, using available attributes provided with public supply data. Records with blank coordinates were also corrected, when possible, using available attributes provided with public supply data. Wells with corrected coordinates were identified as modified with a "DWR" tag.

Step 3 – Compare Coordinates to County Codes: Public supply well locations were compared to the two-digit County Code included in the Public Water System Identification Number. If the well location did not fall within the proper county and location information was not readily available in the public supply well attributes, the public supply well was not included in the dataset.

Step 4 – Sum of Wells in Basin: Using Geographic Information System (GIS) software, the number of wells in each basin were counted based on the reconciled information from Steps 2 and 3.

Step 5 – Calculate the Public Supply Well Density: To calculate the public supply well density, the number of public supply wells (Step 4) was divided by the basin area (square miles).

Priority points were applied to each basin based on the calculated public supply well density. Table 3 lists the priority points and associated ranges of public supply well density.

Table 3 Component 3: Priority Points and Ranges for Public Supply Well Density

Priority Points	Public Supply Well Density (x = wells per square mile)
0	$x = 0$
1	$0 < x < 0.1$
2	$0.1 \leq x < 0.25$
3	$0.25 \leq x < 0.5$
4	$0.5 \leq x < 1.0$
5	$x \geq 1.0$

Component 4: The total number of wells that draw from the basin or subbasin¹²

Data Source

- Online System for Well Completion Reports (OSWCR) (California Department of Water Resources 2017)
- Verified local well location and use information received through public comment process

Process

Production wells were analyzed for the SGMA 2019 Basin Prioritization using updated methods and data relative to the CASGEM 2014 Basin Prioritization. Updated methods included defining production wells and improving the well location process. Both updated methods are further described below.

¹² Water Code Section 10933(b)(4).

DWR's new OSWCR database, which was not available at the time of the CASGEM 2014 Basin Prioritization, was used for the SGMA 2019 Basin Prioritization. The OSWCR database is a statewide dataset of well completion reports (WCRs). Each WCR contains useful information including well type, location, construction details, time of drilling, well performance, and aquifer characteristics.

Part A – Identifying Production Wells

The OSWCR database was used to identify production wells whose well use type within the WCR is listed as agriculture, domestic, irrigation, municipal, commercial, stock, industrial, or other extraction. If the well use type was not provided on the WCR, the following information, if present, was evaluated to determine if the WCR would be used for component 4.

- Many WCRs with an 'unknown' well type provide information about the well casing size and total depth. Criteria for separating production from non-production wells based on well casing size and total depth was established by reviewing domestic and water quality monitoring WCRs. It was determined that screening for a well casing greater than or equal to 4 inches and a total depth greater than or equal to 22 feet to identify production wells would provide the best balance between the urban and rural well characteristics. If the criteria of a well casing greater than or equal to 4 inches and a total depth greater than or equal to 22 feet were met, the WCR was considered to represent a production well.
- In some cases, the WCR only provided information on either well casing diameter or well depth information. For WCRs that only provided well casing size, the casing had to be greater than or equal to 4 inches to be considered a production well. For WCRs that only provided well depth, the well depth had to be greater than or equal to 22 feet to be considered a production well.

Part B – Determining the Location of Production Wells to the Highest Resolution

Well locations were determined using information included on the WCRs. For WCRs that included latitude and longitude, the coordinates were used to determine well locations. The spatial resolution in these cases was assumed to be absolute.

For WCRs that provided a spatial reference location based on Public Land Survey System (PLSS) data, a centroid location was assigned. The spatial reference location for a well gives a general well location within a known

area rather than the actual well location. The process for assigning a well location to a spatial reference location based on information provided in the WCRs is discussed below:

- **WCRs with township-range-section, baseline meridian, and county information:** For WCRs that included township-range-section, baseline meridian, and county information, a section centroid was used as the well location. If the given section was split by a county line, a county-section was created for each portion of the section, and WCRs that identified the county and PLSS location were assigned to that county-section. WCRs were assigned coordinates representing their respective county-section centroid. The spatial resolution in these cases was less than or equal to one square mile.
- **WCRs with incorrect or without baseline meridian:** For WCRs that either did not provide a baseline meridian or provided an incorrect baseline meridian, the county location information was relied upon to locate the well to a county-section and assign a respective centroid. The spatial resolution in these cases was less than or equal to one square mile.
- **WCRs with incorrect or without county:** For WCRs that either did not provide a county or provided an incorrect county, the township-range-section and baseline meridian information was relied on to locate the well to a section and assign a respective centroid. The spatial resolution in these cases was less than or equal to one square mile.
- **WCRs without township-range-section, baseline meridian, and county information:** All WCRs that did not provide township-range-section, baseline meridian, and county information were discarded from the analysis.

Part C – Estimating Number of Production Wells within a Basin

The total number of production wells in a basin was estimated by considering all the wells actually and potentially located in the basin. Wells assigned a centroid location were proportionally counted because the exact location of the wells was unknown. The process for proportionally counting wells is described below:

Step 1 – Map Wells using GIS Software: All wells with coordinates (absolute or section centroid coordinates) were mapped using Geographic Information System (GIS) software.

Step 2 – Sum Wells Wholly in Basin: Based on results from Step 1, if a well's absolute location or entire section's area associated with the centroid was wholly within a basin boundary, it was counted as one well.

Step 3 – Sum Wells Partially in Basin: Based on results from Step 1, if a section's area associated with the centroid was only partially located in a basin, all the wells within the section were proportionally counted based on the proportion of the spatial reference area located in the basin. For example, if only 50 percent of a section's spatial reference area was located in a basin, then all the wells in the section's spatial reference area were given a weighted value of 0.50 for that basin.

Step 4 – Calculate Total Number of Production Wells: The total number of production wells (Steps 2 and 3) in each basin was summed and then rounded down to the nearest whole number.

Part D – Determining the Basin Production Well Density

Once production well totals were calculated for each basin (Part C), the production well density was calculated by dividing the basin's total number of production wells by the basin's area (square mile).

Table 4 lists the priority points and associated ranges of production well density.

Table 4 Component 4: Priority Points and Ranges for Total Production Well Density

Priority Points	Production Well Density (x = production wells per square mile)
0	$x = 0$
1	$0 < x < 2$
2	$2 \leq x < 5$
3	$5 \leq x < 10$
4	$10 \leq x < 20$
5	$x \geq 20$

Component 5: The irrigated acreage overlying the basin or subbasin¹³

Data Source

- Statewide Crop Mapping 2014 (California Department of Water Resources 2014c)
- Verified local land use information received through public comment process

Process

The consideration of irrigated acreage as a component of the SGMA 2019 Basin Prioritization used the same methods with updated data relative to the CASGEM 2014 Basin Prioritization. The CASGEM 2014 Basin Prioritization used DWR Land Use mapping data to determine irrigated acres. However, the land use data represented multiple years of survey efforts throughout the State. For the SGMA 2019 Basin Prioritization, the Statewide Crop Mapping 2014 dataset was used to provide statewide coverage for a single year. The Statewide Crop Mapping 2014 dataset is a statewide, comprehensive field-level assessment of summer-season agriculture, managed wetlands, and urban boundaries for the 2014 year.

For the purposes of basin prioritization, all agriculture identified in the Statewide Crop Mapping 2014 dataset was identified as irrigated unless an agricultural field had been previously identified by DWR as dry-farmed. Only irrigated acreage inside the basin boundaries was included in the calculation and analysis. This was accomplished by overlying the spatial crop mapping data on groundwater basin boundaries to determine total agricultural field acreage overlying the basin.

The basin's irrigated acreage density was calculated by dividing the basin's total irrigated acreage by the basin's area (square mile).

Table 5 lists the priority points and associated ranges of density of irrigated acres.

¹³ Water Code Section 10933(b)(5).

Table 5 Component 5: Priority Points and Ranges for Density of Irrigated Acres

Priority Points	Density of Irrigated Acres (x = acres of irrigation per square mile)
0	$x < 1$
1	$1 \leq x < 25$
2	$25 \leq x < 100$
3	$100 \leq x < 200$
4	$200 \leq x < 350$
5	$x \geq 350$

Component 6: The degree to which persons overlying the basin or subbasin rely on groundwater as their primary source of water¹⁴

The groundwater reliance component in basin prioritization is comprised of two elements: total estimated groundwater use in the basin, referred to as Groundwater Use (sub-component 6.a), and the overall percent groundwater represents of the estimated total water use in the basin, referred to as Groundwater Reliance (sub-component 6.b).

Sub-component 6.a: Evaluating Volume of Groundwater Use

The consideration of groundwater use as a sub-component of the SGMA 2019 Basin Prioritization groundwater reliance component used updated methods and data relative to the CASGEM 2014 Basin Prioritization. The CASGEM 2014 Basin Prioritization used the DWR Agricultural model. For the SGMA 2019 Basin Prioritization, agricultural groundwater use was calculated by incorporating the crop types and total acreage from component 5 (above) into the California Simulation of Evapotranspiration of Applied Water (Cal-SIMETAW) v3.2 model (Morteza et al. 2013). The Cal-SIMETAW model was used for the SGMA 2019 Basin Prioritization to be consistent with the California Water Plan Update 2018. The model results were represented by evapotranspiration of applied water for each crop in the basin, representing total water demand not met by precipitation in Water Year 2014.

¹⁴ Water Code Section 10933(b)(6).

The updated process for this sub-component also included the use of Water Year 2014 (October 1, 2013 to September 30, 2014) data for both agricultural applied water and urban water used. Water Year 2014 was used because the Statewide Crop Mapping 2014 dataset was the best statewide land use information available at the time of analysis. The 2014 land use information also serves as a bench mark of water use prior to the enactment of SGMA.

The updated process for calculating urban groundwater use (Part B, below) included the use of local agency data provided in the SWRCB Public Water System Statistics (PWSS) database (California Department of Water Resources 2014d) and water purveyor boundaries.

Part A: Estimating Agricultural Groundwater Use

Data Source

- California Simulation of Evapotranspiration of Applied Water v3.2
- Statewide Crop Mapping 2014 (California Department of Water Resources 2014c)
- Irrigated Acres (component 5)
- Water balance data developed to support the California Water Plan
- Verified local agricultural information received through public comment process

Process

Agricultural groundwater use was estimated using the most recent Statewide Crop Mapping 2014 survey for land use acreages and the Cal-SIMETAW model, which incorporates local soil information, growth dates, crop coefficients, and evapotranspiration data from the Spatial California Irrigation Management Information System for water use demand estimates. Estimates were calculated using the following steps:

Step 1 – Determine Total Acres of Each Major Crop: The DWR Statewide Crop Mapping 2014 acreage data were overlaid on groundwater basin boundaries to determine the total acres of each DWR-defined major crop class (see Appendix 2) within the groundwater basins.

Step 2 – Determine Applied Water per Acre per Major Crop: The Cal-SIMETAW model was used to determine the volume of applied water for the DWR-defined major crop classes within the groundwater basins. Applied water per single acre of each DWR-defined major crop class was then estimated within each basin.

Step 3 – Calculate Total Applied Water for Each Crop: The estimates of applied water per single acre for each major crop class (Step 2) were multiplied by the total acres of DWR-defined major crop classes (Step 1) to estimate the total applied water for each crop class. The total applied water for each crop class was added to determine the total applied water for agriculture in the basin. The total applied water for each crop represents the combination of surface water and groundwater.

Step 4 – Calculate Total Groundwater Use: The total groundwater use (acre-feet) for the basin was estimated by multiplying the total applied water (Step 3) by the groundwater percentage of total applied water provided in the California Water Plan Update 2018.

Part B: Estimating Urban Groundwater Use

Data Source

- Public Water System Statistics (PWSS) database (California Department of Water Resources 2014d)
- Water purveyor boundaries (multiple sources)
- United States Department of Agriculture (USDA) National Agricultural Statistics Service CropScape and Cropland data layers (Urban portion) 2014
- Land Use surveys (Urban portion) (2000 through 2014)
- Groundwater Basin population data (2014)
- Verified local urban water use information received through public comment process

Process

Urban groundwater use was estimated within each groundwater basin using the data sources listed above. The data sources were processed using the following methods:

Step 1 - Determine Groundwater Basin Population: Actual census population block data and DOF population estimates are only available for years ending in a zero. DWR required 2014 population data to process the urban groundwater volumes. DWR accessed a third-party demographics software (Nielsen Claritas 2014) that estimated the population based on groundwater basin boundaries to determine the 2014 population.

Step 2 - Refine Water Purveyor Service Area: Service area boundaries were compiled using multiple sources including a DWR database, direct inquiries, and information included in Urban Water Management Plans. The service area boundaries were then refined based on the urban land use data

(U.S. Department of Agriculture 2014; California Department of Water Resources 2000 through 2014) and overlaid on groundwater basin boundaries. The basin fraction value of the boundary that overlies each basin was used in subsequent steps.

Step 3 – Determine Population Served Within Groundwater Basin:

Urban water purveyors' PWSS water use and population served data (California Department of Water Resources 2014d) were linked to their respective service area boundaries as refined in Step 2. The basin fraction value (Step 2) of the water purveyor boundary was applied to the total population served to determine the population served within the basin.

Step 4 – Determine Self-Supplied Population: The self-supplied population was determined by calculating the difference between population served in the basin (Step 3) and the basin population (Step 1).

Step 5 – Determine Water Purveyor Per-Capita Water Use: The water purveyors' PWSS water use and population served data were used to develop their respective per-capita water use.

Step 6 – Determine Groundwater Basin Per-Capita Water Use: The water purveyors that were identified as having all or part of their service area within a basin were used in this calculation. Each water purveyors' per-capita water use was averaged together using their respective population served and basin fraction value (Step 2).

Step 7 – Calculate Population-Based Water Use: Groundwater basin per-capita estimates (Step 6) were multiplied by the corresponding groundwater basin 2014 population (Step 1) to produce an estimated population-based urban water use. If the groundwater basin did not have any organized water purveyors, DWR provided an estimated average per-capita use to be used in the calculation.

Step 8a – Calculate Groundwater Use for Population Served by Water Purveyor: The urban water purveyors' PWSS data also reports the source of water used in their systems. DWR used this information along with the basin fraction value (Step 2) to calculate the basin's surface water and groundwater volume and the respective percent of total water supplied.

Step 8b – Calculate Groundwater Use for Self-Supplied Population: Self-supplied groundwater use was calculated by multiplying the per-capita value determined in Step 6 by the self-supplied population. DWR determined the source of supply for the self-supplied population to be groundwater in most cases.

Step 9 – Estimate Additional Groundwater Use: Additional urban water uses (such as golf courses, parks, and self-supplied industrial) were calculated if data were available from local sources such as Urban Water Management Plans.

Step 10 – Calculate Total Urban Groundwater Use: The groundwater amounts calculated in Steps 8a, 8b, and 9 were combined to obtain the total urban groundwater use.

Part C: Calculating Total Groundwater Use

Total groundwater use was calculated by adding agricultural groundwater use (Part A, Step 4) and urban groundwater use (Part B, Step 10). Basin groundwater use per acre was calculated for each basin by dividing the total acre-feet of groundwater use by the basin area (acres). Table 6 lists the points and associated ranges of groundwater use per acre.

Total groundwater use was calculated by adding agricultural groundwater use (Part A, Step 4) and urban groundwater use (Part B, Step 10). Basin groundwater use per acre was calculated for each basin by dividing the total acre-feet of groundwater use by the basin area (acres). Table 6 lists the points and associated ranges of groundwater use per acre.

Table 6 Component 6.a: Points and Ranges for Groundwater Use per Acre

Priority Points	Groundwater Use per Acre ($x = \text{acre-ft} / \text{acre}$)
0	$x < 0.03$
1	$0.03 \leq x < 0.1$
2	$0.1 \leq x < 0.25$
3	$0.25 \leq x < 0.5$
4	$0.5 \leq x < 0.75$
5	$x \geq 0.75$

Sub-component 6.b: Evaluating Overall Supply Met by Groundwater

Data Source

- Sub-component 6.a

Process

The consideration of overall supply met by groundwater (percent) as a component of the SGMA 2019 Basin Prioritization used the same methods and updated data relative to the CASGEM 2014 Basin Prioritization.

After developing the total groundwater volume for the groundwater basin (see sub-component 6.a – Evaluation of Volume of Groundwater Use), the percentage of groundwater supply was derived as the ratio of total groundwater volume to total water use.

Step 1 – Calculate Total Groundwater Use: Agricultural groundwater use was added to urban groundwater use to determine the total groundwater use for each basin (sub-component 6.a, Part C).

Step 2 – Calculate Total Water Use: Agricultural applied water (surface water and groundwater) was added to urban total supply (surface water and groundwater) to determine total water used within each basin.

Step 3 – Calculate Percent of Total Water Supply Met by Groundwater: Total groundwater used (Step 1) was divided by total water used (Step 2) to calculate the groundwater portion of the total water supply.

Table 7 lists the points and associated ranges of percent of total water supply met by groundwater.

Table 7 Component 6.b: Points and Ranges for Percent of Total Water Supply Met by Groundwater

Priority Points	Total Supply Met by Groundwater (x = Groundwater Percent)
0	$x = 0$
1	$0 < x < 20$
2	$20 \leq x < 40$
3	$40 \leq x < 60$
4	$60 \leq x < 80$
5	$x \geq 80$

Calculating the Total Priority Points for Groundwater Reliance

Priority Points for the degree to which persons overlying the basin rely on groundwater as their primary source of water was calculated by averaging the points for groundwater volume density (6.a) and percent of total water supply met by groundwater (6.b).

$$\text{Average (6.a Points + 6.b Points)} = \text{Priority Points}$$

Component 7: Any documented impacts on the groundwater within the basin or subbasin, including overdraft, subsidence, saline intrusion, and other water quality degradation¹⁵

Documented impacts on groundwater were analyzed for the SGMA 2019 Basin Prioritization using updated data and methods relative to the CASGEM 2014 Basin Prioritization. The CASGEM 2014 Basin Prioritization treated all four of the sub-components (overdraft, subsidence, saline intrusion, and other water quality degradation) as a single impact and assigned up to five priority points to the basin based on the effect of the combined documented impacts. The SGMA 2019 Basin Prioritization included separate evaluation of documented groundwater impacts for each of the four sub-components. Points were assigned based on the presence or absence of documented impacts for each sub-category, with the exception of water quality degradation for which points were assigned based on the magnitude and extent of the reported contaminant levels. The updated process is summarized below and described in detail in the following sections.

Each of the four sub-components of component 7 were assigned different maximum points based on the nature of the impact, and whether the impact was susceptible to avoidance or remediation through sustainable groundwater management practices, as follows:

- Basins with declining groundwater levels were assigned 7.5 points.
- Basins with current inelastic subsidence were assigned 10.0 points; basins with only historical inelastic subsidence were assigned 3.0 points.
- Basins with saline intrusion were assigned 5.0 points.

¹⁵ Water Code Section 10933(b)(7).

- Basins with water quality measurements that exceed maximum contaminant levels (MCLs) were assigned 1.0 to 3.0 points.

Sub-component 7.a: Documented Overdraft or Groundwater Level Decline

Data Source

Declining groundwater levels were evaluated by reviewing groundwater level data published over the last 20 years. Evaluation also consisted of reviewing available hydrographs; groundwater management plans; annual reports, such as from watermasters and urban water districts; grant applications submitted to DWR; professional studies; Bulletin 118 – Update 2003; California Water Plan Update 2013 (California Department of Water Resources 2015); Alternatives submitted pursuant to SGMA; and published environmental documents.

Process

Based on available groundwater level data, hydrographs, or similar data for each basin, groundwater levels were classified as being stable, rising, or declining. To make this determination, each piece of data was viewed back in time as far as possible. In many cases, data limited the review time frames to six to ten years, while other data extended back 20 years or more. The entire basin did not have to show declining groundwater levels to be classified as having declining groundwater levels. In most cases, multiple hydrographs were used to support the overall basin determination concerning the status of groundwater levels.

Basins that exhibited declining groundwater levels were assigned 7.5 points.

Sub-component 7.b: Documented Subsidence

Data Source

Evaluation of inelastic subsidence consisted of reviewing hydrographs, extensometer data, and land use data; groundwater management plans submitted to DWR; annual reports, such as from watermasters and urban water districts; grant applications submitted to DWR; professional studies, including those from the NASA Jet Propulsion Laboratory and United State Geological Survey (USGS); Interferometric synthetic aperture radar via Sentinel-1A satellite maps; University NAVSTAR Consortium (UNAVCO) Plate Boundary Observatory graphs; Bulletin 118 – Update 2003; California Water Plan Update 2013; and environmental documents.

Process

Water Code Section 10933(b)(7) identifies inelastic subsidence as one of the four documented impacts DWR needs to consider under SGMA 2019 Basin Prioritization, to the extent data are available. Inelastic subsidence data related to groundwater extractions were evaluated to determine if inelastic subsidence was current or historical. To reach one of these determinations, data was viewed back in time as far as possible. In many cases the time frames were six to ten years for current conditions, while historical analyses required going back 20 years or more. When both historical and current inelastic subsidence was identified, only the current inelastic subsidence was considered for this sub-component.

Points were assigned based on the status of inelastic subsidence found in the basin:

- Basins with no observed inelastic subsidence were assigned 0 points.
- Basins with current inelastic subsidence were assigned 10 points.
- Basins with only historical inelastic subsidence were assigned 3 points.

Sub-component 7.c: Documented Saline Intrusion

Data Source

Saline intrusion was evaluated by reviewing available data published over the last 20 years. Evaluation consisted of reviewing hydrographs; groundwater management plans; annual reports, such as from watermasters and urban water districts; grant applications submitted to DWR; professional studies; *Bulletin 118 – Update 2003*; *California Water Plan Update 2013*; Alternatives submitted pursuant to SGMA; county hazards reports; and environmental documents.

Process

Saline intrusion in the coastal and Sacramento-San Joaquin Delta groundwater basins, as defined in *Bulletin 118 – Interim Update 2016*, was determined by researching available documents for references of past or current excess salinity problems.

The primary source of information used was local reports and studies that focused on the challenges of saline intrusion within individual basins. The reports and studies directed at managing or preventing saline intrusion were related to:

- Water quality analyses.

- Projects designed to stop or reverse current or past intrusions.
- Groundwater management re-operation that reduced or shifted current operations to other parts of the basin or invested in enhanced groundwater and surface water conjunctive management.

Basins with documented evidence of saline intrusion were assigned 5 points.

Sub-component 7.d: Documented Water Quality Degradation

Data Source

- SWRCB, Division of Drinking Water – Public Supply Database, all active wells (March 2016)
- SWRCB – GeoTracker Groundwater Ambient Monitoring and Assessment (GAMA) secure database (Division of Drinking Water, reported Water Quality results (as of April 4, 2017)
- SWRCB – Maximum Contaminant Level (MCL) list (as of November 2017)

Process

The SGMA 2019 Basin Prioritization followed a multi-part process to analyze water quality degradation in a basin. Initially, the water quality data maintained by the SWRCB Division of Drinking Water was used to conduct a statewide assessment of a range of water quality constituents. Data were analyzed using the following methods:

- Water quality testing data were queried statewide in the GeoTracker GAMA secure database (State Water Resources Control Board 2017) for each constituent with a MCL (Appendix 3).
- Data with a sample date between January 1, 2000 and April 4, 2017 and a recorded constituent concentration were included in the evaluation.
- Each water quality sample record was assigned to a groundwater basin as defined in *Bulletin 118 – Interim Update 2016* using the well location data associated with each sample record in the GeoTracker GAMA database.
- Constituent concentrations were compared to MCLs, secondary MCLs, and Public Health Goals as defined in the California Code of Regulations Title 22 Division 4 Chapter 15. Records with instances of constituent concentrations that exceeded water quality criteria were retained for further evaluation.

Data were evaluated for both the magnitude of documented groundwater contamination and prevalence of impact to public drinking water and assigned points as described in sub-components 7.d.1 and 7.d.2, below. The next step in the analysis was to determine whether the basin had one or more of the documented impacts identified in component 7 (i.e. subsidence, declining groundwater levels, and saline intrusion), which are relevant because of the potential to exacerbate water quality degradation in the basin. The purpose of this analysis was to only include water quality impacts that are redressable through sustainable groundwater management practices.

Sub-component 7.d.1: Evaluating the Magnitude of Documented Groundwater Contamination

To compare the magnitude of groundwater contamination across multiple constituents with varying MCL values, the relative MCL exceedance was calculated for each sample record that exceeded the MCL value.

Step 1 – Calculate Relative MCL Exceedance for Each Constituent:

The relative MCL exceedance was calculated by dividing the measured constituent concentration by the regulatory MCL value. For example, a data value that exceeded the regulatory MCL value by twice the limit would have a relative MCL exceedance of two.

Step 2 – Calculate Average Relative MCL Exceedance for Each Basin:

For each basin, relative MCL exceedances for all constituents were averaged to generate an average relative MCL exceedance for the entire basin.

Table 8 lists the points and associated ranges of average relative MCL exceedance values for sub-component 7.d.1.

Table 8 Sub-component 7.d.1: Points and Ranges for Documented Impacts – Water Quality Degradation – Average Relative MCL Exceedance

Priority Points	Average Relative MCL Exceedance $X = \text{Average Exceedance}$
0	$x \leq 1$
1	$1 < x < 2$
2	$2 \leq x < 3$
3	$3 \leq x < 4$
4	$4 \leq x < 6$
5	$x \geq 6$

Sub-component 7.d.2: Evaluating the Prevalence of Documented Groundwater Contamination

The prevalence of contamination in groundwater used as public drinking water in each basin was evaluated by dividing the number of unique wells with MCL exceedances within each basin by the number of public water supply wells in the basin (component 3). Because the selected water quality data set spanned the years 2000 to 2017, the actual number of public water supply wells in a basin would likely have varied as new wells went into service and other wells went offline, but this is common to all basins and not expected to skew the results. The number of public water supply wells calculated for component 3 was determined to most accurately represent the number of public water supply wells for the purposes of this evaluation.

An exception to this method was made if the water quality data indicated an MCL was exceeded, but no active public water supply wells were indicated from the component 3 assessment. In these cases, it was assumed that one public water supply well was present, or had been reactivated, in the basin, and the calculation of groundwater quality contamination proceeded as previously described.

The calculated value for the basin was then assigned points. Table 9 lists the points and associated ranges of values for sub-component 7.d.2.

Table 9 Sub-component 7.d.2: Points and Ranges for Documented Impacts – Water Quality Degradation – Prevalence of Groundwater Contamination

Priority Points	Prevalence of Groundwater Contamination X = Value
0	$x = 0$
1	$0 < x < 0.5$
2	$0.5 \leq x < 0.75$
3	$0.75 \leq x < 1$
4	$x = 1$
5	$x > 1$

Sub-component 7.d: Calculating Total Points for Documented Water Quality Degradation

To obtain the points for documented water quality degradation, the points for average relative MCL exceedance (7.d.1) and points for prevalence of groundwater contamination (7.d.2) were combined; the total was then assigned points. Table 10 lists the points and associated range of water quality degradation values.

Table 10 Sub-component 7.d: Points and Ranges for Documented Impacts – Water Quality Degradation

Priority Points	Documented Impacts – Water Quality Degradation X = Water Quality Points
0	$x < 3$
1	$3 \leq x < 6$
2	$6 \leq x < 8$
3	$x \geq 8$

Calculating the Total Priority Points for Documented Impacts

After each of the four types of documented impacts were assigned a value, the cumulative total of points was calculated. Based on the cumulative total of points assigned for all categories of documented impacts, the basin was assigned priority points as indicated in Table 11.

Table 11 Component 7: Priority Points and Ranges for Documented Impacts – Cumulative Total

Priority Points	Cumulative Total – Documented Impacts
0	$x \leq 3$
1	$3 < x < 7$
2	$7 \leq x < 11$
3	$11 \leq x < 15$
4	$15 \leq x < 19$
5	$x \geq 19$

Component 8: Any other information determined to be relevant by the department, including adverse impacts on local habitat and local streamflows¹⁶

Sub-component 8.a: Adverse Impacts on Local Habitat and Local Streamflows

Adverse impacts on local habitat and local streamflows were not evaluated or required to be evaluated for the CASGEM 2014 Basin Prioritization. The SGMA 2019 Basin Prioritization used the methods and sources described below.

Data Source

- Natural Communities Commonly Associated with Groundwater (Natural Communities) Dataset
- USGS National Hydrography Dataset (NHD)
- Basin Prioritization 2018 Volume of Groundwater Use (sub-component 6.a)
- Basin Prioritization 2018 Documented Impacts (sub-component 7.a)

Adverse impacts on local habitat and local streamflows were identified by the legislature as an example of information relevant to basin prioritization.¹⁷ Impacts to habitat and streamflow are significant factors in the prioritization of basins for the purposes of sustainable groundwater management because such impacts could indicate the depletion of interconnected surface waters,

¹⁶ Water Code Section 10933(b)(8).

¹⁷ Water Code Section 10933(b)(8).

which has significant and unreasonable adverse impacts on beneficial uses of the surface water.¹⁸ In the case of adverse impacts on local habitat and local streamflows, DWR determined that there was not sufficient consistent, reliable, statewide information available for the initial SGMA 2015 Basin Prioritization. After the initial SGMA 2015 Basin Prioritization, DWR developed a statewide Natural Communities dataset that assembled information on the location of seeps, springs, wetlands, rivers, vegetation alliances, and habitat from multiple data sources. Utilizing that dataset, DWR determined sufficient data are available to include impacts to local habitat and local streamflows as a prioritization sub-component.

The following process was used to determine if there is a possibility of adverse impacts on local habitat and local streamflow occurring within the basin.

Process

For the SGMA 2019 Basin Prioritization, DWR evaluated if habitat or streams exist in the basin. To do so, DWR used the Natural Communities and NHD datasets (California Department of Water Resources 2018b; United States Geological Survey 2016) to determine if one or more habitats commonly associated with groundwater or perennial or permanent streams exist within a groundwater basin. Habitat and streams were identified within the basins using the following method:

Method	Points
After consulting the Natural Communities dataset, are there one or more polygons representing vegetation, wetland, seep, or spring habitat in the basin?	No = 0 points Yes = 1 Habitat point
After consulting the NHD dataset, was it determined that one or more perennial or permanent streams are located within or adjacent to the basin?	No = 0 points Yes = 1 Streamflow point

If there was no habitat or streamflow identified in the basin, then zero priority points were assigned to subcomponent 8.a.

Part B: Determining if Potential Adverse Impacts on Habitat and Streamflow are Occurring in the Basin

¹⁸ Water Code Section 10721(x)(6).

The habitat and/or streamflow point(s) were not applied to basin prioritization until it was determined that one or more of the habitats and/or streams were potentially being adversely impacted. No statewide measure of adverse impacts to habitat or streamflow exists that would allow DWR to rank the severity of those impacts. Potential adverse impacts to habitat and streamflow resulting from groundwater activities were determined by evaluating the amount of groundwater pumping and groundwater level monitoring occurring in each basin.

- **Groundwater Monitoring Occurs in the Basin:** If the basin's groundwater use (acre-feet/acre) (sub-component 6.a) exceeded 0.16 acre-feet/acre and groundwater level monitoring indicated that groundwater levels were declining (sub-component 7.a), then the habitat and streamflow points assigned in Part A were applied to the basin's priority points.

Or

- **Groundwater Monitoring Does Not Occur in the Basin:** If the basin's groundwater use (acre-feet/acre) (sub-component 6.a) exceeded 0.16 acre-feet/acre and groundwater level monitoring was not being performed in the basin, the habitat and streamflow point(s) assigned in Part A were applied to the basin's priority points.

Part C: Documenting Adverse Habitat and Streamflow Impacts

If the results from Part B indicated that there were no potential adverse impacts to habitat or streamflow in the basin, but documentation indicated that habitat and/or streamflow were being adversely impacted by groundwater activities in the basin, the habitat and/or streamflow priority point(s) assigned in Part A were applied to the basin's priority points. Documentation reviewed included, but was not limited to, groundwater levels, hydrologic models, hydrologic studies, and court judgements.

Sub-component 8.b – Basin-level Evaluation of “other information determined to be relevant by the department”

The basin-level evaluation of “other information determined to be relevant by the department” as an element of the SGMA 2019 Basin Prioritization used the same analysis method and updated data relative to the CASGEM 2014 Basin Prioritization.

Each basin was reviewed based on the individual basin's hydrology, geology, land use, and challenges to determine if there are groundwater-related

actual or potential impacts to unique features or actual or potential challenges for groundwater management within the basin. Basins with actual or potential impacts to unique features that could result in an unrecoverable loss, and basins facing groundwater management challenges that could be serious enough to impact the sustainability of the basin if the necessary groundwater management is not applied to the basin, were assigned three priority points. If these conditions did not apply, the basin was assigned zero priority points.

Sub-components 8.c and 8.d: Statewide-level Evaluation of “other information determined to be relevant by the department”

Sub-components 8.c and 8.d evaluations were applied uniformly to all basins during the prioritization process and included additional analysis of conditions that, if present, caused basin priority points to be adjusted, regardless of the accumulated priority points from components 1 through 8.b. The sections below (sub-components 8.c.1 through 8.d.2) describe the conditions analyzed prior to the prioritization. The purpose of this analysis was to evaluate other information that was determined to be relevant by DWR. Beginning with sub-component 8.c.1, the analyses were performed in the order listed in Table 12 until a condition was met. After the result was applied, the additional conditions analysis stopped, and the processing continued to section VI – Basin Priority below. Table 12 describes the basin to which the analysis was applied, the condition that was analyzed, and the resulting priority points.

Table 12 Sub-components 8.c and 8.d: Additional Conditions Analyzed Prior to Priority Determination

Sub-Component	Basin Applicability	Condition	If True, Result
8.c.1	All	Less than or equal to 2,000 acre-feet of groundwater use for water year 2014	Total Priority Points = 0
8.c.2	All	Greater than 2,000 and less than or equal to 9,500 acre-feet of groundwater use for water year 2014 with no documented impacts	Total Priority Points = 0
8.c.3	Basins with Adjudications	Basin's non-adjudicated portion extracts less than or equal to 9,500 acre-feet of groundwater for water year 2014	Total Priority Points = 0
8.d.1	Critically Overdrafted basins	Basin considered to be in Critical Overdraft per Bulletin 118 – Interim Update 2016	Total Priority Points = 40
8.d.2	All	Groundwater-related transfers (groundwater substitution transfers, out-of-basin groundwater transfers not part of adjudicated activities) are greater than 2,000 acre-feet in any given year since 2009	Add 2 Priority Points

The analyses above were performed in the order listed in Table 12 and only continued until they reached a condition where the result was true. When the true condition was reached, the remaining analysis steps listed in Table 12 were bypassed and the processing for the basin proceeded to Basin Priority with the adjusted priority points. The points accumulated during analysis of components 1 through 8.b were retained.

If a basin that did not meet a true condition for sub-components 8.c or 8.d listed in Table 12, the basin was prioritized based on the accumulated priority points from components 1 through 8.b.

Sub-component 8.c.1: Does the Basin or Subbasin Use Less Than or Equal to 2,000-acre feet of Groundwater?

Data Source

- Basin Prioritization 2018 Volume of Groundwater Use (sub-component 6.a)

Process

The consideration of “Does the basin use less than or equal to 2,000-acre feet of groundwater?” as an element of the SGMA 2019 Basin Prioritization used the same method and updated data relative to the CASGEM 2014 Basin Prioritization.

Using an approach similar to the GAMA Program, DWR selected the groundwater volume portion of the groundwater reliance component data (sub-component 6.a) as the primary component for the initial review and screening in the groundwater basin prioritization process. DWR considers any basin that uses less than or equal to 2,000 acre-feet of groundwater per year to be low priority with respect to sustainable groundwater management. Total priority points were adjusted to zero for basins that pump less than or equal to 2,000 acre-feet of groundwater per year.

Sub-component 8.c.2: Does the Basin Use Greater Than 2,000-acre feet and Less Than or Equal to 9,500-acre feet AND Have No Documented Impacts (component 7 and 8)?

Data Source

- Basin Prioritization 2018 Volume of Groundwater Use (sub-component 6.a)
- Basin Prioritization 2018 Documented Impacts (component 7)
- Basin Prioritization 2018 Any other information determined to be relevant by the department, including adverse impacts on local habitat and local streamflows (sub-components 8.a and 8.b)

Process

The consideration of “Does the basin use greater than 2,000-acre feet and less than or equal to 9,500-acre feet and have no documented impacts?” in water year 2014 as an element of the SGMA 2019 Basin Prioritization used the same method and updated data relative to the CASGEM 2014 Basin Prioritization.

Step 1 – Check How Much Groundwater is Pumped: If the basin’s groundwater use volume (6.a) was greater than 2,000 and less than or equal to 9,500 acre-feet in water year 2014, the analysis proceeded to Step 2. Otherwise, sub-component 8.c.2 did not apply to the basin.

Step 2 – Check if Documented Impacts Exist: If the basin did not have any of the documented impacts listed below, the analysis proceeded to Step 3. Otherwise, sub-component 8.c.2 did not apply to the basin.

1. Documented impacts (component 7)
2. Documented adverse impacts to habitat and streamflow (sub-component 8.a, Part C)
3. Other basin-specific impacts or challenges (sub-component 8.b)

Step 3 – Assign Priority Points: If the basin met the criteria of Step 1 and Step 2, the basin's priority points were adjusted to zero.

Sub-component 8.c.3: For Basins That Have Adjudicated Area Within the Basin, Does the Basin's Non-Adjudicated Portion Pump Less Than or Equal To 9,500-acre feet of Groundwater?

Data Source

- California Department of Water Resources 2018 Adjudicated Areas (shapefile)
- Basin Prioritization Groundwater Volume for non- adjudicated area or areas of basin, 2018 (Appendix 4)
- Basin Prioritization 2010 Population for non-adjudicated area or areas, 2018

With the exception of an annual reporting requirement, SGMA does not apply to the adjudicated areas identified in the Act. Because these adjudicated areas are not required to develop and adopt a GSP or Alternative, DWR determined that SGMA prioritization should evaluate those portions of the basin that are non-adjudicated. The non-adjudicated areas remain subject to SGMA, but DWR evaluated the non-adjudicated portion of the basin to determine the extent that these areas are independently significant based on the prioritization criteria developed for an entire basin, or to determine the potential to affect groundwater management in the entire basin, in accordance with the consideration of components 1 through 8 of Water Code Section 10933(b).

Process

The results of the SGMA 2019 Basin Prioritization were based on the analysis of the entire basin, including the adjudicated area. If the basin was determined to be medium or high priority under the SGMA 2019 Basin Prioritization, the full requirements of SGMA only applies to the non-

adjudicated portion of the basin. Appendix 5 provides a complete listing of the 37 basins that are covered completely or partially by adjudicated areas.

The adjudication analysis was only performed on basins with adjudicated areas (Appendix 5) and was only applied to the portion or combined portions of the basin that are not covered by a groundwater adjudication. The following steps were applied when evaluating sub-component 8.c.3:

Step 1 – Create Shapefile: A shapefile was created to represent the non-adjudicated portion or portions of the basins listed in Appendix 5 by cutting out the portion(s) of the basin that are adjudicated.

Step 2 – Calculate Urban Groundwater Use: Using the shapefile from Step 1, the 2010 population in the non-adjudicated portion or portions was determined, and the urban water demands and ultimately the urban groundwater volume was processed, as calculated for sub-component 6.a.

Step 3 – Calculate Agricultural Groundwater Use: Using the shapefile from Step 1, the 2014 land use in the non-adjudicated portion or portions was determined and the agricultural water demand and groundwater volume were processed, as calculated for sub-component 6.a.

Step 4 – Calculate Total Groundwater Use: The urban (Step 2) and agricultural (Step 3) groundwater use amounts were combined to establish the total groundwater used in the non-adjudicated portion of the basin (see Appendix 4).

Step 5 – Determine Priority Points: If the groundwater volume computed in Step 4 was less than or equal to 9,500-acre feet per year, the basin total priority points were adjusted to zero.

Sub-component 8.d.1: Is the Basin Considered to be in Critical Overdraft?

Data Source

- Bulletin 118 - Interim Update 2016, Table 2

Critically overdrafted basins were analyzed for the SGMA 2019 Basin Prioritization using updated methods and data relative to the CASGEM 2014 Basin Prioritization. Critical conditions of overdraft have been identified in 21 groundwater basins as described in *Bulletin 118 – Interim Update 2016*.¹⁹ A basin is subject to critical conditions of overdraft when continuation of

¹⁹ Water Code Section 12924.

current water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts.²⁰ Additionally, chronic lowering of groundwater levels (indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon) is an undesirable result.²¹ For these reasons, DWR has determined that critical overdraft of a basin is a relevant factor in the prioritization of basins for the purposes of achieving sustainable groundwater management.

The SGMA 2019 Basin Prioritization process flagged each of the 21 basins in critical overdraft, as determined in *Bulletin 118 – Interim Update 2016*, and adjusted the overall basin priority points for these basins by assigning the maximum total priority points of 40.

Sub-component 8.d.2: Does the Basin Participate in Groundwater-Related Transfers?

Data Source

- Bulletin 132 - Management of the California State Water Project

Groundwater-related transfers (groundwater substitution transfers and out-of-basin groundwater transfers) were not evaluated as part of the CASGEM 2014 Basin Prioritization. Groundwater-related transfers were deemed relevant to basin prioritization for the purposes of achieving sustainable groundwater management and were analyzed for the SGMA 2019 Basin Prioritization. Groundwater-related transfers, if unmanaged, could lead to impacts to groundwater levels and interconnected surface water, and subsidence, among others. Groundwater-related transfers were considered significant if they exceeded 2,000 acre-feet of groundwater-related transfers or exports from a basin in a single year, which was the threshold utilized in the CASGEM 2014 Basin Prioritization for a basin to be classified as very low priority.

The consideration of groundwater-related transfers (groundwater substitution transfers or out-of-basin groundwater transfers) included reviewing groundwater substitution records since 2009. Data from the most recent (10) years is consistent with the Water Budget requirements within the GSP regulation.²²

²⁰ Bulletin 118 – Update 2003.

²¹ Water Code Section 10721(x)(1).

²² California Code of Regulations 354.18.

The two types of groundwater transfer are described as follows:

- *Groundwater substitution transfers* occur when surface water is made available for transfer by reducing surface water diversions and replacing that water with groundwater pumping. The rationale is that surface water demands are reduced because a like amount of groundwater is used to meet the demands. The resulting increase in available surface water supplies can be transferred to other users. DWR only considered those groundwater substitution transfers that are out-of-basin. The SGMA 2019 Basin Prioritization refers to these transfers as Type A.
- *Out-of-basin groundwater transfers* are transfers that pump percolating groundwater from a source basin and convey the pumped water to a location outside the source basin. DWR only considered groundwater transfers that are or would be under the decision-making authority of a GSA. Transfers pursuant to a groundwater adjudication were not considered. The SGMA 2019 Basin Prioritization refers to these transfers as Type B.

Groundwater-related transfers were evaluated by reviewing available data published annually from 2009 through 2015 in DWR *Bulletin 132: Management of the California State Water Project* (California Department of Water Resources 2009 through 2015). Additionally, SGMA watermaster annual reports, basin annual reports, and hydrologic studies were consulted to determine if groundwater-related transfers occurred.

Appendix 6 identifies the basins that participate in Type A or Type B groundwater transfers and volume of groundwater pumped in years with transfers.

Basins shown in Appendix 6 were evaluated using the following steps for sub-component 8.d.2:

Step 1 – Determine Maximum Groundwater Pumped: Using Appendix 6, the maximum groundwater volume pumped to meet the requirements of groundwater substitution transfers or groundwater exports out of basin in any year since 2009 was determined.

Step 2 – Check Groundwater Pumped: If the groundwater pumped was greater than 2,000 acre-feet, the analysis proceeded to Step 3. Otherwise, sub-component 8.d.2 did not apply to the basin.

Step 3 – Assign Priority Points: The basin was assigned two priority points for sub-component 8.d.2.

Step 4 – Adjust Sub-Component 6.a: Volume of groundwater pumped in 2014 for groundwater substitution transfers or out-of-basin groundwater transfers was added to the overall groundwater (“other” groundwater) in sub-component 6a. For groundwater substitution transfers, the equal volume was subtracted from the overall surface water (“other” surface water).

VI. Basin Priority

All basins were processed for all eight components. Prior to determining the basins' priority, adjustments were made, as described above (see sub-components 8c and 8d), that would automatically result in a very low or high priority determination. In cases where basins were automatically assigned very low or high priority, the calculation of priority points was completed and retained.

The basin priority determination for each basin as an element of the SGMA 2019 Basin Prioritization used the same data and an updated method relative to the CASGEM 2014 Basin Prioritization. For the CASGEM 2014 Basin Prioritization, the threshold value between low and medium priority was set at 13.42 and was based on a maximum of 40 points. For the SGMA 2019 Basin Prioritization, DWR adjusted the threshold value to account for the two additional points added for the adverse impacts on local habitat and local streamflow (sub-component 8.a). The approach was a simple ratio calculation that increased the medium priority threshold value to 14.1.

The total possible points for the SGMA 2019 Basin Prioritization range from zero to 40 in increments of 0.5 points. The new priority threshold value for medium priority was set to greater than 14. The other threshold values were evenly distributed from the 14-point value in multiples of 7. The basin priority ranks were determined using the value ranges listed in Table 13, including basins that had their total priority points adjusted to zero (very low) or 40 (high).

Table 13 SGMA 2019 Basin Prioritization Priority Based on Total Priority Points

Priority	Total Priority Point Ranges X = Cumulative Priority Points
Very Low	$0 \leq x \leq 7$
Low	$7 < x \leq 14$
Medium	$14 < x \leq 21$
High	$21 < x \leq 40$

VII. References

California Department of Finance. 2016. Population Projections. Available online at: <http://www.dof.ca.gov/Forecasting/Demographics/projections/>

California Department of Water Resources. 2018a. California Water Plan Update 2018. Available online at: <https://www.water.ca.gov/Programs/California-Water-Plan/>

_____. 2018b. Natural Communities Commonly Associated with Groundwater Dataset Viewer. Available online at: <https://gis.water.ca.gov/app/NCDataSetViewer/>

_____. 2017. Online system for well completion report (OSWCR). Accessed February 13, 2017. Available online at: https://civicnet.resources.ca.gov/DWR_WELLS/

_____. 2016a. Bulletin 118 - Interim Update 2016. California's Groundwater: Working Toward Sustainability. Available online at: <https://www.water.ca.gov/Programs/Groundwater-Management/Bulletin-118>

_____. 2016b. Bulletin 118 - Groundwater Basin Boundaries Shapefile. Available online at: <https://data.cnra.ca.gov/dataset/ca-bulletin-118-groundwater-basins>

_____. 2015. California's Groundwater Update 2013: A Compilation of Enhanced Content for California Water Plan Update 2013. Available online at <https://www.water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Statewide-Reports/California-Groundwater-Update-2013/California-Groundwater-Update-2013---Chapter-1-and-2-Statewide.pdf>

_____. 2014a. CASGEM Basin Prioritization 2014 Final Results. Available online at: <https://www.water.ca.gov/Programs/Groundwater-Management/Bulletin-118/Basin-Prioritization>

_____. 2014b. CASGEM Basin Prioritization Process 2014. Available online at: <https://www.water.ca.gov/Programs/Groundwater-Management/Bulletin-118/Basin-Prioritization>

_____. 2014c. Statewide Crop Mapping 2014. Available online at: https://gis.water.ca.gov/arcgis/rest/services/Planning/i15_Crop_Mapping_2014/FeatureServer

_____. 2014d. Public Water System Statistics (PWSS) database. Created using data from the SWRCB Public Water System Electronic Annual Reporting System. Source data available online at: <https://drinc.ca.gov/ear/>

_____. 2009. 2009 Comprehensive Water Package: Special Session Policy Bills and Bond Summary. November. Available online at: <https://www.water.ca.gov/LegacyFiles/legislation/docs/01272010waterpackage.pdf>

_____. 2003a. Bulletin 118 - Update 2003. California's Groundwater: Working Toward Sustainability. Available online at: https://www.water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/Statewide-Reports/Bulletin_118_Update_2003.pdf

_____. 2003b. Bulletin 118 - Groundwater Basin Boundaries Shapefile. Available online at: <https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer>

_____. 2000 through 2014. DWR Land Use Survey data for Alameda, Alpine, Butte, Calaveras, Colusa, Del Norte, El Dorado, Glenn, Humboldt, Lake, Lassen, Marin, Mendocino, Modoc, Mono, Napa, Nevada, Placer, Plumas, Sacramento, San Francisco, San Mateo, Santa Clara, Shasta, Sierra, Siskiyou, Solano, Sonoma, Sutter, Tehama, Tuolumne, Yolo, and Yuba counties. Available online at: <https://water.ca.gov/Programs/Water-Use-And-Efficiency/Land-And-Water-Use/Land-Use-Surveys>

_____. 2009 through 2015 - Bulletin 132: Management of the California State Water Project. Available online at <https://water.ca.gov/Programs/State-Water-Project/Management/Bulletin-132> and <http://wdl.water.ca.gov/waterdatalibrary/docs/historic/bulletins.cfm>

_____. 2019. Bulletin 118 - Groundwater Basin Boundaries Shapefile. Available online at: <https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer>

Morteza, O., R. Snyder, S. Geng, Q. Hart, S. Sarreshteh, M. Falk, D. Beaudette, S. Hayes, and S. Eching. 2013. California Simulation of Evapotranspiration of Applied Water and Agricultural Energy Use in California. *Journal of Integrative Agriculture*, 12(8): 1371-1388. August 2013. Available online at <https://www.water.ca.gov/LegacyFiles/landwateruse/models/Cal-SIMETAW.pdf>

Nielsen Claritas. 2014. Population data for 2014. Demographic vendor; contact information available online at <http://www.icyte.com/system/snapshots/fs1/6/9/e/4/69e4183d948d876d4b507ff90401c4aaaf397ce3/index.html>

State Water Resources Control Board. 2017. Geotracker Groundwater Ambient Monitoring and Assessment (GAMA) groundwater information system. Accessed April 4, 2017. Available online at: https://www.waterboards.ca.gov/water_issues/programs/gama/geotracker_gama.shtml

_____. 2016. Safe Drinking Water Information System. Water System Details. Accessed March 2016. Public supply well data is available at: <https://data.cnra.ca.gov/dataset/sgma-basin-prioritization>

United States Census Bureau. 2010a California Population Block Groups, Cartographic Boundary Shapefiles - Census Tracts "gz_2010_ss_140_00_500k.zip." Available online at: https://www.census.gov/geo/maps-data/data/cbf/cbf_blkgrp.html

_____. 2010b. United States Census 2010 Interactive Population Map – Download Summary files for California. Available online at: https://www2.census.gov/census_2010/03-Demographic_Profile/California/

_____. 2000a. California Population Block Groups, Cartographic Boundary Shapefiles - Census Tracts "bgss_d00_shp.zip." Available online at: https://www.census.gov/geo/maps-data/data/cbf/cbf_blkgrp.html

_____. 2000b. Population results available at: <https://www.census.gov//census2000/states/ca.html>

United States Department of Agriculture. 2014. National Agricultural Statistics Service Cropscape and Cropland Data Layer for Amador, Contra Costa, Imperial, Kern, Los Angeles, Orange, San Bernardino, San Diego, San Joaquin, San Luis Obispo, and Santa Barbara counties. Available online at: <https://nassgeodata.gmu.edu/CropScape/>

United States Geological Survey. 2016. National Hydrography Dataset, High Resolution, v220. Washington D.C. Available online at: ftp://nhdftp.usgs.gov/DataSets/Staged/States/FileGDB/HighResolution/NHDH_CA_931v220.zip



Appendix 1 – Summary of SGMA 2019 Basin Prioritization Results

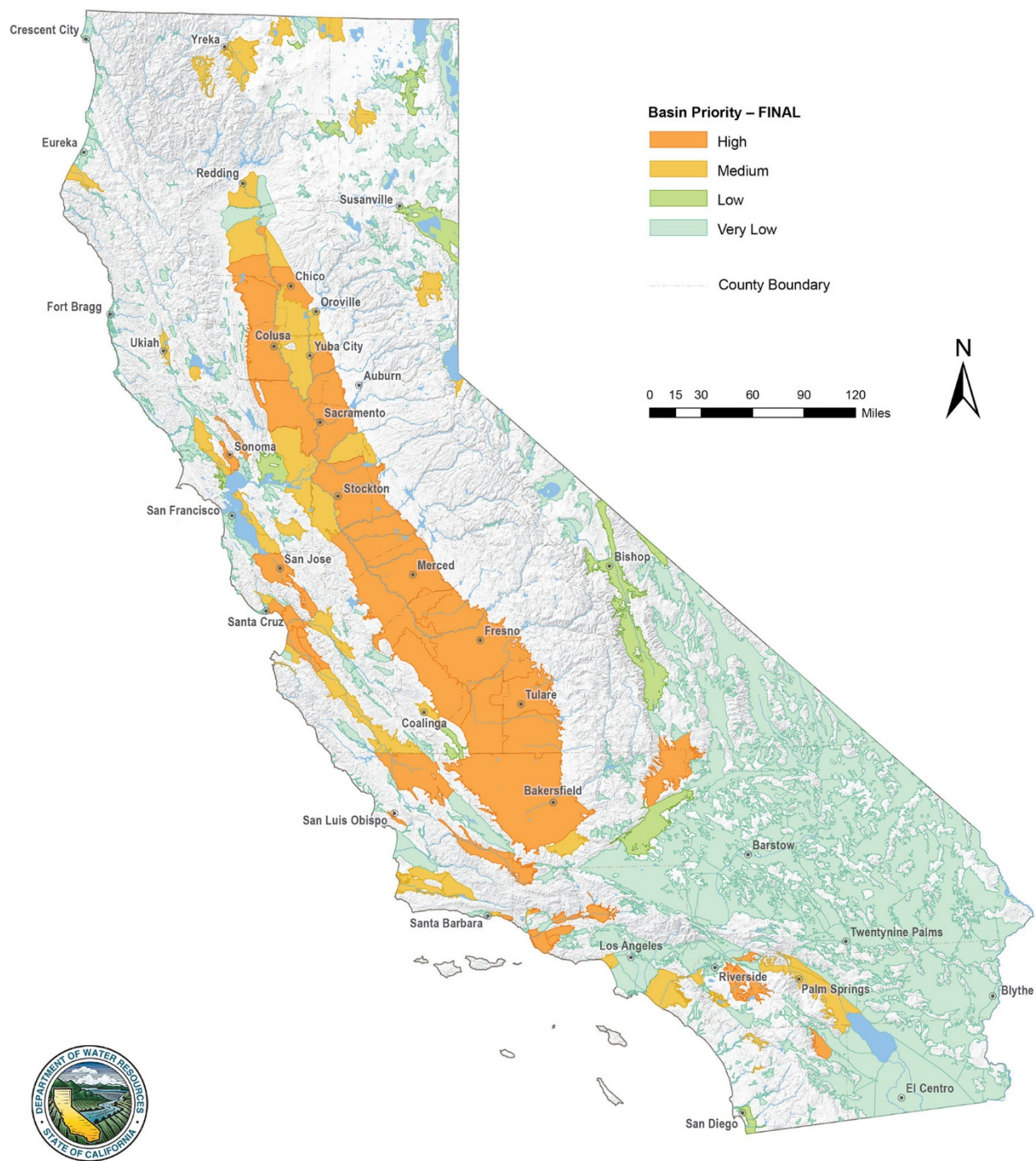
Final September 2019: 515 basins (Figure A-1 and Table A-1)

- High priority – 46 basins
- Medium priority – 48 basins
- Low priority – 11 basins
- Very Low priority – 410 basins

Basins newly identified as high- or medium-priority in the SGMA 2019 Basin Prioritization are required to form a GSA within two years from the date the basin's priority is finalized and are required to submit a GSP five years from the same finalization date.

DWR created a web application that spatially and graphically presents the SGMA 2019 Basin Prioritization data and results for each basin. This application can be accessed at <https://gis.water.ca.gov/app/bp2018-dashboard>. Additional information related to SGMA 2019 Basin Prioritization can be accessed at: <https://www.water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization>.

Figure A-1 Statewide Map of SGMA 2019 Basin Prioritization Results



Department of Water Resources, Public Affairs Office October 10, 2019

Table A-1 SGMA 2019 Basin Prioritization – Statewide Results

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
1-001	Smith River Plain	40,434.50	63.2	Very Low	1
1-002.01	Tulelake	110,521.40	172.7	Medium	1
1-002.02	Lower Klamath	75,330.30	117.7	Very Low	1
1-003	Butte Valley	79,739.00	124.6	Medium	1
1-004	Shasta Valley	218,215.03	340.96	Medium	2
1-005	Scott River Valley	63,831.40	99.7	Medium	1
1-006	Hayfork Valley	3,297.50	5.2	Very Low	1
1-007	Hoopa Valley	3,897.20	6.1	Very Low	1
1-008.01	Mad River Lowland	24,663.20	38.5	Very Low	1
1-008.02	Dows Prairie School Area	15,416.10	24.1	Very Low	1
1-009	Eureka Plain	38,795.40	60.6	Very Low	1
1-010	Eel River Valley	72,956.70	114	Medium	1
1-011	Covelo Round Valley	16,408.90	25.6	Very Low	1
1-012	Laytonville Valley	5,023.70	7.8	Very Low	1
1-013	Little Lake Valley	10,025.50	15.7	Very Low	1
1-014	Lower Klamath River Valley	7,022.10	11	Very Low	1
1-015	Happy Camp Town Area	2,773.30	4.3	Very Low	1
1-016	Seiad Valley	2,245.10	3.5	Very Low	1
1-017	Bray Town Area	8,032.40	12.6	Very Low	1
1-018	Red Rock Valley	9,000.70	14.1	Low	1

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Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
1-019	Anderson Valley	4,972.80	7.8	Very Low	1
1-020	Garcia River Valley	2,199.50	3.4	Very Low	1
1-021	Fort Bragg Terrace Area	23,897.80	37.3	Very Low	1
1-022	Fairchild Swamp Valley	3,277.90	5.1	Very Low	1
1-025	Prairie Creek Area	20,848.80	32.6	Very Low	1
1-026	Redwood Creek Area	2,009.40	3.1	Very Low	1
1-027	Big Lagoon Area	13,217.00	20.7	Very Low	1
1-028	Mattole River Valley	3,160.00	4.9	Very Low	1
1-029	Honeydew Town Area	2,369.90	3.7	Very Low	1
1-030	Pepperwood Town Area	6,292.00	9.8	Very Low	1
1-031	Weott Town Area	3,655.20	5.7	Very Low	1
1-032	Garberville Town Area	2,113.20	3.3	Very Low	1
1-033	Larabee Valley	967.2	1.5	Very Low	1
1-034	Dinsmores Town Area	2,277.90	3.6	Very Low	1
1-035	Hyampom Valley	1,354.80	2.1	Very Low	1
1-036	Hettenshaw Valley	847	1.3	Very Low	1
1-037	Cottoneva Creek Valley	762.1	1.2	Very Low	1
1-038	Lower Laytonville Valley	2,153.10	3.4	Very Low	1

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
1-039	Branscomb Town Area	1,382.10	2.2	Very Low	1
1-040	Ten Mile River Valley	1,491.30	2.3	Very Low	1
1-041	Little Valley	812.5	1.3	Very Low	1
1-042	Sherwood Valley	1,150.70	1.8	Very Low	1
1-043	Williams Valley	1,643.40	2.6	Very Low	1
1-044	Eden Valley	1,377.50	2.2	Very Low	1
1-045	Big River Valley	1,685.90	2.6	Very Low	1
1-046	Navarro River Valley	768.5	1.2	Very Low	1
1-048	Gravelly Valley	2,976.30	4.7	Very Low	1
1-049	Annapolis Ohlson Ranch Fm Highlands	8,653.00	13.5	Very Low	1
1-050	Knights Valley	4,089.50	6.4	Very Low	1
1-051	Potter Valley	8,243.00	12.9	Very Low	1
1-052	Ukiah Valley	37,537.40	58.7	Medium	1
1-053	Sanel Valley	5,572.40	8.7	Very Low	1
1-054.01	Alexander Area	24,484.40	38.3	Very Low	1
1-054.02	Cloverdale Area	6,530.10	10.2	Very Low	1
1-055.01	Santa Rosa Plain	81,284.31	127.01	Medium	2
1-055.02	Healdsburg Area	15,412.70	24.1	Very Low	1
1-055.03	Rincon Valley	5,553.20	8.7	Very Low	1

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Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
1-056	Mcdowell Valley	1,487.60	2.3	Very Low	1
1-057	Bodega Bay Area	2,668.70	4.2	Very Low	1
1-059	Wilson Grove Formation Highlands	63,836.66	99.74	Very Low	2
1-060	Lower Russian River Valley	6,645.00	10.4	Very Low	1
1-061	Fort Ross Terrace Deposits	8,360.90	13.1	Very Low	1
1-062	Wilson Point Area	710	1.1	Very Low	1
2-001	Petaluma Valley	46,661.32	72.91	Medium	2
2-002.01	Napa Valley	45,928.20	71.8	High	1
2-002.02	Sonoma Valley	44,846.18	70.07	High	2
2-002.03	Napa-Sonoma Lowlands	40,297.45	62.96	Very Low	2
2-003	Suisun-Fairfield Valley	133,586.20	208.7	Low	1
2-004	Pittsburg Plain	11,613.30	18.1	Very Low	1
2-005	Clayton Valley	17,846.60	27.9	Very Low	1
2-006	Ygnacio Valley	15,469.00	24.2	Very Low	1
2-007	San Ramon Valley	7,057.40	11	Very Low	1
2-008	Castro Valley	1,821.70	2.8	Very Low	1
2-009.01	Niles Cone	65,214.50	101.9	Medium	1
2-009.02	Santa Clara	189,581.00	296.2	High	1
2-009.03	San Mateo Plain	37,865.00	59.2	Very Low	1
2-009.04	East Bay Plain	71,315.10	111.4	Medium	1
2-010	Livermore Valley	69,567.10	108.7	Medium	1
2-011	Sunol Valley	16,632.00	26	Very Low	1

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
2-019	Kenwood Valley	5,139.00	8	Very Low	1
2-022	Half Moon Bay Terrace	9,155.90	14.3	Very Low	1
2-024	San Gregorio Valley	1,074.90	1.7	Very Low	1
2-026	Pescadero Valley	2,912.40	4.6	Very Low	1
2-027	Sand Point Area	22,342.21	34.91	Very Low	2
2-028	Ross Valley	1,764.70	2.8	Very Low	1
2-029	San Rafael Valley	874.8	1.4	Very Low	1
2-030	Novato Valley	20,535.10	32.1	Low	1
2-031	Arroyo Del Hambre Valley	786.3	1.2	Very Low	1
2-032	Visitacion Valley	5,831.10	9.1	Very Low	1
2-033	Islais Valley	5,941.30	9.3	Very Low	1
2-035	Westside	25,392.40	39.7	Very Low	1
2-036	San Pedro Valley	710.4	1.1	Very Low	1
2-037	South San Francisco	2,176.50	3.4	Very Low	1
2-038	Lobos	2,360.80	3.7	Very Low	1
2-039	Marina	2,187.70	3.4	Very Low	1
2-040	Downtown	7,640.10	11.9	Very Low	1
3-001	Santa Cruz Mid-County	36,289.70	56.7	High	1
3-002.01	Pajaro Valley	75,055.10	117.3	High	1
3-002.02	Purisima Highlands	12,932.00	20.2	Very Low	1

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Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
3-003.01	Llagas Area	47,370.90	74	High	1
3-003.05	North San Benito	131,030.03	204.73	Medium	2
3-004.01	180/400 Foot Aquifer	89,706.30	140.2	High	1
3-004.02	East Side Aquifer	57,474.30	89.8	High	1
3-004.04	Forebay Aquifer	94,052.20	147	Medium	1
3-004.05	Upper Valley Aquifer	238,020.54	371.91	Medium	2
3-004.06	Paso Robles Area	436,157.09	681.5	High	2
3-004.08	Seaside Area	14,488.70	22.6	Very Low	1
3-004.09	Langley Area	17,618.50	27.5	High	1
3-004.10	Corral De Tierra Area	30,854.90	48.2	Medium	1
3-004.11	Atascadero Area	19,734.90	30.8	Very Low	1
3-005	Cholame Valley	39,824.60	62.2	Very Low	1
3-006	Lockwood Valley	59,941.00	93.7	Very Low	1
3-007	Carmel Valley	4,321.70	6.8	Medium	1
3-008.01	Los Osos	4,232.03	6.61	Very Low	2
3-008.02	Warden Creek	1,762.94	2.75	Very Low	2
3-009	San Luis Obispo Valley	12,720.60	19.9	High	1
3-012.01	Santa Maria	170,212.68	265.96	Very Low	2
3-012.02	Arroyo Grande	2,901.22	4.53	Very Low	2
3-013	Cuyama Valley	241,729.90	377.7	High	1
3-014	San Antonio Creek Valley	67,437.40	105.4	Medium	1
3-015	Santa Ynez River Valley	203,050.60	317.3	Medium	1
3-016	Goleta	9,217.10	14.4	Very Low	1
3-017	Santa Barbara	6,183.10	9.7	Very Low	1
3-018	Carpinteria	7,977.71	12.47	High	2

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
3-019	Carrizo Plain	210,627.50	329.1	Very Low	1
3-020	Ano Nuevo Area	1,995.20	3.1	Very Low	1
3-022	Santa Ana Valley	2,724.30	4.3	Very Low	1
3-023	Upper Santa Ana Valley	1,430.90	2.2	Very Low	1
3-024	Quien Sabe Valley	4,707.00	7.4	Very Low	1
3-026	West Santa Cruz Terrace	7,306.40	11.4	Very Low	1
3-027	Santa Margarita	22,249.00	34.8	Medium	1
3-028	San Benito River Valley	24,227.00	37.9	Very Low	1
3-029	Dry Lake Valley	1,416.30	2.2	Very Low	1
3-030	Bitter Water Valley	32,224.80	50.4	Very Low	1
3-031	Hernandez Valley	2,864.50	4.5	Very Low	1
3-032	Peach Tree Valley	9,790.00	15.3	Very Low	1
3-033	San Carpofofo Valley	1,042.60	1.6	Very Low	1
3-034	Arroyo De La Cruz Valley	1,015.90	1.6	Very Low	1
3-035	San Simeon Valley	547	0.9	Very Low	1
3-036	Santa Rosa Valley	3,507.50	5.5	Very Low	1
3-037	Villa Valley	1,355.90	2.1	Very Low	1
3-038	Cayucos Valley	333.5	0.5	Very Low	1
3-039	Old Valley	1,178.40	1.8	Very Low	1

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Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
3-040	Toro Valley	720	1.1	Very Low	1
3-041	Morro Valley	644.1	1	Very Low	1
3-042	Chorro Valley	1,549.60	2.4	Very Low	1
3-043	Rinconada Valley	2,577.80	4	Very Low	1
3-044	Pozo Valley	6,848.60	10.7	Very Low	1
3-045	Huasna Valley	4,703.00	7.3	Very Low	1
3-046	Rafael Valley	2,993.20	4.7	Very Low	1
3-047	Big Spring Area	7,324.10	11.4	Very Low	1
3-049	Montecito	6,144.71	9.6	Medium	2
3-051	Majors Creek	478.7	0.7	Very Low	1
3-052	Needle Rock Point	839.9	1.3	Very Low	1
3-053	Foothill	3,282.30	5.1	Very Low	1
4-001	Upper Ojai Valley	3,806.30	5.9	Very Low	1
4-002	Ojai Valley	5,913.40	9.2	High	1
4-003.01	Upper Ventura River	5,278.10	8.2	Medium	1
4-003.02	Lower Ventura River	5,262.10	8.2	Very Low	1
4-004.02	Oxnard	57,887.91	90.45	High	2
4-004.03	Mound	13,865.83	21.67	High	2
4-004.04	Santa Paula	22,112.00	34.55	Very Low	2
4-004.05	Fillmore	22,585.84	35.29	High	2
4-004.06	Piru	10,896.87	17.03	High	2

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
4-004.07	Santa Clara River Valley East	67,687.60	105.8	High	1
4-005	Acton Valley	8,268.40	12.9	Very Low	1
4-006	Pleasant Valley	19,840.00	31	High	1
4-007	Arroyo Santa Rosa Valley	3,924.27	6.13	Very Low	2
4-008	Las Posas Valley	44,622.00	69.7	High	1
4-009	Simi Valley	12,155.20	19	Very Low	1
4-010	Conejo	18,796.00	29.4	Very Low	1
4-011.01	Santa Monica	31,779.20	49.7	Medium	1
4-011.02	Hollywood	10,070.20	15.7	Very Low	1
4-011.03	West Coast	92,996.70	145.3	Very Low	1
4-011.04	Central	177,770.30	277.8	Very Low	1
4-012	San Fernando Valley	144,837.10	226.3	Very Low	1
4-013	San Gabriel Valley	126,379.00	197.5	Very Low	1
4-015	Tierra Rejada	4,597.80	7.2	Very Low	1
4-016	Hidden Valley	2,210.70	3.5	Very Low	1
4-017	Lockwood Valley	21,789.50	34	Very Low	1
4-018	Hungry Valley	5,309.20	8.3	Very Low	1
4-019	Thousand Oaks Area	3,106.00	4.9	Very Low	1
4-020	Russell Valley	3,078.30	4.8	Very Low	1
4-022	Malibu Valley	610.8	1	Very Low	1

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Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
4-023	Raymond	26,048.80	40.7	Very Low	1
5-001.01	Goose Valley	35,954.40	56.2	Very Low	1
5-001.02	Fandango Valley	18,443.00	28.8	Very Low	1
5-002.01	South Fork Pitt River	114,136.70	178.3	Low	1
5-002.02	Warm Springs Valley	68,007.90	106.3	Very Low	1
5-003	Jess Valley	6,705.40	10.5	Very Low	1
5-004	Big Valley	92,067.10	143.9	Medium	1
5-005	Fall River Valley	54,824.60	85.7	Low	1
5-006.01	Bowman	122,533.80	191.46	Very Low	2
5-006.03	Anderson	98,704.60	154.2	Medium	1
5-006.04	Enterprise	61,288.30	95.8	Medium	1
5-006.05	Millville	65,616.02	102.53	Very Low	2
5-006.06	South Battle Creek	33,716.35	52.68	Very Low	2
5-007	Lake Almanor Valley	7,154.10	11.2	Very Low	1
5-008	Mountain Meadows Valley	8,145.90	12.7	Very Low	1
5-009	Indian Valley	29,413.20	46	Very Low	1
5-010	American Valley	6,799.30	10.6	Very Low	1
5-011	Mohawk Valley	18,983.10	29.7	Very Low	1
5-012.01	Sierra Valley	117,292.42	183.27	Medium	2
5-012.02	Chilcoot	7,545.70	11.8	Very Low	1
5-013	Upper Lake Valley	7,265.90	11.4	Very Low	1

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
5-014	Scotts Valley	7,326.10	11.4	Very Low	1
5-015	Big Valley	24,231.30	37.9	Medium	1
5-016	High Valley	2,357.90	3.7	Very Low	1
5-017	Burns Valley	2,875.10	4.5	Very Low	1
5-018	Coyote Valley	6,533.20	10.2	Very Low	1
5-019	Collayomi Valley	6,501.60	10.2	Very Low	1
5-020	Berryessa Valley	1,376.10	2.2	Very Low	1
5-021.50	Red Bluff	271,793.90	424.7	Medium	1
5-021.51	Corning	207,342.76	323.97	High	2
5-021.52	Colusa	723,823.74	1,130.97	High	2
5-021.53	Bend	22,676.40	35.4	Very Low	1
5-021.54	Antelope	19,090.80	29.8	High	1
5-021.56	Los Molinos	99,422.40	155.35	Medium	2
5-021.57	Vina	184,917.61	288.93	High	2
5-021.60	North Yuba	60,838.08	95.06	Medium	2
5-021.61	South Yuba	109,020.31	170.34	High	2
5-021.62	Sutter	285,809.87	446.58	Medium	2
5-021.64	North American	342,241.43	534.75	High	2
5-021.65	South American	248,403.37	388.13	High	2
5-021.66	Solano	354,672.90	554.18	Medium	2
5-021.67	Yolo	540,693.50	844.83	High	2
5-021.69	Wyandotte Creek	59,382.18	92.78	Medium	2
5-021.70	Butte	265,500.00	414.84	Medium	2
5-022.01	Eastern San Joaquin	764,802.78	1,195.00	High	2
5-022.02	Modesto	245,252.70	383.2	High	1
5-022.03	Turlock	348,187.10	544	High	1
5-022.04	Merced	512,959.10	801.5	High	1

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Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
5-022.05	Chowchilla	145,574.30	227.46	High	2
5-022.06	Madera	347,667.39	543.23	High	2
5-022.07	Delta-Mendota	764,964.86	1,195.26	High	2
5-022.08	Kings	981,324.82	1,533.32	High	2
5-022.09	Westside	621,823.20	971.6	High	1
5-022.10	Pleasant Valley	48,195.60	75.3	Medium	1
5-022.11	Kaweah	441,003.90	689.1	High	1
5-022.12	Tulare Lake	535,869.10	837.3	High	1
5-022.13	Tule	477,646.40	746.3	High	1
5-022.14	Kern County	1,782,320.81	2,784.88	High	2
5-022.15	Tracy	238,428.97	372.55	Medium	2
5-022.16	Cosumnes	210,275.92	328.56	Medium	2
5-022.17	Kettleman Plain	63,754.60	99.6	Low	1
5-022.18	White Wolf	107,546.30	168	Medium	1
5-022.19	East Contra Costa	107,596.40	168.12	Medium	2
5-023	Panoche Valley	33,086.60	51.7	Very Low	1
5-025	Kern River Valley	79,388.90	124	Very Low	1
5-026	Walker Basin Creek Valley	7,667.60	12	Very Low	1
5-027	Cummings Valley	10,019.30	15.7	Very Low	1
5-028	Tehachapi Valley West	14,803.10	23.1	Very Low	1
5-029	Castac Lake Valley	3,563.60	5.6	Very Low	1
5-030	Lower Lake Valley	2,405.80	3.8	Very Low	1
5-031	Long Valley	2,801.50	4.4	Very Low	1
5-035	Mccloud Area	21,334.50	33.3	Very Low	1
5-036	Round Valley	7,266.30	11.4	Very Low	1

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
5-037	Toad Well Area	3,357.50	5.2	Very Low	1
5-038	Pondosa Town Area	2,082.90	3.3	Very Low	1
5-040	Hot Springs Valley	2,405.10	3.8	Very Low	1
5-041	Egg Lake Valley	4,102.30	6.4	Very Low	1
5-043	Rock Prairie Valley	5,739.10	9	Very Low	1
5-044	Long Valley	1,087.00	1.7	Very Low	1
5-045	Cayton Valley	1,306.70	2	Very Low	1
5-046	Lake Britton Area	14,061.20	22	Very Low	1
5-047	Goose Valley	4,210.40	6.6	Very Low	1
5-048	Burney Creek Valley	2,352.90	3.7	Very Low	1
5-049	Dry Burney Creek Valley	3,076.00	4.8	Very Low	1
5-050	North Fork Battle Creek	12,761.90	19.9	Very Low	1
5-051	Butte Creek Valley	3,227.60	5	Very Low	1
5-052	Grays Valley	5,440.80	8.5	Very Low	1
5-053	Dixie Valley	4,867.00	7.6	Very Low	1
5-054	Ash Valley	6,007.10	9.4	Very Low	1
5-056	Yellow Creek Valley	2,311.70	3.6	Very Low	1
5-057	Last Chance Creek Valley	4,657.10	7.3	Very Low	1

California Department of Water Resources

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
5-058	Clover Valley	16,778.00	26.2	Very Low	1
5-059	Grizzly Valley	13,438.00	21	Very Low	1
5-060	Humbug Valley	9,976.20	15.6	Very Low	1
5-061	Chrome Town Area	1,409.20	2.2	Very Low	1
5-062	Elk Creek Area	1,439.40	2.2	Very Low	1
5-063	Stonyford Town Area	6,441.60	10.1	Very Low	1
5-064	Bear Valley	9,110.80	14.2	Very Low	1
5-065	Little Indian Valley	1,269.50	2	Very Low	1
5-066	Clear Lake Cache Formation	29,740.40	46.5	Very Low	1
5-068	Pope Valley	7,182.50	11.2	Very Low	1
5-069	Yosemite Valley	7,454.90	11.6	Very Low	1
5-070	Los Banos Creek Valley	4,835.40	7.6	Very Low	1
5-071	Vallecitos Creek Valley	15,107.40	23.6	Very Low	1
5-080	Brite Valley	3,170.20	5	Very Low	1
5-082	Cuddy Canyon Valley	3,299.30	5.2	Very Low	1
5-083	Cuddy Ranch Area	4,202.60	6.6	Very Low	1
5-084	Cuddy Valley	3,465.30	5.4	Very Low	1
5-085	Mil Potrero Area	2,308.90	3.6	Very Low	1

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
5-086	Joseph Creek	4,456.40	7	Very Low	1
5-087	Middle Fork Feather River	4,341.30	6.8	Very Low	1
5-088	Stony Gorge Reservoir	1,065.60	1.7	Very Low	1
5-089	Squaw Flat	1,294.40	2	Very Low	1
5-090	Funks Creek	3,014.10	4.7	Very Low	1
5-091	Antelope Creek	2,040.90	3.2	Very Low	1
5-092	Blanchard Valley	2,222.90	3.5	Very Low	1
5-094	Middle Creek	705.2	1.1	Very Low	1
5-095	Meadow Valley	5,734.90	9	Very Low	1
6-001	Surprise Valley	228,661.50	357.3	Very Low	1
6-002	Madeline Plains	156,097.30	243.9	Very Low	1
6-003	Willow Creek Valley	11,695.90	18.3	Very Low	1
6-004	Honey Lake Valley	311,716.00	487.1	Low	1
6-005.01	Tahoe South	14,800.30	23.1	Medium	1
6-005.02	Tahoe West	6,168.40	9.6	Very Low	1
6-005.03	Tahoe North	1,929.70	3	Very Low	1
6-006	Carson Valley	10,721.50	16.8	Very Low	1
6-007	Antelope Valley	20,078.10	31.4	Very Low	1
6-008	Bridgeport Valley	32,485.60	50.8	Very Low	1

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Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
6-009	Mono Valley	172,843.20	270.1	Very Low	1
6-010	Adobe Lake Valley	39,866.20	62.3	Very Low	1
6-011	Long Valley	71,843.80	112.3	Very Low	1
6-012.01	Owens Valley	660,648.16	1,032.26	Low	2
6-012.02	Fish Slough	3,221.60	5	Very Low	1
6-013	Black Springs Valley	30,766.90	48.1	Very Low	1
6-014	Fish Lake Valley	48,003.90	75	Low	1
6-015	Deep Springs Valley	29,930.40	46.8	Very Low	1
6-016	Eureka Valley	128,759.70	201.2	Very Low	1
6-017	Saline Valley	146,182.80	228.4	Very Low	1
6-018	Death Valley	920,379.90	1,438.10	Very Low	1
6-019	Wingate Valley	71,285.40	111.4	Very Low	1
6-020	Middle Amargosa Valley	389,763.40	609	Very Low	1
6-021	Lower Kingston Valley	239,740.30	374.6	Very Low	1
6-022	Upper Kingston Valley	176,749.20	276.2	Very Low	1
6-023	Riggs Valley	87,515.10	136.7	Very Low	1
6-024	Red Pass Valley	96,315.40	150.5	Very Low	1
6-025	Bicycle Valley	89,458.50	139.8	Very Low	1
6-026	Avawatz Valley	27,612.10	43.1	Very Low	1

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
6-027	Leach Valley	61,175.50	95.6	Very Low	1
6-028	Pahrump Valley	92,926.70	145.2	Very Low	1
6-029	Mesquite Valley	88,157.10	137.7	Very Low	1
6-030	Ivanpah Valley	198,129.10	309.6	Very Low	1
6-031	Kelso Valley	254,686.60	397.9	Very Low	1
6-032	Broadwell Valley	91,878.20	143.6	Very Low	1
6-033	Soda Lake Valley	380,056.30	593.8	Very Low	1
6-034	Silver Lake Valley	35,202.10	55	Very Low	1
6-035	Cronise Valley	126,299.90	197.3	Very Low	1
6-036.01	Langford Well Lake	19,312.10	30.2	Very Low	1
6-036.02	Irwin	10,480.30	16.4	Very Low	1
6-037	Coyote Lake Valley	88,101.80	137.7	Very Low	1
6-038	Caves Canyon Valley	72,962.30	114	Very Low	1
6-040	Lower Mojave River Valley	285,485.50	446.1	Very Low	1
6-041	Middle Mojave River Valley	211,320.70	330.2	Very Low	1
6-042	Upper Mojave River Valley	412,841.00	645.1	Very Low	1
6-043	El Mirage Valley	75,896.10	118.6	Very Low	1
6-044	Antelope Valley	1,010,268.8	1,578.50	Very Low	1

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Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
6-045	Tehachapi Valley East	23,967.30	37.4	Very Low	1
6-046	Fremont Valley	335,234.10	523.8	Low	1
6-047	Harper Valley	409,501.80	639.8	Very Low	1
6-048	Goldstone Valley	28,090.50	43.9	Very Low	1
6-049	Superior Valley	120,319.70	188	Very Low	1
6-050	Cuddeback Valley	94,901.90	148.3	Very Low	1
6-051	Pilot Knob Valley	138,605.10	216.6	Very Low	1
6-052	Searles Valley	197,011.40	307.8	Very Low	1
6-053	Salt Wells Valley	29,473.90	46.1	Very Low	1
6-054	Indian Wells Valley	381,708.60	596.4	High	1
6-055	Coso Valley	25,561.60	39.9	Very Low	1
6-056	Rose Valley	42,524.80	66.4	Very Low	1
6-057	Darwin Valley	44,160.90	69	Very Low	1
6-058	Panamint Valley	259,290.70	405.1	Very Low	1
6-061	Cameo Area	9,303.40	14.5	Very Low	1
6-062	Race Track Valley	14,113.30	22.1	Very Low	1
6-063	Hidden Valley	17,943.30	28	Very Low	1
6-064	Marble Canyon Area	10,363.50	16.2	Very Low	1
6-065	Cottonwood Spring Area	3,896.70	6.1	Very Low	1

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
6-066	Lee Flat	20,282.80	31.7	Very Low	1
6-067	Martis Valley	36,357.00	56.8	Very Low	1
6-068	Santa Rosa Flat	16,779.90	26.2	Very Low	1
6-069	Kelso Lander Valley	11,164.70	17.4	Very Low	1
6-070	Cactus Flat	7,025.10	11	Very Low	1
6-071	Lost Lake Valley	23,253.60	36.3	Very Low	1
6-072	Coles Flat	2,946.00	4.6	Very Low	1
6-073	Wild Horse Mesa Area	3,320.50	5.2	Very Low	1
6-074	Harrisburg Flats	24,928.30	39	Very Low	1
6-075	Wildrose Canyon	5,151.30	8	Very Low	1
6-076	Brown Mountain Valley	21,726.60	33.9	Very Low	1
6-077	Grass Valley	9,974.80	15.6	Very Low	1
6-078	Denning Spring Valley	7,231.60	11.3	Very Low	1
6-079	California Valley	58,111.70	90.8	Very Low	1
6-080	Middle Park Canyon	1,741.40	2.7	Very Low	1
6-081	Butte Valley	8,797.60	13.7	Very Low	1
6-082	Spring Canyon Valley	4,800.40	7.5	Very Low	1
6-084	Greenwater Valley	59,813.80	93.5	Very Low	1

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Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
6-085	Gold Valley	3,210.70	5	Very Low	1
6-086	Rhodes Hill Area	15,578.50	24.3	Very Low	1
6-088	Owl Lake Valley	22,242.30	34.8	Very Low	1
6-089	Kane Wash Area	5,954.10	9.3	Very Low	1
6-090	Cady Fault Area	7,949.20	12.4	Very Low	1
6-091	Cow Head Lake Valley	5,617.40	8.8	Very Low	1
6-092	Pine Creek Valley	9,526.90	14.9	Very Low	1
6-093	Harvey Valley	4,503.20	7	Very Low	1
6-094	Grasshopper Valley	17,663.80	27.6	Very Low	1
6-095	Dry Valley	6,497.50	10.2	Very Low	1
6-096	Eagle Lake Area	12,699.50	19.8	Very Low	1
6-097	Horse Lake Valley	3,826.30	6	Very Low	1
6-098	Tuledad Canyon Valley	5,149.90	8	Very Low	1
6-099	Painters Flat	6,374.20	10	Very Low	1
6-100	Secret Valley	33,663.70	52.6	Very Low	1
6-101	Bull Flat	18,117.10	28.3	Very Low	1
6-104	Long Valley	46,846.20	73.2	Very Low	1
6-105	Slinkard Valley	4,511.20	7	Very Low	1

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
6-106	Little Antelope Valley	2,487.70	3.9	Very Low	1
6-107	Sweetwater Flat	4,719.80	7.4	Very Low	1
6-108	Olympic Valley	702	1.1	Very Low	1
7-001	Lanfair Valley	156,540.30	244.6	Very Low	1
7-002	Fenner Valley	452,482.50	707	Very Low	1
7-003	Ward Valley	557,586.40	871.2	Very Low	1
7-004	Rice Valley	188,094.10	293.9	Very Low	1
7-005	Chuckwalla Valley	601,573.10	940	Very Low	1
7-006	Pinto Valley	182,439.40	285.1	Very Low	1
7-007	Cadiz Valley	269,847.90	421.6	Very Low	1
7-008	Bristol Valley	496,816.20	776.3	Very Low	1
7-009	Dale Valley	212,533.30	332.1	Very Low	1
7-010	Twentynine Palms Valley	62,260.00	97.3	Very Low	1
7-011	Copper Mountain Valley	30,279.70	47.3	Very Low	1
7-012	Warren Valley	17,475.73	27.31	Very Low	2
7-013.01	Deadman Lake	89,012.40	139.1	Very Low	1
7-013.02	Surprise Spring	29,253.20	45.7	Very Low	1
7-014	Lavic Valley	102,278.30	159.8	Very Low	1

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Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
7-015	Bessemer Valley	39,067.70	61	Very Low	1
7-016	Ames Valley	108,438.10	169.4	Very Low	1
7-017	Means Valley	14,941.50	23.3	Very Low	1
7-018.01	Soggy Lake	77,277.40	120.7	Very Low	1
7-018.02	Upper Johnson Valley	34,782.10	54.3	Very Low	1
7-019	Lucerne Valley	147,431.50	230.4	Very Low	1
7-020	Morongo Valley	7,228.10	11.3	Very Low	1
7-021.01	Indio	297,156.40	464.3	Medium	1
7-021.02	Mission Creek	48,571.70	75.9	Medium	1
7-021.03	Desert Hot Springs	100,947.60	157.7	Very Low	1
7-021.04	San Gorgonio Pass	38,545.10	60.2	Medium	1
7-022	West Salton Sea	105,382.30	164.7	Very Low	1
7-024.01	Borrego Springs	62,749.20	98	High	1
7-024.02	Ocotillo Wells	90,086.80	140.8	Very Low	1
7-025	Ocotillo-Clark Valley	222,280.20	347.3	Very Low	1
7-026	Terwilliger Valley	8,017.40	12.5	Very Low	1
7-027	San Felipe Valley	23,376.40	36.5	Very Low	1
7-028	Vallecito-Carrizo Valley	121,816.00	190.3	Very Low	1
7-029	Coyote Wells Valley	145,659.90	227.6	Very Low	1
7-030	Imperial Valley	957,774.40	1,496.50	Very Low	1

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
7-031	Orocopia Valley	96,223.50	150.3	Very Low	1
7-032	Chocolate Valley	129,107.20	201.7	Very Low	1
7-033	East Salton Sea	194,844.20	304.4	Very Low	1
7-034	Amos Valley	129,920.80	203	Very Low	1
7-035	Ogilby Valley	133,170.10	208.1	Very Low	1
7-036	Yuma Valley	123,880.60	193.6	Very Low	1
7-037	Arroyo Seco Valley	256,477.90	400.7	Very Low	1
7-038	Palo Verde Valley	72,934.10	114	Very Low	1
7-039	Palo Verde Mesa	224,910.80	351.4	Very Low	1
7-040	Quien Sabe Point Valley	25,173.30	39.3	Very Low	1
7-041	Calzona Valley	80,545.60	125.9	Very Low	1
7-042	Vidal Valley	137,660.10	215.1	Very Low	1
7-043	Chemehuevi Valley	272,014.50	425	Very Low	1
7-044	Needles Valley	88,053.90	137.6	Very Low	1
7-045	Piute Valley	175,192.40	273.7	Very Low	1
7-046	Canebrake Valley	5,411.50	8.5	Very Low	1
7-047	Jacumba Valley	2,475.70	3.9	Very Low	1
7-048	Helendale Fault Valley	2,617.20	4.1	Very Low	1

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Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
7-049	Pipes Canyon Fault Valley	3,382.00	5.3	Very Low	1
7-050	Iron Ridge Area	5,243.00	8.2	Very Low	1
7-051	Lost Horse Valley	17,299.60	27	Very Low	1
7-052	Pleasant Valley	9,642.60	15.1	Very Low	1
7-053	Hexie Mountain Area	11,131.90	17.4	Very Low	1
7-054	Buck Ridge Fault Valley	6,914.50	10.8	Very Low	1
7-055	Collins Valley	7,062.20	11	Very Low	1
7-056	Yaqui Well Area	14,966.60	23.4	Very Low	1
7-059	Mason Valley	5,520.50	8.6	Very Low	1
7-061	Davies Valley	3,570.90	5.6	Very Low	1
7-062	Joshua Tree	33,448.78	52.26	Very Low	2
7-063	Vandeventer Flat	6,732.00	10.5	Very Low	1
8-001	Coastal Plain Of Orange County	224,226.30	350.4	Medium	1
8-002.01	Chino	153,762.30	240.3	Very Low	1
8-002.02	Cucamonga	9,028.00	14.1	Very Low	1
8-002.03	Riverside-Arlington	56,563.10	88.4	Very Low	1
8-002.04	Rialto-Colton	24,794.10	38.7	Very Low	1
8-002.05	Cajon	23,134.60	36.1	Very Low	1

Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
8-002.06	San Bernardino	92,488.20	144.5	Very Low	1
8-002.07	Yucaipa	22,218.80	34.7	High	1
8-002.08	San Timoteo	32,287.65	50.45	Very Low	2
8-002.09	Temescal	22,963.60	35.9	Medium	1
8-004.01	Elsinore Valley	23,601.20	36.9	Medium	1
8-004.02	Bedford-Coldwater	7,025.70	11	Very Low	1
8-005	San Jacinto	158,534.44	247.71	High	2
8-006	Hemet Lake Valley	16,679.90	26.1	Very Low	1
8-007	Big Meadows Valley	14,162.10	22.1	Very Low	1
8-008	Seven Oaks Valley	4,075.20	6.4	Very Low	1
8-009	Bear Valley	19,170.10	30	Very Low	1
9-001	San Juan Valley	16,712.40	26.1	Very Low	1
9-002	San Mateo Valley	2,993.50	4.7	Very Low	1
9-003	San Onofre Valley	1,238.10	1.9	Very Low	1
9-004	Santa Margarita Valley	5,214.70	8.1	Very Low	1
9-005	Temecula Valley	87,752.60	137.1	Very Low	1
9-006	Cahuilla Valley	18,201.60	28.4	Very Low	1
9-007.01	Upper San Luis Rey Valley	19,254.35	30.08	Medium	2
9-007.02	Lower San Luis Rey Valley	10,411.92	16.27	Very Low	2
9-008	Warner Valley	23,963.50	37.4	Very Low	1
9-009	Escondido Valley	2,886.90	4.5	Very Low	1

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Basin Number	Basin/Subbasin Name	Area (Acres)	Area (Square Miles)	Priority	Phase
9-010	San Pasqual Valley	3,498.40	5.5	Medium	1
9-011	Santa Maria Valley	12,289.90	19.2	Very Low	1
9-012	San Dieguito Creek	3,547.90	5.5	Very Low	1
9-013	Poway Valley	2,467.90	3.9	Very Low	1
9-014	Mission Valley	7,302.50	11.4	Very Low	1
9-015	San Diego River Valley	9,873.37	15.43	Very Low	2
9-016	El Cajon Valley	7,152.10	11.2	Very Low	1
9-022	Batiquitos Lagoon Valley	740.8	1.2	Very Low	1
9-023	San Elijo Valley	882.3	1.4	Very Low	1
9-024	Pamo Valley	1,502.50	2.3	Very Low	1
9-025	Ranchita Town Area	3,119.90	4.9	Very Low	1
9-027	Cottonwood Valley	3,838.50	6	Very Low	1
9-028	Campo Valley	3,538.50	5.5	Very Low	1
9-029	Potrero Valley	2,018.90	3.2	Very Low	1
9-032	San Marcos Area	2,129.80	3.3	Very Low	1
9-033	Coastal Plain of San Diego	54,980.89	85.91	Low	2

Appendix 2 – DWR standard land use legend (adapted for remote sensing crop mapping) (component 6.a)

Crop Category	DWR 20 Crop (CalSIMETAW Input)	Crop
G – GRAIN & HAY	Miscellaneous Grain and Hay	Wheat, Miscellaneous grain and hay
R – RICE	Rice	Rice, Wild rice
F – FIELD CROPS	Cotton	Cotton
F – FIELD CROPS	Safflower	Safflower
F – FIELD CROPS	Other Field	Sunflowers
F – FIELD CROPS	Dry Beans	Beans (dry)
F – FIELD CROPS	Corn	Corn (field & sweet), sorghum and Sudan
P - PASTURE	Alfalfa	Alfalfa & alfalfa mixtures
P - PASTURE	Pasture	Mixed pasture Miscellaneous grasses (includes Bermuda grass, ryegrass, turf grass, etc.)
T – TRUCK, NURSERY, AND BERRY CROPS	Onions & Garlic	Onions and garlic
T – TRUCK, NURSERY, AND BERRY CROPS	Tomato Processing	Tomatoes (processing and fresh)
T – TRUCK, NURSERY, AND BERRY CROPS	Potatoes	Potatoes and sweet potatoes
T – TRUCK, NURSERY, AND BERRY CROPS	Cucurbits	Melons, squash, and cucumbers (all types)

Crop Category	DWR 20 Crop (CalSIMETAW Input)	Crop
T – TRUCK, NURSERY, AND BERRY CROPS	Truck Crops	Cole crops (includes broccoli, cauliflower, cabbage, brussel sprouts, mixed cole crops or cole crops not specifically listed in the legend) Carrots Lettuce/leafy greens Flowers, nursery & Christmas tree farms Bush berries (includes blueberries, blackberries, raspberries, and other bush berries) Strawberries Peppers (chili, bell, etc.) Miscellaneous truck (a truck crop not specifically listed in the legend)
D – DECIDUOUS FRUITS AND NUTS	Almonds & Pistachios	Almonds, Pistachios
D – DECIDUOUS FRUITS AND NUTS	Other Deciduous	Apples Cherries Peaches/nectarines Pears Plums, prunes, and apricots Walnuts Pomegranates Miscellaneous deciduous (a type of deciduous orchard not specifically listed in the legend) Young perennial fruits and nuts (includes young orchards and vineyards)
C – CITRUS AND SUBTROPICAL	Citrus Subtropical	Citrus Dates Avocados Olives Kiwis

Crop Category	DWR 20 Crop (CalSIMETAW Input)	Crop
		Miscellaneous subtropical fruits
V – VINEYARDS	Vineyard	Grapes

Table Note: Crop categories not included in DWR 20 Crop categories are Sugar Beets (none reported in the state during 2014) and Fresh tomatoes (combined with Tomato Processing). Non-crop categories, Urban, Native Riparian, Idle and Water Surface, are not used in basin prioritization.

Appendix 3 – List of chemicals used in the evaluation of documented water quality degradation (component 7.d)

Table with Primary MCLs

GAMA Storenum	Units	MCL	Chemical Name	GAMA Storenum	Units	MCL	Chemical Name
TCA111	UG/L	200	1,1,1-Trichloroethane	ENDOTHAL	UG/L	100	Endothal
PCA	UG/L	1	1,1,2,2-Tetrachloroethane	ENDRIN	UG/L	2	Endrin
FC113	MG/L	1.2	1,1,2-Trichloro-1,2,2-Trifluoroethane	EBZ	UG/L	300	Ethylbenzene
TCA112	UG/L	5	1,1,2-Trichloroethane	F	MG/L	2	Fluoride (F)
DCA11	UG/L	5	1,1-Dichloroethane	ALPHA	pCi/L	15	Gross Alpha
DCE11	UG/L	6	1,1-Dichloroethylene	HEPTACHLOR	UG/L	0.01	Heptachlor
TCB124	UG/L	5	1,2,4-Trichlorobenzene	HCLBZ	UG/L	1	Hexachlorobenzene
DCBZ12	UG/L	600	1,2-Dichlorobenzene	HCCP	UG/L	50	Hexachlorocyclopentadiene
DCA12	UG/L	0.5	1,2-Dichloroethane	PB	UG/L	15	Lead
DCPA12	UG/L	5	1,2-Dichloropropane	BHCGAMMA	UG/L	0.2	Lindane
DCP13	UG/L	0.5	1,3-Dichloropropene (Total)	HG	UG/L	2	Mercury
DCBZ14	UG/L	5	1,4-Dichlorobenzene	MTXYCL	UG/L	30	Methoxychlor

GAMA Storenum	Units	MCL	Chemical Name	GAMA Storenum	Units	MCL	Chemical Name
SILVEX	UG/L	50	2,4,5-Tp (Silvex)	MTBE	UG/L	13	Methyl-Tert-Butyl-Ether (Mtbe)
24D	UG/L	70	2,4-D	MOLINATE	UG/L	20	Molinate
ALACL	UG/L	2	Alachlor	NI	UG/L	100	Nickel
AL	UG/L	1000	Aluminum	NO3N	MG/L	10	Nitrate (As N)
SB	UG/L	6	Antimony	OXAMYL	UG/L	50	Oxamyl
AS	UG/L	10	Arsenic	PCP	UG/L	1	Pentachlorophenol
ATRAZINE	UG/L	1	Atrazine	PCATE	UG/L	6	Perchlorate
BA	MG/L	1	Barium	PICLORAM	MG/L	0.5	Picloram
BTZ	UG/L	18	Bentazon	PCB1016	UG/L	0.5	Polychlorinated Biphenyls
BZ	UG/L	1	Benzene	SE	UG/L	50	Selenium
BZAP	UG/L	0.2	Benzo (A) Pyrene	SIMAZINE	UG/L	4	Simazine
BE	UG/L	4	Beryllium	SR-90	pCi/L	8	Strontium-90
BRO3	UG/L	10	Bromate	STY	UG/L	100	Styrene
CD	UG/L	5	Cadmium	PCE	UG/L	5	Tetrachloroethylene
CTCL	UG/L	0.5	Carbon Tetrachloride	TL	UG/L	2	Thallium
CHLORITE	MG/L	1	Chlorite	THIOBENCARB	UG/L	70	Thiobencarb
CLBZ	UG/L	70	Chlorobenzene (Monochlorobenzene)	BZME	UG/L	150	Toluene
CR	UG/L	50	Chromium (Total)	THM	UG/L	80	Total Trihalomethanes
DCE12C	UG/L	6	Cis-1,2-Dichloroethylene	DCE12T	UG/L	10	Trans-1,2-Dichloroethylene
CN	UG/L	150	Cyanide	TCE	UG/L	5	Trichloroethylene

GAMA Storenum	Units	MCL	Chemical Name	GAMA Storenum	Units	MCL	Chemical Name
DALAPON	UG/L	200	Dalapon	FC11	UG/L	150	Trichlorofluoro methane
DOA	MG/L	0.4	Di(2-Ethylhexyl)Adipate	H-3	pCi/L	20000	Tritium
BIS2EHP	UG/L	4	Di(2-Ethylhexyl)Phthalate	U	pCi/L	20	Uranium
DCMA	UG/L	5	Dichloromethane	VC	UG/L	0.5	Vinyl Chloride
DINOSEB	UG/L	7	Dinoseb	XYLENES	UG/L	1750	Xylenes (Total)

Table with Secondary MCLs

GAMA Storenum	Units	MCL	Chemical Name	GAMA Storenum	Units	MCL	Chemical Name
CU	MG/L	1	Copper	ZN	MG/L	5	Zinc
FOAMAGENT S	MG/L	0.5	Foaming Agents (Mbas)	CL	MG/L	500	Chloride
FE	UG/L	300	Iron	SO4	MG/L	500	Sulfate
MN	UG/L	50	Manganese	TDS	MG/L	1000	Total Dissolved Solids
AG	UG/L	100	Silver				

Table Source: State Water Resources Control Board 2017

Key: GAMA = groundwater ambient monitoring and assessment; MCL = maximum contaminant level; UG/L = microgram per liter; MG/L = milligram per liter; pCi/L = picocuries per liter

Note: The water quality data query of the SWRCB GAMA database and the initial basin prioritization water quality analysis was performed on and soon after April 4, 2017. Hexavalent chromium (CR6) was included on the above list as a Primary MCL and used in the initial analysis. In September 2017, CR6 was removed from the MCL Primary list on court order. The water quality analysis for basin prioritization was corrected to reflect this change and consequently does not include any CR6 records.

Appendix 4 – Computed groundwater volume for non-adjudicated portion(s) of basins with adjudicated area used during evaluation (component 8.c.3)

Basin Number	Basin/Subbasin Name	Groundwater volume (acre-feet) of non-adjudicated portion of basin*
1-005	Scott River Valley	27,496
3-004.08	Salinas Valley/Seaside	0
3-008.01	Los Osos Valley/ Los Osos Area	2
3-012.01	Santa Maria/ Santa Maria	2,316
3-016	Goleta	557
4-004.04	Santa Clara River Valley/ Santa Paula	668
4-011.03	Coastal Plain of Los Angeles/ West Coast	60
4-011.04	Coastal Plain of Los Angeles/ Central	0
4-012	San Fernando Valley	1,025
4-013	San Gabriel Valley	7,000
4-023	Raymond	1
5-027	Cummings Valley	63
5-028	Tehachapi Valley West	222
5-080	Brite Valley	8
6-012.01	Owens Valley/Owens Valley	24,346
6-037	Coyote Lake Valley	1
6-038	Caves Canyon Valley	2
6-040	Lower Mojave River Valley	0
6-041	Middle Mojave River Valley	0
6-042	Upper Mojave River Valley	5
6-043	El Mirage Valley	526

Basin Number	Basin/Subbasin Name	Groundwater volume (acre-feet) of non-adjudicated portion of basin*
6-044	Antelope Valley	2,631
6-045	Tehachapi Valley East	55
6-047	Harper Valley	7
6-089	Kane Wash Area	0
7-012	Warren Valley	69
7-019	Lucerne Valley	0
8-002.01	Upper Santa Ana Valley/ Chino	2,553
8-002.02	Upper Santa Ana Valley/ Cucamonga	1
8-002.03	Upper Santa Ana Valley/ Riverside-Arlington	7,778
8-002.04	Upper Santa Ana Valley/ Rialto-Colton	2,349
8-002.06	Upper Santa Ana Valley/ Bunker Hill	216
8-002.08	Upper Santa Ana Valley/ San Timoteo	3,806
8-005	San Jacinto	32,508
9-004	Santa Margarita Valley	0
9-005	Temecula Valley	29
9-006	Cahuilla Valley	10

Table Note: *From Step 4 of Component # 8.c.3

Appendix 5 – Breakdown of area in basins with adjudications used during evaluation (component 8.c.3)

Basin	Basin / Subbasin Name	Basin Area (Acres)	Adjudicated Acres	Percent Adjudicated	Non-Adjudicated Acres	Percent Non-Adjudicated
1-005	Scott River Valley	63,831	10,015	15.69%	53,816	84.31%
3-004.08	Salinas Valley/Seaside	14,489	14,489	100.00%	0	0.00%
3-008.01	Los Osos Valley/ Los Osos Area	4,232	4,226	99.87%	6	0.13%
3-012.01	Santa Maria/ Santa Maria	170,213	162,277	95.34%	7,936	4.66%
3-016	Goleta	9,217	8,034	87.16%	1,183	12.84%
4-004.04	Santa Clara River Valley/ Santa Paula	22,112	20,646	93.37%	1,466	6.63%
4-011.03	Coastal Plain of Los Angeles/ West Coast	92,997	92,532	99.50%	465	0.50%
4-011.04	Coastal Plain of Los Angeles/ Central	177,770	149,067	83.85%	28,703	16.15%
4-012	San Fernando Valley	144,837	143,363	98.98%	1,474	1.02%
4-013	San Gabriel Valley	126,379	122,603	97.01%	3,776	2.99%
4-023	Raymond	26,049	26,047	99.99%	2	0.01%
5-027	Cummings Valley	10,019	9,213	91.95%	807	8.05%
5-028	Tehachapi Valley West	14,803	13,085	88.40%	1,718	11.60%
5-080	Brite Valley	3,170	2,845	89.73%	326	10.27%

California Department of Water Resources

Basin	Basin /Subbasin Name	Basin Area (Acres)	Adjudicated Acres	Percent Adjudicated	Non-Adjudicated Acres	Percent Non-Adjudicated
6-012.01	Owens Valley/ Owens Valley	660,648	231,276	35.01%	429,372	64.99%
6-037	Coyote Lake Valley	88,102	80,890	91.81%	7,212	8.19%
6-038	Caves Canyon Valley	72,962	27,201	37.28%	45,761	62.72%
6-040	Lower Mojave River Valley	285,486	260,561	91.27%	24,925	8.73%
6-041	Middle Mojave River Valley	211,321	206,613	97.77%	4,707	2.23%
6-042	Upper Mojave River Valley	412,841	405,091	98.12%	7,750	1.88%
6-043	El Mirage Valley	75,896	70,298	92.62%	5,598	7.38%
6-044	Antelope Valley	1,010,269	904,447	89.53%	105,822	10.47%
6-045	Tehachapi Valley East	23,967	11,658	48.64%	12,310	51.36%
6-047	Harper Valley	409,502	351,094	85.74%	58,408	14.26%
6-089	Kane Wash Area	5,954	5,954	100.00%	0	0.00%
7-012	Warren Valley	17,476	13,035	74.59%	4,441	25.41%
7-019	Lucerne Valley	147,432	145,964	99.00%	1,468	1.00%
8-002.01	Upper Santa Ana Valley/ Chino	153,762	146,652	95.38%	7,110	4.62%
8-002.02	Upper Santa Ana Valley/ Cucamonga	9,028	8,232	91.18%	796	8.82%
8-002.03	Upper Santa Ana Valley/ Riverside-Arlington	56,563	37,217	65.80%	19,346	34.20%
8-002.04	Upper Santa Ana Valley/ Rialto-Colton	24,794	23,636	95.33%	1,158	4.67%
8-002.06	Upper Santa Ana Valley/	92,488	87,594	94.71%	4,894	5.29%

Basin	Basin /Subbasin Name	Basin Area (Acres)	Adjudicated Acres	Percent Adjudicated	Non-Adjudicated Acres	Percent Non-Adjudicated
	San Bernardino					
8-002.08	Upper Santa Ana Valley/ San Timoteo	32,288	14,138	43.79%	18,150	56.21%
8-005	San Jacinto	158,534	59,939	37.81%	98,596	62.19%
9-004	Santa Margarita Valley	5,215	5,191	99.54%	24	0.46%
9-005	Temecula Valley	87,753	87,386	99.58%	367	0.42%
9-006	Cahuilla Valley	18,202	17,850	98.07%	351	1.93%

Appendix 6 – Groundwater Basins Identified with Groundwater-Related Transfers (component 8.d.2)

Groundwater Basin ID	Groundwater Basin / Subbasin Name	Type of Groundwater-Related Transfer	Year	Total Groundwater Pumped (AF)
4-003.01	Ventura River Valley / Upper Ventura River	B	2015	1,314
5-006.03	Redding Area / Anderson	A	2013	2,314
5-006.03	Redding Area / Anderson	A	2014	3,526
5-006.03	Redding Area / Anderson	A	2015	3,785
5-021.51	Sacramento Valley / Corning	A	2013	2,030
5-021.52	Sacramento Valley / Colusa	A	2009	1,447
5-021.52	Sacramento Valley / Colusa	A	2013	2,970
5-021.52	Sacramento Valley / Colusa	A	2014	6,838
5-021.52	Sacramento Valley / Colusa	A	2015	13,969
5-021.60	Sacramento Valley / North Yuba	A	2009	8,262
5-021.60	Sacramento Valley / North Yuba	A	2013	8,270
5-021.60	Sacramento Valley / North Yuba	A	2014	2,102
5-021.60	Sacramento Valley / North Yuba	A	2018	9,080
5-021.61	Sacramento Valley / South Yuba	A	2014	3,637
5-021.61	Sacramento Valley / South Yuba	A	2015	2,000

Groundwater Basin ID	Groundwater Basin / Subbasin Name	Type of Groundwater-Related Transfer	Year	Total Groundwater Pumped (AF)
5-021.61	Sacramento Valley / South Yuba	A	2018	5,998
5-021.62	Sacramento Valley / Sutter	A	2009	14,841
5-021.62	Sacramento Valley / Sutter	A	2010	14,317
5-021.62	Sacramento Valley / Sutter	A	2013	15,264
5-021.62	Sacramento Valley / Sutter	A	2014	17,400
5-021.62	Sacramento Valley / Sutter	A	2015	8,659
5-021.62	Sacramento Valley / Sutter	A	2018	15,352
5-021.64	Sacramento Valley / North American	A	2009	24,630
5-021.64	Sacramento Valley / North American	A	2010	13,045
5-021.64	Sacramento Valley / North American	A	2013	8,903
5-021.64	Sacramento Valley / North American	A	2014	27,334
5-021.64	Sacramento Valley / North American	A	2015	28,358
5-021.64	Sacramento Valley / North American	A	2018	21,551
5-021.66	Sacramento Valley/Solano	A	2011	409
5-021.67	Sacramento Valley / Yolo	A	2009	4,873
5-021.67	Sacramento Valley / Yolo	A	2013	7,155
5-021.67	Sacramento Valley / Yolo	A	2014	16,995
5-021.67	Sacramento Valley / Yolo	A	2015	14,668

Groundwater Basin ID	Groundwater Basin / Subbasin Name	Type of Groundwater-Related Transfer	Year	Total Groundwater Pumped (AF)
5-021.67	Sacramento Valley / Yolo	A	2018	1,149
5-021.70	Sacramento Valley / Butte	A	2009	5,501
5-021.70	Sacramento Valley / Butte	A	2013	7,175

Appendix B

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

RESOLUTION NO. 17-013

A RESOLUTION OF THE BOARD OF SUPERVISORS OF LASSEN COUNTY ELECTING
TO BE THE GROUNDWATER SUSTAINABILITY AGENCY FOR ALL PORTIONS OF THE
BIG VALLEY (BASIN NUMBER 5-004) GROUNDWATER BASIN LOCATED WITHIN
LASSEN COUNTY, PURSUANT TO THE SUSTAINABLE GROUNDWATER
MANAGEMENT ACT OF 2014

WHEREAS, the Legislature has adopted, and the Governor has signed into law, Senate Bills 1168 and 1319 and Assembly Bill 1739, known collectively as the Sustainable Groundwater Management Act of 2014 (SGMA); and

WHEREAS, the Sustainable Groundwater Management Act of 2014 went into effect on January 1, 2015; and

WHEREAS, the legislative intent of SGMA is to, among other goals, provide for sustainable management of groundwater basins and sub-basins defined by the California Department of Water Resources (DWR), to enhance local management of groundwater, to establish minimum standards for sustainable groundwater management, and to provide specified local agencies with authority and technical and financial assistance necessary to sustainably manage groundwater; and

WHEREAS, the Sustainable Groundwater Management Act of 2014 enables the State Water Resources Control Board to intervene in groundwater basins unless a local public agency or combination of local public agencies form a groundwater sustainability agency (GSA) or agencies by June 30, 2017; and

WHEREAS, retaining local jurisdiction over water management and land use is essential to sustainably manage groundwater and to the vitality of Lassen County's economy, communities and environment, and

WHEREAS, any local public agency that has water supply, water management or land use responsibilities within a groundwater basin may elect to be the groundwater sustainability agency for that basin; and

WHEREAS, Lassen County is a local public agency organized as a general law County under the State Constitution; and

WHEREAS, in 1995 the California Supreme Court declined to review an appeal of a lower court decision, *Baldwin v. County of Tehama* (1994), that holds that State law does not occupy the field of groundwater management and does not prevent cities and counties from adopting ordinances to manage groundwater under their police powers; and

WHEREAS, in 1999 the Lassen County Board of Supervisors adopted Ordinance Number 539 (codified at Chapter 17.01 of County Code), requiring a permit to export any groundwater from Lassen County; and

WHEREAS in 2007, the Lassen County Board of Supervisors adopted a *Groundwater*

Management Plan; as authorized by California Water Code Section 10753(a); and

WHEREAS, in 2012 the Lassen County Board of Supervisors adopted Ordinance Number 2012-001 (codified at Chapter 17.02 of County Code), which in part adopts a basin management objective program to facilitate the understanding and public dissemination of groundwater information in Lassen County; and

WHEREAS, in December of 2015, the Lassen County Board of Supervisors adopted the *Groundwater Monitoring Plan for Lassen County*, which was in turn approved by the California Department of Water Resources, making Lassen County the designated monitoring entity pursuant to the California Statewide Groundwater Elevation Monitoring (CASGEM) program; and

WHEREAS, the County overlies those portions of the Big Valley (Basin 5-004) Groundwater Basin located within Lassen County; and

WHEREAS, Section 10723.2 of the Sustainable Groundwater Management Act of 2014 requires that a GSA consider the interests of all beneficial uses and users of groundwater, as well as those responsible for implementing groundwater sustainability plans; and

WHEREAS, Section 10723.8 of the Sustainable Groundwater Management Act of 2014 requires that a local agency electing to be a GSA notify the California Department of Water Resources of its election and its intent to undertake sustainable groundwater management within a basin; and

WHEREAS, On January 26, 2017, the Lassen County Planning and Building Services Department conducted a public meeting within the affected basin, in the community of Bieber, to solicit comment as to whether the Board of Supervisors should or should not be the sustainable groundwater agency for the Big Valley Basin. Notice of said public meeting was published in the Lassen County Times, Mountain Echo, and Modoc County Record; mailed to the list of interested parties; and posted at various places around the basin where announcements are posted; and

WHEREAS, The January 26, 2017, meeting resulted in the identification of additional “interested parties”, that were added to the previously compiled list of interested parties.

WHEREAS, the County held a public hearing on this date after publication of notice pursuant to Government Code section 6066 to consider adoption of this Resolution. Notice, as provided for at Government Code Section 6066 was published in the Lassen County Times, Mountain Echo, and Modoc County Record; mailed to the list of interested parties; and posted at various places around the basin where announcements are posted; and

WHEREAS, it would be in the public interest of the people of Lassen County for the County to become the groundwater sustainability agency for all those portions of the Big Valley (Basin 5-004) Groundwater Basin located within Lassen County; and

WHEREAS, the County and other local public agencies have a long history of coordination and cooperation on water management; and

WHEREAS, it is the intent of the County to work cooperatively with other local agencies and Counties to manage the aforementioned groundwater basin in a sustainable fashion; and

WHEREAS, The Environmental Review Officer of Lassen County has determined that the action taken under this Resolution is exempt from the California Environmental Quality Act (Public Resources Code §21000, et seq.) ("CEQA") Under the Class 7 and Class 8, CEQA Guidelines Exemptions §§15307, 15308, and 15320 because the formation of a GSA, as provided for under state law, is meant to assure the maintenance, restoration, or enhancement of a natural resource and the regulatory process involves procedures for the protection of the environment.

NOW, THEREFORE BE IT RESOLVED AS FOLLOWS:

1. The foregoing recitals are true and correct.
2. The Board of Supervisors further finds that:
 - a. The Board of Supervisors hereby concurs with the Lassen County Environmental Review Officer that adoption of this Resolution is exempt from the California Environmental Quality Act under CEQA Guidelines Exemptions §§15307, 15308, and 15320. The Environmental Review Officer is hereby directed to file a Notice of Exemption with the Lassen County Clerk for the actions taken in this Resolution.
 - b. The proposed boundaries of the basin that the County intends to manage under the Sustainable Groundwater Management Act of 2014 shall be the entirety of the boundaries for the aforementioned groundwater basin, as set forth in California Department of Water Resources Bulletin 118 (updated in 2003), that lie within the County of Lassen; provided that the Board of Supervisors is authorized and directed to evaluate whether basin boundaries should be adjusted in a manner that will improve the likelihood of achieving sustainable groundwater management.
 - c. Lassen County hereby elects to become the groundwater sustainability agency, as defined at Section 10721 of the California Water Code, for all those portions of the Big Valley (Basin 5-004) Groundwater Basin located within Lassen County.
 - d. Within thirty days of the date of this Resolution, the Director of the Planning and Building Services Department is directed to provide notice of this election to the California Department of Water Resources in the manner required by law. Such notification shall include a map of the portion of the basin that the County intends to manage under the Sustainable Groundwater Management Act of 2014, a copy of this resolution, a list of interested parties developed pursuant to Section 10723.2 of the Act, and an explanation of how their interests will be considered in the development and operation of the groundwater sustainability agency and the development and implementation of the agency's groundwater sustainability plan.
 - e. The Director of the Planning and Building Services Department and legal counsel are hereby directed to promptly prepare a Memorandum of Understanding with Modoc County to collaboratively develop a groundwater sustainability plan for

the Big Valley (Basin 5-004) Groundwater Basin for Board consideration.

- f. The Director of the Planning and Building Services Department shall begin discussions with other local agencies in this basin in order to begin the process of developing a groundwater sustainability plan for the basin, in consultation and close coordination with other local agencies, as contemplated by the Act.
- g. The Director of the Planning and Building Services Department be directed to report back to the Board at least quarterly on the progress toward developing the groundwater sustainability plan.

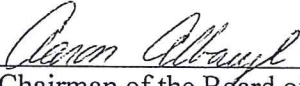
The foregoing resolution was adopted at a regular meeting of the Lassen County Board of Supervisors of the County of Lassen, State of California, held on the 14 th day of March, 2017 by the following vote:

AYES: Supervisors Gallagher, Teeter, Hemphill, Albaugh and Hammond

NOES: NONE

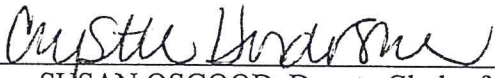
ABSTAIN: NONE

ABSENT: NONE



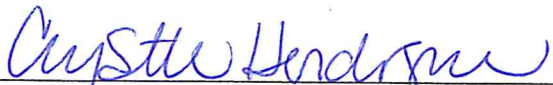
Chairman of the Board of Supervisors
County of Lassen, State of California

ATTEST:
JULIE BUSTAMANTE
Clerk of the Board

BY 

~~SUSAN OSGOOD~~, Deputy Clerk of the Board
Crystle Henderson

Crystle Henderson
I, ~~SUSAN OSGOOD~~, Deputy Clerk of the Board of the Board of Supervisors, County of Lassen, do hereby certify that the foregoing resolution was adopted by the said Board of Supervisors at a regular meeting thereof held on the 14 th day of March, 2017.



Deputy Clerk of the County of Lassen Board of Supervisors

RESOLUTION # 2017-09

**A RESOLUTION OF THE BOARD OF SUPERVISORS
OF THE COUNTY OF MODOC
ELECTING TO BE THE GROUNDWATER SUSTAINABILITY AGENCY FOR
PORTIONS OF THE BIG VALLEY GROUNDWATER BASIN
(BASIN NUMBER 5-004) WITHIN MODOC COUNTY**

WHEREAS, the Legislature has adopted, and the Governor has signed into law, Senate Bills 1168 and 1319 and Assembly Bill 1739, known collectively as the Sustainable Groundwater Management Act of 2014; and

WHEREAS, the Sustainable Groundwater Management Act of 2014 went into effect on January 1, 2015; and

WHEREAS, the Sustainable Groundwater Management Act of 2014 enables the State Water Resources Control Board to intervene in groundwater basins unless a local public agency or combination of local public agencies form a Groundwater Sustainability Agency or Agencies (GSA) by June 30, 2017; and

WHEREAS, retaining local jurisdiction over water management and land use is essential to sustainably manage groundwater and to the vitality of Modoc County's economy, communities, and environment, and

WHEREAS, any local public agency that has water supply, water management, or land use responsibilities within a groundwater basin may elect to be the Groundwater Sustainability Agency for that basin; and

WHEREAS, Modoc County is a public agency as defined by 10721 of the Water Code; and

WHEREAS, under Section 10723(a), the County is responsible for portions of the Big Valley Groundwater Basin as shown on the map hereto in "Exhibit A"; and

WHEREAS, the County overlies those portions of the Big Valley 5-004 located within Modoc County; and

WHEREAS, Section 10723.2 of the Sustainable Groundwater Management Act of 2014 requires that a GSA consider the interests of all beneficial uses and users of groundwater, as well as those responsible for implementing groundwater sustainability plans; and

WHEREAS, Section 10723.8 of the Sustainable Groundwater Management Act of 2014 requires that a local agency electing to be a GSA notify the Department of Water Resources of its election and its intent to undertake sustainable groundwater management within a basin; and

WHEREAS, the County held a public hearing on this date after publication of notice in the Modoc Record pursuant to Government Code section 6066 to consider adoption of this Resolution; and

WHEREAS, it would be in the public interest of the people of Modoc County for the County to become the groundwater sustainability agency for all those portions of the Big Valley 5-004 Groundwater Basin located within Modoc County; and

WHEREAS, the County and other local public agencies have a long history of coordination and cooperation on water management; and

WHEREAS, it is the intent of the County to work cooperatively with other local agencies and Counties to manage the aforementioned groundwater basins in a sustainable fashion;

NOW, THEREFORE, BE IT RESOLVED, that Modoc County hereby elects to become the Groundwater Sustainability Agency for all those portions of the Big Valley 5-004 Groundwater Basin located within Modoc County.

BE IT FURTHER RESOLVED that the proposed boundaries of the basin that the County intends to manage under the Sustainable Groundwater Management Act of 2014 shall be the entirety of the boundaries for the aforementioned basin, as set forth in California Department of Water Resources Bulletin 118 (updated in 2003), that lie within the County of Modoc; provided that the Board of Supervisors is authorized and directed to evaluate whether basin boundaries should be adjusted in a manner that will improve the likelihood of achieving sustainable groundwater management.

BE IT FURTHER RESOLVED that within thirty days of the date of this Resolution, the designated Staff Liaison to the Groundwater Resources Advisory Committee ("GRAC") is directed to provide notice of this election to the California Department of Water Resources in the manner required by law. Such notification shall include a map of the portion of the basin that the County intends to manage under the Sustainable Groundwater Management Act of 2014, a copy of this resolution, a list of interested parties developed pursuant to Section 10723.2 of the Act, and an explanation of how their interests will be considered in the development and operation of the groundwater sustainability agency and the development and implementation of the agency's groundwater sustainability plan.

BE IT FURTHER RESOLVED that the designated Staff Liaison to the GRAC and County Counsel are hereby directed to promptly prepare a Memorandum of Understanding with Lassen County to collaboratively develop a Groundwater Sustainability Plan for the Big Valley 5-04 Groundwater Basin for Board consideration.

BE IT FURTHER RESOLVED that the designated Staff Liaison to the GRAC shall begin discussions with other local agencies in this basin in order to begin the process of developing groundwater sustainability plans for the basin, in consultation and close coordination with other local agencies, as contemplated by the Act.

BE IT FURTHER RESOLVED that that the designated Staff Liaison to the GRAC or the Chairman of the GRAC be directed to report back to the Board at least quarterly on the progress toward developing the groundwater sustainability plans.

PASSED AND ADOPTED by the Board of Supervisors of the County of Modoc, State of California, on the 28th day of February, 2017 by the following vote:

Motion Approved:

RESULT: APPROVED [UNANIMOUS]

MOVER: David Allan, Supervisor District I

SECONDER: Patricia Cullins, Supervisor District II

AYES: David Allan, Supervisor District I, Patricia Cullins, Supervisor District II, Kathie Rhoads, Supervisor District III, Geri Byrne, Supervisor District V

ABSENT: Elizabeth Cavasso, Supervisor District IV

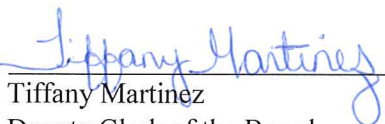


BOARD OF SUPERVISORS
OF THE COUNTY OF MODOC



Geri Byrne, Chair
Modoc County Board of Supervisors

ATTEST:



Tiffany Martinez
Deputy Clerk of the Board

Appendix C

MOU Establishing the Big Valley Advisory Committee

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

1. Background

The Sustainable Groundwater Management Act (SGMA) is codified as Part 2.74 of the California Water Code (Section 10720 et seq). The regulations adopted to enforce the provisions of the Act are found in Section 350 et seq, Division 2, Chapter 1.5, Subchapter 2 of Title 23 of the California Code of Regulations. The Sustainable Groundwater Management Act (SGMA) became effective January 1, 2015.

This memorandum of understanding pertains to the Big Valley Groundwater Basin (BVGB), which has been designated as a “medium priority” basin by the California Department of Water Resources (DWR). This designation as a medium priority basin requires preparation of a Groundwater Sustainability Plan (GSP) under the Act.

The SGMA was created to ensure groundwater basins throughout the state are managed to reliably meet the needs of all users, while mitigating changes in the quality and quantity of groundwater. The intent of the Act as described in section 10720.1 of the Water Code is to:

- Provide for the sustainable management of groundwater basins.
- Enhance local management of groundwater consistent with rights to use or store groundwater.
- Establish minimum standards for sustainable groundwater management.
- Provide local groundwater agencies with the authority and the technical and financial assistance necessary to sustainably manage groundwater.
- Avoid or minimize subsidence.
- Improve data collection and understanding about groundwater.
- Increase groundwater storage and remove impediments to recharge.
- Manage groundwater basins through the action of local governmental agencies to the greatest extent feasible, while minimizing state intervention to only when necessary to ensure that local agencies manage groundwater in a sustainable manner.

The role of the Groundwater Sustainability Agency (GSA) is to create a GSP and then to implement and enforce that plan. The plan must include measurable objectives that can be used to demonstrate the basin is sustainably managed within twenty (20) years of implementation.

2. Purpose

The purpose of this memorandum is to:

- a. Establish the Big Valley Groundwater Basin Advisory Committee (BVAC) and its responsibilities.
- b. Establish the membership of the BVAC.
- c. Describe how meetings of the BVAC will be conducted and how information, findings, conclusions, decisions, etc. of the BVAC will be conveyed to the Lassen County Groundwater Sustainability Agency (GSA) and to the Modoc County Groundwater Sustainability Agency (GSA).

3. Recitals

- a. In September 2014, the Governor signed into law a legislative package (three bills), collectively known as the Sustainable Groundwater Management Act (SGMA), which requires local agencies with land use and/or water management or water supply authority to do certain things to reach sustainability of medium and high priority groundwater basins as designated by the State of California Department of Water Resources (DWR). SGMA became effective on January 1, 2015.
- b. The Big Valley Groundwater Basin has been designated a medium priority basin by the DWR.
- c. This MOU is dedicated to the Big Valley Groundwater Basin, not any other basin in either Lassen or Modoc Counties.
- d. The Lassen and Modoc County Board of Supervisors have adopted resolutions (17-013 and 2017-09 respectively) declaring themselves to be the Groundwater Sustainability Agency (GSA) for the portion of the Big Valley Groundwater Basin within their respective jurisdictions.
- e. No other agency pursued GSA status and therefore Lassen and Modoc Counties were awarded exclusive GSA status by DWR for the portion of the Big Valley Groundwater Basin within their respective jurisdictions.
- f. GSAs are required to develop Groundwater Sustainability Plans (GSP) for all medium and high priority basins, and said GSP for the BVGB is to be submitted to the DWR by January 31, 2022.
- g. Absent a qualified planning process which produces a Groundwater Sustainability Plan, the State Water Resources Control Board (State Board) is authorized to declare that the subbasins are out of compliance and thereby they will intervene and place the subbasins on probation with regard to SGMA.
- h. Lassen County has been awarded a grant (Grant Number 4600012669) to provide funding for the preparation of a GSP for the BVGB.

- i. Lassen and Modoc Counties intend to work cooperatively in the preparation of a GSP for the BVGB and prepare one GSP that covers the entirety of the basin.
- j. Lassen and Modoc Counties see the value of stakeholder input into the development and implementation of a Groundwater Sustainability Plan for the Big Valley Groundwater Basin.
- k. It is the intent of this MOU to form an advisory committee that would advise both Lassen and Modoc Counties on the preparation of a GSP for the basin.

4. Goals of the BVAC are as follows:

- a. Work collaboratively and transparently with other members to identify common goals, foster mutual understanding, and develop a GSP that all members and their constituents can live with and support;
- b. Develop a common understanding of existing groundwater resources, including groundwater dependent habitats, public trust resources and the current and future needs of all beneficial uses and users in the Big Valley groundwater basin, as well as current and future water needs;
- c. Solicit and incorporate community and stakeholder interests into committee discussions and emerging committee agreements in order to develop a locally-informed and broadly supported GSP;
- d. Consider and integrate science, to the best of its ability and with support from qualified scientific consultants, during GSP development and implementation;
- e. Support implementation efforts guided by GSP goals to use, monitor, and manage water resources in a sustainable manner, ensure local control, address current and future local water needs, and support the agricultural economy, Adin, Bieber, Nubieber, Lookout, and outlying communities, tourist visitation and fish and wildlife habitat in the basin;
- f. Negotiate in good faith to achieve consensus on management of groundwater resources in the Big Valley groundwater basin into the future;
- g. Advise the Lassen and Modoc GSAs on the preparation of a Groundwater Sustainability Plan (GSP);
- h. Provide a forum for the public to comment during the preparation of the GSP;
- i. Provide recommendations to the Lassen and Modoc GSAs that would result in actions which have as minimal impact as possible on the residents of Big Valley groundwater basin;
- j. Advise the Lassen and Modoc GSAs on the preparation of a GSP to produce the lowest possible future costs to the residents of Big Valley; and
- k. Ensure local control of the Big Valley Groundwater Basin be maintained by the Lassen and Modoc GSAs.

As a standing committee of the Lassen and Modoc GSA's, the Advisory Committee will operate in compliance with the Ralph M. Brown Act (Brown Act). Committee meetings will be noticed and agendas posted according to the Brown Act. All meetings will be open to the public and allow public comment. Speakers will generally be limited to three minutes, but time may be adjusted based upon meeting circumstances. As needed, the Chair may place time limits on public comments to ensure that the committee is reasonably able to address all agenda items

during the course of a meeting. The Lassen GSA will announce committee meetings on its website and through its regular communication channels. Recommendations and advice from the committee will be presented to the Lassen and Modoc GSA's through their staff.

5. BVAC Membership Composition

1. One (1) member of the Lassen County Board of Supervisors selected by said Board.
2. One (1) alternate member of the Lassen County Board of Supervisors selected by said Board
3. One (1) member of the Modoc County Board of Supervisors selected by said Board.
4. One (1) alternate member of the Modoc County Board of Supervisors selected by said Board
5. Two (2) public members selected by the Lassen County Board of Supervisors. Said members must either reside or own property within the Lassen County portion of the Big Valley Groundwater Basin.
6. Two (2) public members selected by the Modoc County Board of Supervisors. Said members must either reside or own property within the Modoc County portion of the Big Valley Groundwater Basin.

Member vacancies

If a vacancy occurs, the respective GSA will select a new committee member. Applications or letter of intent for all members of the committee must be kept on file with the respective GSA. An appointing GSA must notify the other GSA in writing if a member of the BVAC has been replaced.

Committee Member Terms

- Committee members serve four (4) year terms starting from the date of their appointment. If any committee member decides, for any reason, to terminate his or her role, he/she will notify GSA staff as soon as possible after making such a determination. Committee members interested in serving beyond four (4) years must re-apply through the GSA's application process.
- The chair and vice-chair will serve one a (1) year term. At the culmination of the term of a chair or vice-chair, the committee will use its decision-making procedures to nominate and confirm a new chair and vice-chair. Any interested chair or vice chair may be nominated for a second term, however, no chair or vice-chair shall serve more than two (2) consecutive terms.

6. BVAC Roles and Responsibilities

This section describes roles and responsibilities that the Big Valley Advisory Committee Members commit to during development and implementation of the Big Valley groundwater basin GSP.

Convener

The Lassen and Modoc GSA's, are the final decision maker in the GSP process. The GSA's will:

- Provide guidance, evaluation and feedback that directs GSA staff and Advisory Committee members to build and implement an effective GSP;

- Work collaboratively with GSA staff, Advisory Committee members, consultants, and constituents;
- Receive, evaluate, and decide on all GSP and SGMA related actions that come in the form of advice and recommendations from the Big Valley Advisory Committee;
- Welcome feedback that pertains to the GSP from all diverse stakeholder interests in each groundwater basin; and
- Serve as a representative for the basin, making decisions in the best interest of achieving and maintaining long-term groundwater sustainability for all beneficial uses and users of water in the basin.

Advisory Committee Members

Members of the Advisory Committee (“members”) collectively represent the diversity of beneficial groundwater uses and users in the Big Valley groundwater basin. Committee members commit to:

- Serve as strong, effective advocates and educators for the interest group (constituency) represented;
- Nominate and confirm a committee chair and vice chair every year;
- Arrive at each meeting fully prepared to discuss all agenda items and relevant issues. Preparation may include, but is not limited to, reviewing previous meeting summaries, draft and final GSP chapters, and other information distributed in advance of each meeting;
- Develop an innovative problem-solving approach in which the interests and viewpoints of all members are considered;
- Explore all options to resolve disagreements, including, as needed, one-on-one discussions with GSA staff, or, at Advisory Committee meetings, interest-based caucuses or small group discussions;
- Act as liaisons throughout the GSP development and implementation process to educate, inform and solicit input from the wider local community and interested constituencies not represented on the committee;
- Present constituent views on the issues being discussed and commit to engage in civil, respectful and constructive dialogue with other members, as well as GSA staff, technical team members and potentially a facilitator;
- Ensure accuracy of information dissemination during or outside meetings, and correct false information as needed or appropriate;
- Avoid representing individual viewpoints as those of the committee and respect confidential conversations;
- Work collaboratively to ensure broad constituent understanding and support for any advice and recommendations that the committee shares with the Lassen and Modoc GSA Boards;
- Coordinate with Lassen and Modoc GSA staff regarding recommendations for any additional committee tasks that should be undertaken by the committee, and which items shall be presented to the GSA Boards for its review and approval;
- Operate at all times in compliance with the Brown Act;
- Attend meetings consistently – participation in 75% of the meetings is the minimum expectation. *(Given the volume of information to be considered and discussed, it is*

essential that members actively participate in committee meetings on a consistent basis. It is understood that professional and personal commitments may at times prevent members from attending committee meetings. In such cases, members shall notify Lassen GSA staff no less than 24 hours in advance to be excused from attending any given committee meeting. As needed, staff will reach out to members who are not actively participating to give them the opportunity to explain their absence and reaffirm their interest to participate on the committee, and thus not lose their seat. Members who do not meet the threshold for active participation, and have not expressed an interest to continue participating, will, at the recommendation of Lassen and Modoc GSA staff, be automatically removed by the appropriate GSA Board from the committee. Alternates may attend in the absence of a committee member but must alert the Lassen and Modoc GSA staff prior to the meeting.); and

- Recuse him/herself from discussion and voting if he/she has a personal interest or stake in the outcome [BVAC members are subject to recusal due to conflicts of interest (as that term is defined by the Political Reform Act) in accordance with *Government Code Title 9, Political Reform; Chapter 7, Conflicts of Interest*].

Through its public meetings, the committee shall serve as an additional forum for public dialogue on SGMA and GSP development. Finally, with approval by the Lassen and Modoc GSA's, committee tasks may be amended, repealed, or additionally added at any time with the intent to comply with SGMA related activities provided said activities comply under the authorities granted by SGMA law. Alternates may vote on all matters before the BVAC in the absence of the appointed member. Each alternate shall be informed of the business of the BVAC and the actions to be taken when acting on behalf of a member.

The following are desired attributes for BVAC members:

- a. Have knowledge and experience in water resources management.
- b. Represent an agency, organization, tribe, academia, or interest that is under-represented in the region (e.g., disadvantaged communities or unincorporated areas).
- c. Have the ability and desire to objectively articulate the perspective of his/her BVAC seat and caucus at a level beyond that of his/her individual interest.
- d. Provide recommendations with the best interests of the entire Big Valley region in mind.

7. Appointment

Members of the BVAC shall be appointed by the respective Board of Supervisors acting as the GSA. Members will serve at the pleasure of said Boards and may be terminated at any time without cause. Persons interested in serving on the BVAC shall submit a letter of interest or application to the pertinent Clerk of the Board of Supervisors which includes the following:

- a. Current level of SGMA knowledge;
- b. Knowledge of groundwater in the Big Valley Groundwater Basin;
- c. Their ability to commit to attending meetings of the Advisory Committee
- d. Committee members should have demonstrated ability to work collaboratively with others of differing viewpoints and achieve good faith compromise.

8. BVAC Chair and Vice Chair Roles

The BVAC Chair and Vice Chair must be BVAC members. The Chair and Vice Chair will be determined by a majority vote of the BVAC. The Chair and Vice Chair shall serve for one (1) year term (multiple terms may be held, not to exceed two (2) years).

Although not required, the following attributes are desirable for the Chair and Vice Chair:

- Chair: prior experience working in the role of a Chair of a committee.
- Vice Chair: attributes and ability to assume Chair role and responsibilities, but not necessarily as much experience as the Chair.
- Chair and Vice Chair should come from different GSAs.
- Familiar with the purpose, structure, and content of meetings.
- Willing and able to attend each BVAC meeting until the GSP is drafted. The GSP must be submitted to the DWR by January 31, 2022.
- Ability to even-handedly articulate all interests.
- Consensus-builder.

The role of the Chair and Vice Chair will vary between BVAC meetings; however, the Vice Chair's primary role is to take on Chair responsibilities in the absence of the Chair and/or at the discretion of the Chair. General responsibilities for the Chair are as follows:

- a. Review BVAC agenda prior to finalization and distribution to stakeholders (one week prior to BVAC meetings);
- b. Meet with staff prior to each BVAC meeting to go over the BVAC agenda and presentation(s) so that the BVAC meeting runs smoothly and without interruption;
- c. Manage the BVAC agenda, select members to speak in turn, and keep the BVAC on task and on time;
- d. Convene each BVAC meeting and initiate introductions;
- e. Organize and call on public speakers during appropriate agenda items (if applicable) and determine public comment procedures;
- f. Identify when the BVAC has reached an impasse and needs to move forward with formal voting to resolve an issue;
- g. Summarize key decisions and action items at the end of each BVAC meeting.
- h. Close meetings;
- i. Ensure that notes are prepared summarizing discussion, agreements, and decisions; and
- j. Review and provide comments on BVAC meeting notes.

9. Meetings

Meetings will be conducted on a monthly basis or as often as is needed during preparation of the Big Valley Groundwater Basin GSP. Meetings shall be noticed in accordance with the Brown Act. The Lassen County Department of Planning and Building Services will coordinate Brown Act noticing and any other noticing that is executed. The Lassen County Department of Planning and Building Services will prepare and disseminate packets in advance of all meetings, if applicable. Said Department shall serve as staff to the BVAC, and be the repository of all associated records, with a copy of all records sent to the Modoc County Clerk of the Board. The

Director of the Lassen County Planning and Building Services Department or his or her designee shall serve as secretary of the BVAC and may comment on any item but does not have a vote. The designated Modoc County GSA groundwater staff member may comment on any item but does not have a vote. Legal counsel shall be provided by the Modoc County Counsel.

Meetings shall be conducted in accordance with this MOU, SGMA and any other applicable rules or regulations. A quorum is required to convene. The BVAC Chair or Vice Chair will determine if a quorum exists at any BVAC meeting. Formal voting may not occur without a quorum of BVAC members; however, presentations and discussion of agenda topics may occur. A quorum shall be defined as having at least four BVAC representatives, present at every meeting.

Meeting Location

All meetings of the Big Valley Groundwater Advisory Committee must be held within the boundary of the Big Valley Groundwater basin. Lassen GSA staff will work collaboratively with the Chair to determine a location which will encourage the most participation from all stakeholders. Meeting locations shall remain consistent to prevent reduced participation from all stakeholders.

10. Public Comments at BVAC Meetings

BVAC meetings are open to the public, and public comments are welcomed and encouraged. To ensure that members of the public have an adequate chance to provide comments, the BVAC Chair will invite public comments by members of the public in attendance on any agenda item in which the BVAC is making a decision or formulating a recommendation. An open public comment period will be offered at the end of BVAC meetings to allow members of the public to speak to non-agenda topics.

If there is substantial public interest or comment on a topic, the BVAC Chair or Vice Chair may implement the following procedures to ensure that such comments are received in a timely manner:

- Members of the public will be asked to fill out a speaker card to indicate their name, affiliation, contact, and the specific agenda item they wish to speak to (if applicable).
- Speaker cards will be limited to one per person per agenda item. Participants may submit multiple speaker cards to address multiple agenda items.
- The BVAC Chair or Vice Chair will invite those who submitted speaker cards to address the agenda item prior to calling for a consensus decision and/or vote on that item.
- Speaker cards will generally allow three minutes of public speaking time per speaker. However, in the event that there are a large number of public speaker comments, it will be up to the discretion of the BVAC Chair or Vice Chair to reduce the time for each public speaker to ensure that all agenda items are addressed and that the BVAC meeting closes on time.

11. Decision-making Procedures

In order to hold a meeting and conduct its work, a quorum of the Big Valley GSA Advisory Committee must be present.

- 1) **Consensus as the Fundamental Principle:** The advisory committee shall strive for consensus (agreement among all participants) in all of its decision-making. Working toward consensus is a fundamental principle which will guide group efforts, particularly when crafting any draft or final advisory committee proposals, reports or recommendations for GSA Boards consideration. If the committee is unable to reach consensus, the range of opinions provided, including areas of agreement and disagreement, will be documented in meeting summaries or otherwise communicated in written reports when advisory committee work is shared with the GSA Boards.
- 2) **Definition of Consensus:** Consensus means all committee members either fully support or can live with a particular decision and believe that their constituents can as well. In reaching consensus, some committee members may strongly endorse a particular proposal, report or recommendation while others may simply accept it as "workable." Others may only be able to "live with it" as less than desired but still acceptable. Still others may choose to "stand aside" by verbally noting disagreement, yet allowing the group to reach consensus without them, or by abstaining altogether. Any of these actions constitutes consensus.
- 3) **Types of Decision-Making:**
 - a. Administrative: Decisions about the daily administrative activities of the committee—including, but not limited to meeting logistics, meeting dates and times, agenda revisions and schedules. *Administrative decisions* will typically be put forward to the group by Lassen County Department of Planning and Building Services staff. As needed, staff will consult with the committee. Any administrative decisions by the committee will be made on a simple majority vote of all members present at a meeting. The committee will defer to the decision-making procedures outlined in this section of the MOU in circumstances where it is unclear if a committee decision is *administrative* in nature, or represents a more substantive *GSP/SGMA* decision (described below).
 - b. Groundwater Sustainability Planning/SGMA Advice and Recommendations: Advice and recommendations about the Big Valley GSP—including but not limited to topics mandated by SGMA and other groundwater related topics that the committee chooses to address. All *GSP/SGMA advice and recommendation decisions* will be made by the decision-making procedures outlined in this section of the MOU.
- 4) **Consensus with Accountability:** Consensus seeking efforts recognize that a convened group such as Big Valley Advisory Committee makes recommendations, but is not a formal decision-making body like the Lassen or Modoc GSA's. That said, achieving consensus is the goal, as this allows all stakeholder interests represented on the committee to communicate a unified group perspective to the GSA Boards as it considers public policy decisions and actions which may affect the constituencies that members represent, and the wider community. Using a model of consensus with accountability, all committee members shall commit to two principles:
 - a. All members are expected to routinely express their interests and analyze conditions to ensure they have clarity on how their interests and those of others may shift over time;

- b. All members shall negotiate agreements in a manner that serves their interests, and offers either neutral impact to others, or ideally provides benefit to others' interests as well as their own.

Operating by consensus with accountability will encourage multi-interest solutions based on shared member interests. Such solutions are in turn more sustainable and durable as they represent shared agreements rather than majority/minority dynamics. Most consensus building during the course of GSP development and SGMA implementation will be based on verbal dialogue, deliberation and iterative development of group ideas. The Chair may commonly ask, when it appears consensus or near consensus agreement has emerged or is emerging, if any member cannot live with said agreement. For any final decisions, committee members will demonstrate consensus, or lack thereof, in the following manner:

<i>Nay:</i>	<i>I do not support the proposal.</i>
<i>Aye:</i>	<i>I support the proposal.</i>
<i>Stand Aside:</i>	<i>Member verbally notes he/she is willing to stand aside and allow group consensus</i>
<i>Abstention:</i>	<i>At times, a pending decision may be infeasible for a participant to weigh in on. Member verbally notes he/she abstains. Abstentions do not prevent group consensus.</i>

Any member that stands aside or abstains from a decision is encouraged to explain why his/her choice is in his/her best interest.

- 5) **Less than 100% Consensus Decision Making:** The advisory committee is consensus seeking but shall not limit itself to strict consensus if 100% agreement among all participants cannot be reached after all interests and options have been thoroughly identified, explored and discussed. Less-than-consensus decision-making shall not be undertaken lightly. If the committee cannot come to 100% agreement, it could set aside the particular issue while it continues work on other issues, then revisit the disagreement later in the process. Finally, the committee recognizes that certain deadlines must be met during the collaborative process to ensure completion of all SGMA opportunities and requirements on time.

If, after thoroughly exploring all ideas and options, consensus is absent or otherwise not forthcoming, the committee, with assistance from the GSA staff, will clearly document majority and minority viewpoints. The Chair and Vice-Chair will then work with GSA staff to incorporate all viewpoints into the meeting summary, and, as warranted, prepare a committee report to the GSA Boards. The chair, in coordination with GSA staff, will then present the report to the GSA Boards, ensuring that all majority and minority viewpoints are clearly communicated and accurately represent the outcomes of committee discussions. Any committee member holding minority viewpoints will have the opportunity, if he/she is not comfortable with the process, to present his/her viewpoints directly to the GSA Boards at the

time the report is presented. Members wishing to do this will express their interest and minority viewpoints with GSA staff in advance of said GSA Board meetings.

- 6) **Decision Outcomes:** Advisory committee decisions will be made at appropriate meetings and, in accordance with the Brown Act, will be publicly noticed in advance and shared via the Lassen County GSA's website and SGMA interested parties email list. As described above, all committee proposals, reports and recommendations will reflect the outcomes of collaborative member discussions. All consensus agreements and other negotiated outcomes during GSP development and implementation, as well as discussion outcomes when consensus is not forthcoming, will be documented, as described above, and shared with the GSA Boards.

12. Collaborative Process Agreements and Meeting Ground Rules

Members commit to the following process agreements during discussion, deliberation and attempts to find consensus-based solutions to sustainable groundwater management in the Big Valley groundwater basin. Moreover, members also agree to abide by meeting ground rules in order to intentionally and consistently engage each other in civil and constructive dialogue during the collaborative process.

Process Agreements

- **Strive to focus on interests versus positions.** A focus on interests instead of positions will help reveal the needs, hopes or concerns behind any member's words. By extension this can help identify shared interests among committee members and, based on those shared interests, multiple options for mutually beneficial agreements.
- **Foster mutual understanding and attempt to address the interests and concerns of all participants.** For the collaborative process to be successful, all members must seek to understand the interests and concerns of other members, then strive to reach agreements that take all member interests under consideration.
- **Inform, educate and seek input from community constituents.** To the extent possible, members will share information and solicit input from their constituents, scientific advisors, and others about ongoing committee discussions and potential agreements or recommendations as they emerge.
- **View challenges as problems to be solved rather than battles to be won.** Challenges will at times arise during discussion of issues. Remember to focus on the challenge versus on each other. Search for multi-interest solutions, rather than win/lose agreements.
- **Be creative and innovative problem solvers.** Creative thinking and problem solving are essential to success in any collaboration. Get beyond the past, climb out of the perceived "box" and attempt to think about the problem, and potential solutions, in new ways.
- **Negotiate in good faith.** All members agree to candidly and honestly participate in decision making, to act in good faith in all aspects of this effort, and to communicate their interests in

group meetings. Good faith also requires that parties not make commitments for which they cannot or do not intend to honor.

- **Consider the long-term view.** SGMA requires submission and approval of a Big Valley GSP by January 31st, 2022. Taking a long-term view of the planning horizon, may help inform collaborative discussions, reduce conflict and thereby ensure long-term sustainability of groundwater resources.

Ground rules

- **Use common conversational courtesy and treat each other with respect.** Civil and respectful dialogue tends to foster a constructive, thorough and solutions-oriented environment within multi-stakeholder groups.
- **Remember that all ideas and points of view linked to the committee's charge have value.** All ideas have value in this setting. Simply listen, you do not have to agree. If you hear something you do not agree with or you think is silly or wrong, please remember that a fundamental purpose of this forum is to encourage diverse ideas.
- **Be candid, listen actively and seek to understand others.** This promotes genuine dialogue and mutual understanding. Mutual understanding in turn helps parties identify shared interests. Shared interests set the foundation to finding and developing mutually acceptable agreements.
- **Be concise and share the air.** Keep in mind that time is limited at meetings. Be concise when sharing your perspective so that all members can participate in the discussion. And remember, people's time is precious, treat it with respect.
- **Avoid editorial comments.** At times it will be tempting to try and interpret the intentions or motivations of others. Please avoid this temptation and instead speak to your own interests and the motivation behind them.
- **Stay focused on the meeting agenda.** The committee is a Brown Act compliant body. As such it is important to stay focused on the posted agenda for any given meeting.
- **Welcome levity and humor to the discussions.** Work around water can at times be daunting and filled with challenges. Levity and humor is both welcome and helpful at times, as long as it does not come at the expense of others.
- **Turn cell phones off or to vibrate.** Help the group avoid distractions by turning cell phones to vibrate, not checking email during meetings and, if you must take a call, taking it outside the room.

13. Communications/Media Relations

Members are asked to speak only for themselves or the constituency they represent when asked by external parties, including the media, about the committee's work, unless there has been a formal adoption of a statement, report or recommendations by the committee. Members will refer media inquiries to GSA staff while also having the freedom to express their own opinions to the

media. Members should inform media and external parties that they only speak for themselves and do not represent other members or the committee as a whole. The temptation to discuss someone else's statements or positions should be avoided.

14. Indemnification/Defense

Claims Arising from Acts or Omissions.

No GSA, nor any officer or employee of a GSA, shall be responsible for any damage or liability occurring by reason of anything done or omitted to be done by another GSA under or in connection with this MOU. The GSA's further agree, pursuant to California Government Code section 895.4, that each GSA shall fully indemnify and hold harmless each other GSA and its agents, officers, employees and contractors from and against all claims, damages, losses, judgements, liabilities, expenses, and other costs, including litigation costs and attorney fees, arising out of, resulting from, or in connection with any work delegated to or action taken or omitted to be taken by such GSA under this MOU.

15. Litigation

In the event that any lawsuit is brought by a third party against any Party based upon or arising out of the terms of this MOU, the Parties shall cooperate in the defense of the action. Each Party shall bear its own legal costs associated with such litigation.

16. Books and Records

Each Governing Body will be entitled to receive copies of documents, records, historical data, data compiled through consultants and any and all information related to groundwater within the Big Valley Groundwater basin developed pursuant to this MOU; provided that nothing in this paragraph shall be construed to operate as a waiver of any right to assert any privilege that might apply to protect the disclosure to information or materials subject to the attorney-client privilege, attorney work product privilege, or other applicable privilege or exception to disclosure.

17. Miscellaneous

A. Term of Agreement.

This MOU shall remain in full force and effect until the date upon which all Parties have executed a document terminating the provisions of this MOU.

B. No Third-Party Beneficiaries.

This MOU is not intended and will not be construed to confer a benefit or create any right on any third party, or the power or right to bring an action to implement any of its terms.

C. Amendments.

This MOU may be amended only by written instrument duly signed and executed by all Parties.

D. Compliance with Law.

In performing their respective obligations under this MOU, the Parties shall comply with and conform to all applicable laws, rules, regulations and ordinances.

E. Construction of Agreement.

This MOU shall be construed and enforced in accordance with the laws of the United States and the State of California.

18. All notice required by this MOU will be deemed to have been given when made in writing and delivered or mailed to the respective representatives of the Parties at their respective addresses as follows:

For the County of Modoc:
Clerk of the Board
204 South Court Street
Alturas, CA 96101

For the County of Lassen:
Lassen County Planning and Building Services
707 Nevada Street, Suite 5
Susanville, CA 96130

19. Signature

The parties hereto have executed this Memorandum of Understanding as of the dates shown below.

The effective date of this MOU is the latest signature date affixed to this page. This MOU may be executed in multiple originals or counterparts. A complete original of this MOU shall be maintained in the records of each of the parties.

COUNTY OF LASSEN

By: _____ Date: _____
Chairman, Lassen County Board of Supervisors

ATTEST:

By: _____ Date: _____
Clerk of the Board

APPROVED AS TO FORM:

Lassen County Counsel

COUNTY OF MODOC

By: *Scottie Rhoads* Date: MAY 21 2019
Chairman, Modoc County Board of Supervisors

ATTEST:

By: *Tiffany A. Martinez* Date: MAY 21 2019
Clerk of the Board

APPROVED AS TO FORM:

[Signature] Date: MAY 23 2019
Modoc County Counsel

Big Valley GSP Comment Matrix

Document	Page & Line Number	Comment	Date	Response
Public Draft Chapters 1 and 2	Section 1.2, line 23	Prove description of Lassen County Basin. DWR boundary definitions and the GSP need to be more specific.	3/4/2020	The boundaries of the basin are established by DWR in their Bulletin 118 for SGMA. A basin boundary modification process is allowed under SGMA and can be investigated, but is outside the scope of writing the GSP. A background section has been added to Chap 1 that describes the County's request for basin boundary modification that was denied by DWR.
Public Draft Chapters 1 and 2	Section 1.3	DWR prioritization criteria are subjective. Groundwater irrigated acres need to be differentiated from surface water irrigation. DWR doesn't respond to questions.	3/4/2020	A section was added describing the basin prioritization process and the interaction between the counties and DWR regarding the ranking. DWR's dataset that they used to determine irrigated acres is documented on their website. The acreage irrigated by groundwater will be evaluated in Chapter 6: Water Budget. The extent of lowering groundwater levels in the basin will be evaluated in Chapter 5: Groundwater Conditions. DWR's lack of responsiveness to questions is noted.
Public Draft Chapters 1 and 2	Chap 2 Line 61	Add that GSA was established because we have to, it is not voluntary	3/4/2020	A Background section was added describing the basin prioritization, basin boundary modification request, and correspondence between the counties and DWR. The overarching message of this new text is to document that the counties did not start this process willingly. Wording was changed in Chap 2 to add the word "mandate" when referring to SGMA to emphasize that compliance with this law is not voluntary.
Public Draft Chapters 1 and 2	Page #: 1.1, Line #: 6,7,&8	1.1 Lines 6,7,&8 Should state in the body with verbiage of the fact that the Stake Holders" contested DWR findings and protested the priority ranking.1.3 Line 54 graphWhat is it? Where do these numbers come from?I also think that we should refer to the land owners with wells effected by the basin should be referred to as "Stake Holders"	3/5/2020	A background section has been added to Chap 1 that describes the prioritization and the Counties' responses. DWR provides some of the data it used for prioritization on its website, at the URL shown on Line 53. Use of the term "stakeholders" will be defined and used in future chapters.

Big Valley GSP Comment Matrix

Document	Page & Line Number	Comment	Date	Response
Public Draft Chapters 1 and 2	Page #: 1-2, Line #: 42	I would like to recommend that the description of the boundary of the Big Valley Basin be amended to include the water delivery sources which feed into the water table of the valley. These water sources are varied and include a number of perennial and ephemeral drainages, springs and reservoirs. For example:North: Halls Canyon Creek, Howell Canyon Creek, Fox Draw, Hayes Canyon and seventeen (17) Unnamed ephemeral drainages along Barber and Ryan Ridges.East: Ash Creek, Butte Creek and seven (7) Unnamed Ephemeral drainages.South: Willow Creek, Juniper Creek, Juniper Creek " South Fork, Hot Springs Slough, Gobel Slough, Big Valley Canal and twenty (20) Unnamed ephemeral drainages.West: Taylor Reservoir, Kramer Reservoir, Lower Roberts Reservoir, Taylor Creek, Widow Valley Creek, Bull Run Slough, Egg Lake Slough and fifteen (15) Unnamed ephemeral drainages.My reasoning for this recommendation to include these delivery systems is due to the topographic gradients that assist in the recharging of the Big Valley Basin groundwater. The Pit River itself offers limited influence on recharging groundwater levels to the West and southwest areas of the basin. It offers very little to no influence to the north, east and southern areas. The elevation gradient in the basin varies approximately from 4450 feet in the east to 4160 feet in the west a drop of a few hundred feet. These areas are vital to not only modeling the water budget for the Basin, but provide potential areas for remediation projects. It will make it easier for project planning in the future since we will not have to go through amending the original boundaries at a later date.Although DWR Bulletin 118 determines the boundary based on alluvial deposits, the basin does not exist in an environmental vacuum and is dependent upon all of its water delivery systems.	3/8/2020	A background section has been added to Chap 1 that, in part, describes Lassen County's request for a basin boundary modification that was denied by DWR in 2016. DWR will again accept requests for basin boundary modifications in 2023. The current GSP will need to honor the currently established basin boundary. With that said, the GSP will acknowledge the importance of areas outside the basin on recharge. Projects and management actions described in the Plan are not restricted to being inside the groundwater basin.

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Appendices

None

Abbreviations and Acronyms

Basin	Big Valley Groundwater Basin
bgs	below ground surface
BVGB	Big Valley Groundwater Basin
BVAC	Big Valley Groundwater Basin Advisory Committee
BVWUA	Big Valley Water Users Association
CASGEM	California Statewide Groundwater Elevation Monitoring
CCR	California Code of Regulations
CDP	Census Designated Place
CEDEN	California Environmental Data Exchange Network
CIMIS	California Irrigation Management Information System

CWC	California Water Code
DDW	Division of Drinking Water, State Water Resources Control Board
DWR	Department of Water Resources
ET _o	Evapotranspiration
°F	degrees Fahrenheit
ft	feet
GAMA	Groundwater Ambient Monitoring and Assessment Program
GP	General Plan
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IRWMP	Integrated Regional Water Management Plan
LMFCWCD	Lassen-Modoc Flood Control and Water Conservation District
MCL	Maximum Contaminant Level
MOU	Memorandum of Understanding
NASA	National Aeronautics and Space Administration
NCNRCDC	North Cal-Neva Resource Conservation and Development Council
NOAA	National Oceanic and Atmospheric Administration
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
SWRCB	California State Water Resources Control Board
SWQL	Secondary Water Quality Limits
UPIRWMP	Upper Pit Integrated Regional Water Management Plan
USGS	United States Geologic Survey
SWRCB	State Water Resources Control Board
WQCP	Water Quality Control Plan

3. Description of Plan Area (§ 354.8)

3.1 Area of the Plan

This GSP covers the Big Valley Groundwater Basin (BVGB or Basin), which is located within Modoc and Lassen Counties and is approximately 92,000 acres (144 square miles). The Basin is a broad, flat plain extending about 13 miles north to south and 15 miles east to west and consists of depressed fault blocks surrounded by tilted fault-block ridges. The BVGB is designated as basin number 5-004 by DWR and was most recently described in the 2003 update of Bulletin 118 (DWR 2003):

“The basin is bounded to the north and south by Pleistocene and Pliocene basalt and Tertiary pyroclastic rocks of the Turner Creek Formation, to the west by Tertiary rocks of the Big Valley Mountain volcanic series, and to the east by the Turner Creek Formation.

The Pit River enters the Basin from the north and exits at the southernmost tip of the valley through a narrow canyon gorge. Ash Creek flows into the valley from Round Valley and disperse into Big Swamp. Near its confluence with the Pit River, Ash Creek reforms as a tributary at the western edge of Big Swamp. Annual precipitation ranges from 13- to 17-inches.”

Communities in the Basin are Nubieber, Bieber, Lookout, and Adin which are categorized as census-designated places (CDPs). Highway 299 is the most significant east to west highway in the Basin, with Highway 139 at the eastern border of the Basin. **Figure 3-1** shows the extent of the GSP area (the BVGB) as well as the significant water bodies, communities, and highways.

Lassen and Modoc Counties were established as the exclusive Groundwater Sustainability Agencies (GSAs) for their respective portions of the Basin in 2017. **Figure 3-1** shows the two GSAs within the Basin, which is separated from the nearest basin (Round Valley [5-036], a very low-priority basin to the northeast) by Barber Ridge and a half-mile gap where Ash Creek enters the Basin. The Ash Creek State Wildlife Area occupies 14,400 acres in the center of Big Valley.

3.2 Adjudicated Areas

An alternative to a GSP was not submitted. No areas exist in the basin where groundwater is adjudicated. Therefore, this GSP does not include a map or description for adjudicated or alternative areas.

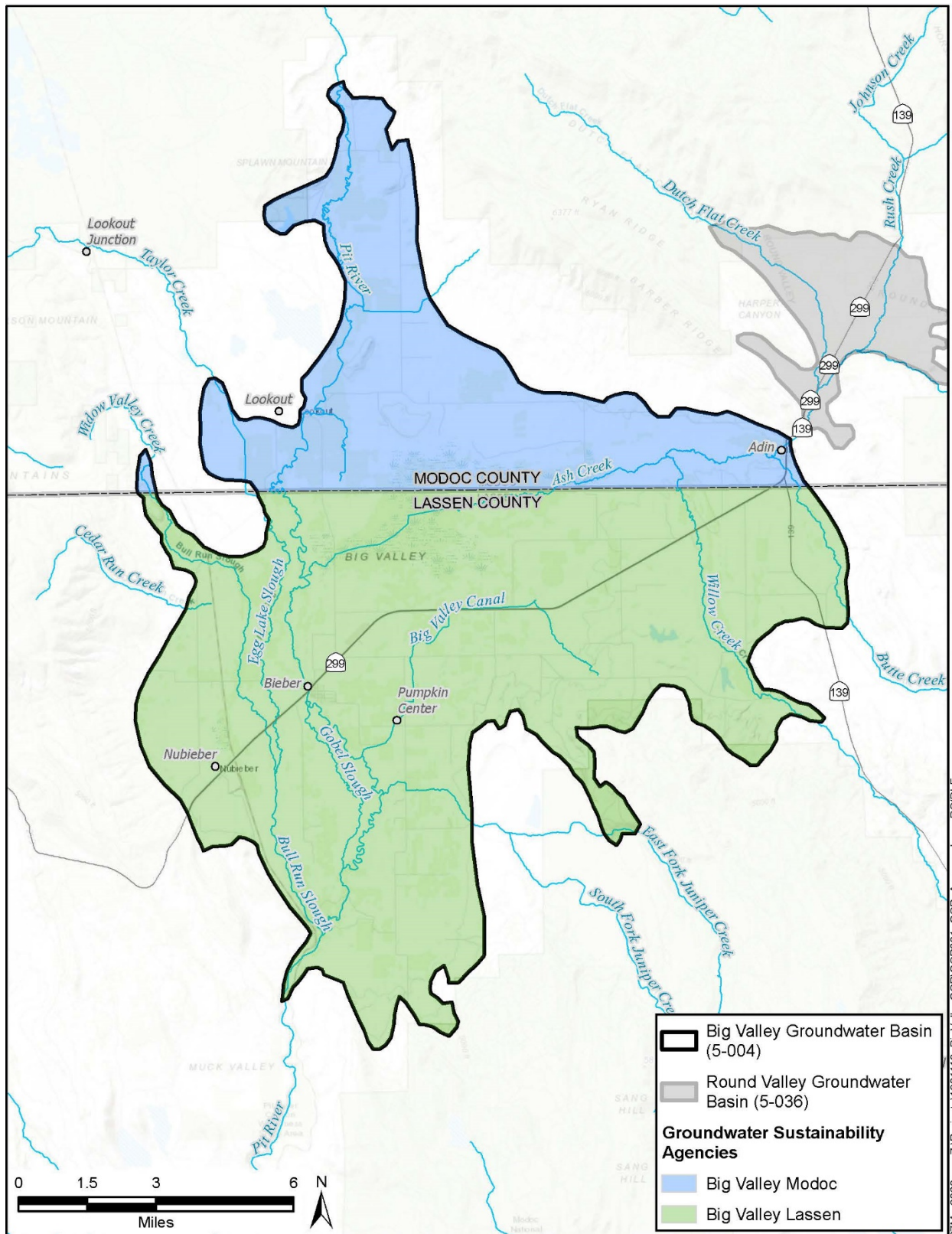


Figure 3-1 Area Covered by the GSP

3.3 Jurisdictional Areas

In addition to the GSAs, several other agencies have water management authority or planning responsibilities in the Basin, as discussed below. A map of the jurisdictional extent of the County and Special Districts within the Basin is shown on **Figure 3-2**.

3.3.1 Federal Jurisdictions

The United States Bureau of Land Management as well as the United States Forest Service owns/manages land within the Basin, including Modoc National Forest. The Forest Service Ranger Station in Adin is a public water supplier with a groundwater well (Water System No. CA2500547).

3.3.2 State Jurisdictions

The California Department of Fish and Wildlife owns and operates the Ash Creek Wildlife Area, including conservation easements, shown on **Figure 3-2**. The Basin is located within the jurisdiction of the Central Valley Regional Water Quality Control Board (Region 5).

3.3.3 Tribal Jurisdiction

The Bureau of Indian Affairs Land Area Representations database identifies one tribal property in the BVGB. The Lookout Rancheria, labeled on **Figure 3-2**, is associated with the Pit River Tribe. The other tribal lands shown on **Figure 3-2** are “public domain allotments,” or lands held in trust for the exclusive use of individual tribal members. (DWR 2020)

3.3.4 County Jurisdictions

The County of Modoc and the County of Lassen have jurisdiction over the land within the Basin in their respective counties as shown on **Figure 3-1**.

3.3.5 Local Jurisdictions

Adin, Bieber, and Nubieber are census-designated places with boundaries shown on **Figure 3-2**. Lookout is primarily located just outside of the the Basin boundary on the northwest side, but does extend into the Basin. Lassen County Waterworks District #1 provides water and sewer services to Bieber. Adin Community Services District provides wastewater services to Adin.

3.3.6 Special Districts

Cemeteries

There are several cemeteries in the Big Valley Groundwater Basin as shown on **Figure 3-2**. The Lookout Cemetery and the Adin Cemetery are Special Districts in Modoc County. Mountain View Cemetery in Bieber and Hillside Cemetery west of Nubieber are owned by Lassen County.

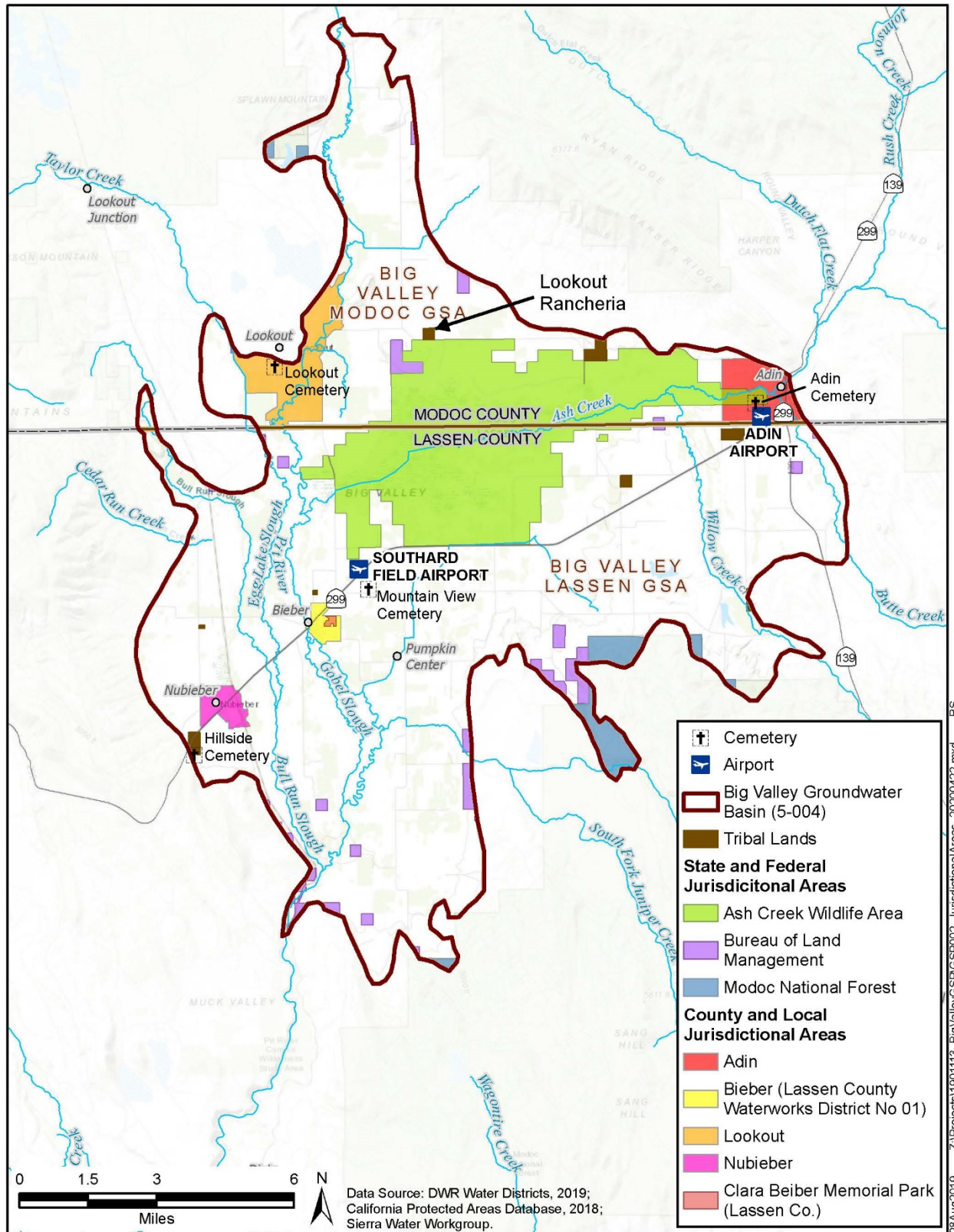


Figure 3-2 Jurisdictional Areas

3.3.7 Other

Airports

The Basin has two airports: the Bieber Airport (aka Southard Field) (O55) in Bieber and the Adin Airport (A26) in Adin, owned by Lassen and Modoc Counties, respectively.

Lassen-Modoc County Flood Control and Water Conservation District

The Lassen-Modoc County Flood Control and Water Conservation District (LMFCWCD or District) was established in 1959 by the California Legislature and was activated in 1960 by the Lassen County Board of Supervisors (LAFCo, 2018). The District covers all of the Lassen County portion of the Basin and a significant portion of the Modoc County portion, extending from the common boundary northward beyond Canby and Alturas. In 1965, the District established Zone 2 in a nearly 1000-square mile area surrounding Big Valley and, in 1994, established Zone 2A for “groundwater management including the exploration of the feasibility of replenishing, augmenting, and preventing interference with or depletion of the subterranean supply of waters used or useful or of common benefit to the lands within the zone.” During 2018, the management activities included biannual monitoring of water levels in wells and groundwater use as determined by 85 flow meters, which are replaced as needed.

Upper Pit Integrated Regional Water Management Plan

Big Valley lies within the area of the Upper Pit Integrated Regional Water Management Plan (UPIRWMP), which was developed by the Regional Water Management Group (RWMG). The UPIRWMP is managed by the North Cal-Neva Resource Conservation and Development Council (NCNRCD) who is a member of the RWMG along with 27 other stakeholders, including community organizations; environmental stewards; water purveyors; numerous local, county, state, and federal agencies; industry; the University of California; and the Pit River Tribe. The UPIRWMP addresses a three-million-acre watershed across four counties in northeastern California. The BVGB is located near the center of this area and comprises about three percent (92,000 acres) of the watershed.

The UPIRWMP was established under the Integrated Regional Water Management Act (Senate Bill 1672) which was passed in 2002 to foster local management of water supplies to improve reliability, quantity and quality, and to enhance environmental stewardship. Several propositions were subsequently passed by voters to provide funding grants for planning and implementation. Beginning in early 2011, a plan was developed for the Upper Pit River area and was adopted in late 2013. During 2017 and 2018, the plan was revised according to 2016 guidelines.

3.4 Land Use

Land use planning in the Basin is the responsibility of Lassen and Modoc Counties. Land use information was collected by DWR through a remote sensing process developed by Land IQ.

Current land use in the Basin is shown on **Figure 3-3** and is summarized by category in **Table 3-1**.

The land use categories were established by DWR (2014). These land uses account for about 33,000 acres of the 92,000 total acres in the basin. The remaining 59,000 acres are assumed to be native vegetation.

Table 3-1 Land Use Summary

Land Use Category	Acres
Citrus and subtropical	0
Deciduous fruits and nuts	0
Grain and hay crops ¹	440
Idle fields	1,046
Pasture ²	17,964
Rice	995
Truck nursery and berry crops	0
Urban	339
Vineyard	0
Young perennial	0
Riparian vegetation	12,107
Total	32,891

Source: DWR 2014

¹ Includes wheat and miscellaneous grain and hay crops

² Includes alfalfa and mixed pasture crops

3.4.1 Water Source Types

The Basin has two water source types: groundwater and surface water. Groundwater resources have long played an important role in the Basin and for its residents, and is used for a variety of purposes throughout the BVGB. Water uses in the Basin include:

- Drinking water from numerous domestic wells and three active public supply wells
- Irrigation water for agricultural uses
- Environmental uses such as wetland habitat in the Ash Creek Wildlife Area.¹

¹ The wetlands in the Ash Creek Wildlife area are supported by surface water and augmented with groundwater during dry portions of the year.

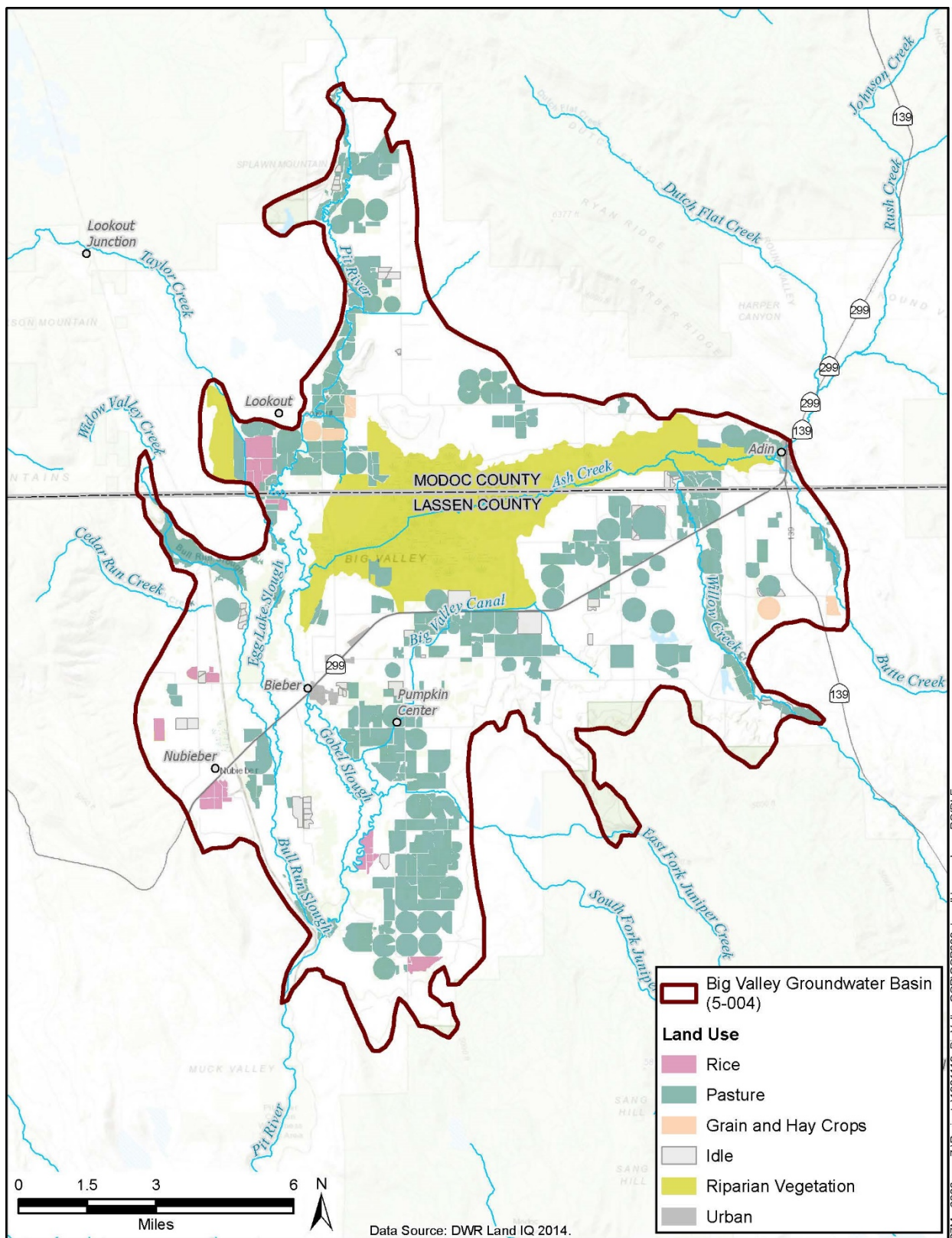


Figure 3-3 Land Use

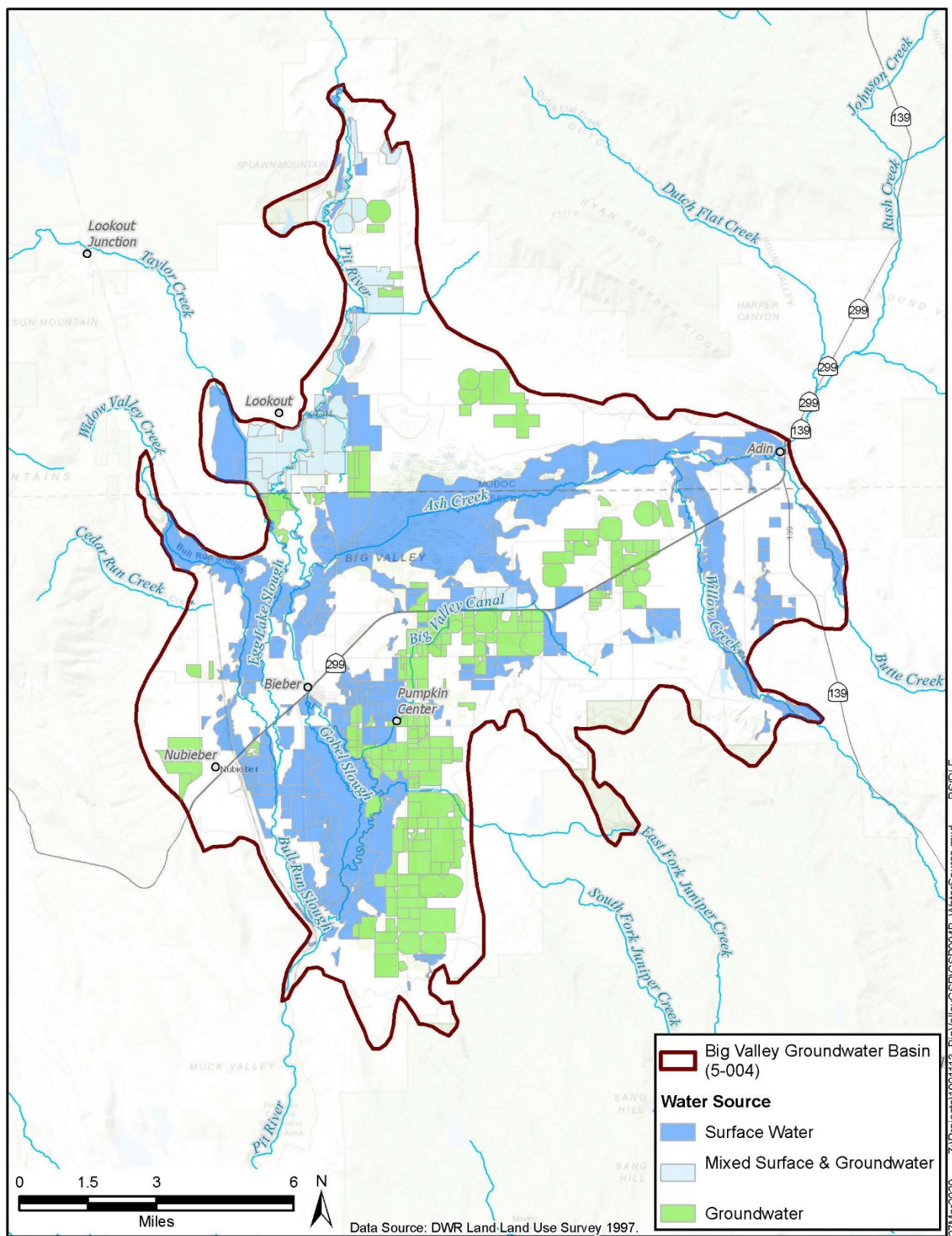


Figure 3-4 Water Source Types

The best available data for distinguishing surface water and groundwater uses comes from DWR land use datasets from 1997². **Figure 3-4** shows in general where surface water and groundwater are used in the Basin. Lassen County provides drinking water to Bieber via two wells in the their Waterworks District #1. The US Forest Service Ranger Station utilizes a well in Adin for its water supply.

Surface water has been appropriated from Ash Creek on the east side of the Basin and from the Pit River on the west side. SGMA does not alter surface water rights, and the delineation of surface water rights in Big Valley is beyond the scope of the GSP.

Recycled water and desalinated water are not utilized in the Basin, nor is stormwater used as a supplemental water supply at the time of the development of this GSP.

3.4.2 Water Use Sectors

Water demands in the Basin are organized into the same water use sectors identified in Article 2 of the GSP emergency regulations (DWR 2016). These sectors include:

- **Urban** Urban water use is assigned to non-agricultural water uses in the census-designated places. Domestic use outside of census-designated places is not considered urban use, rather it is categorized under the agricultural use sector.
- **Industrial** There is limited industrial use in the Basin. DWR does not have any records of wells in the Basin that are categorized for industrial use. Most industrial use is associated with agriculture and is included under the agricultural water use sector.
- **Agricultural** This is the largest water use sector in the Basin by water use. Agricultural areas also include associated domestic users outside of census designated places.
- **Managed Wetlands** The Ash Creek Wildlife Area is located within the center of the Basin. The area includes approximately 14,400 acres of preserved freshwater wetlands created by the seasonal flow of six streams, including Ash Creek. (CDFW 2019)
- **Managed Recharge** There is no formal managed recharge or recycled water discharged in the Basin. However, flood irrigation of some fields and natural flooding of lowland areas do likely provide recharge. In addition, projects implemented at the Ash Creek Wildlife Area to increase wetland areas are also beneficial to groundwater recharge even though that is not their primary purpose.
- **Native Vegetation** This is the largest water use sector in the Basin by land area. This sector includes domestic wells in the rural residential areas that are not agricultural lands.

Figure 3-5 shows the distribution of the water use sectors in the Basin.

² The more recent land use surveys (i.e 2014) do not distinguish between water sources. Previous land surveys did and 1997 was the last land use survey for both counties with water source data.

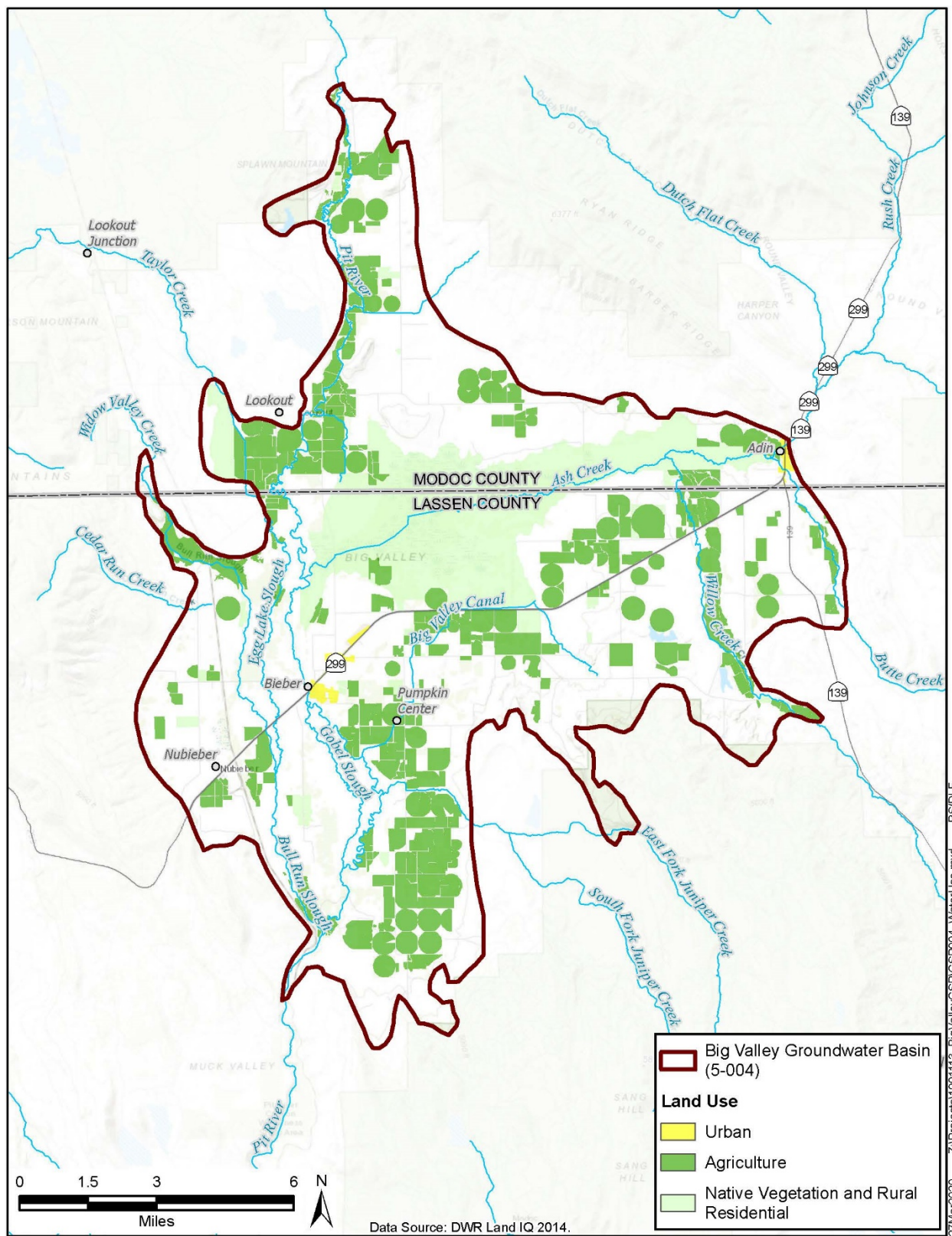


Figure 3-5 Water Use Sectors

3.5 Density of Wells

Well types, well depths, and well distribution data were downloaded from DWR's well completion report map application (DWR, 2018). DWR categorizes wells in this mapping application as domestic, production, or public supply. In addition, well inventories were requested and received from DWR during 2015 and 2017. These categories of well type are based on the well use information submitted with the well logs to DWR. **Table 3-2** summarizes the types of wells by use, based on the DWR mapping tool; and on the DWR inventories. The majority of the wells categorized as production wells by the mapping tool are likely used for agricultural puposes and many of those wells in the Basin are used for domestic purposes.

The table shows similar totals by the two approaches for the number of domestic, production, and public supply wells while the DWR inventories show an additional 159 wells from five additional types. The DWR inventories show that 628 wells have been installed in the BVGB. Adding the 20 new monitoring wells from the grant funds increases the total to 648 wells.

Table 3-2 Well Types in the BVGB

DWR Mapping Tool			DWR Inventories		
Type of Well ^a	Lassen County Total Wells	Modoc County Total Wells	Proposed Use of Well ^b	Lassen County Total Wells	Modoc County Total Wells
Domestic	136	81	Domestic	142	79
Production	177	76	Irrigation	157	65
			Stock	11	5
			Industrial	6	0
Public Supply	5	1	Public	5	1
			Monitor	55	0
			Test	25	29
			Other	7	2
			Unknown	27	7
			Destroyed	5	0
Total (476)	318	158	Total (628)	440	188
Source:		2019/20 SGMA Monitor (20)		4	16

^a DWR SMGA Data Viewer – Well Report Statistics in Big Valley Basin; downloaded in April 2019.

^b DWR Well Inventories – 2015 and 2017; based on well log.

Figures 3-6, 3-7, and 3-8 show the density of wells in the Basin per square mile for domestic, production, and public, respectively, based on the DWR mapping tool. These maps are

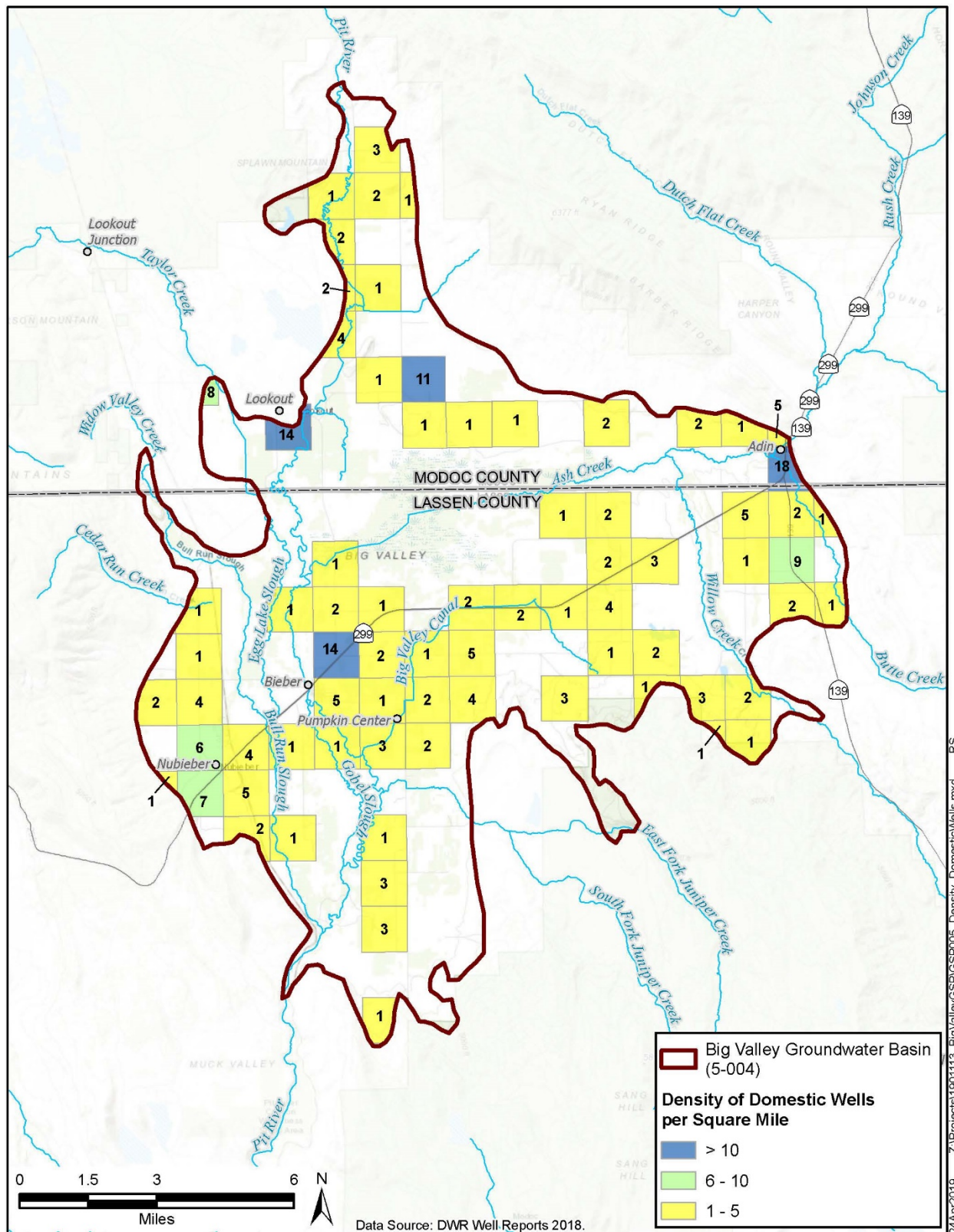


Figure 3-6 Density of Domestic Wells

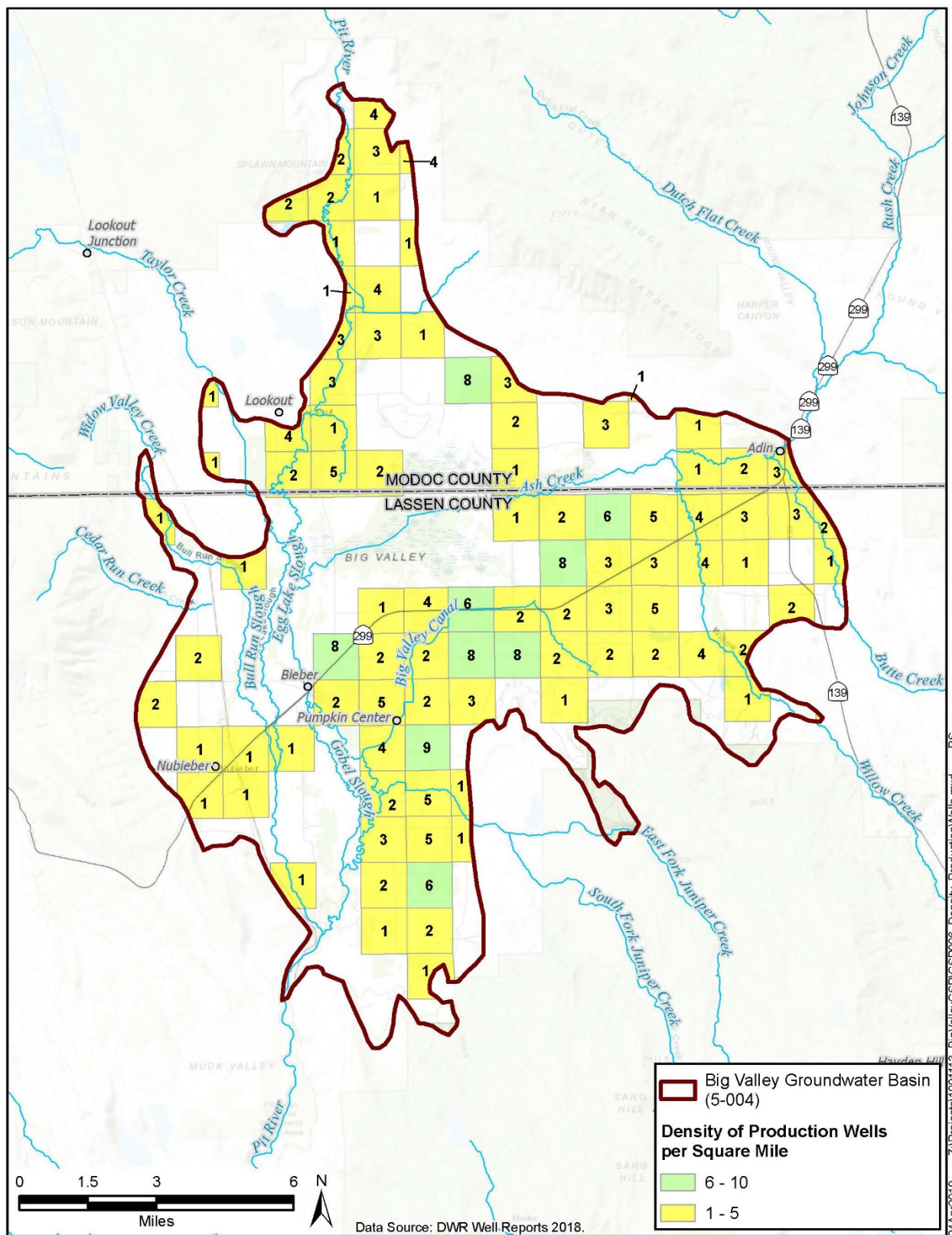


Figure 3-7 Density of Production Wells

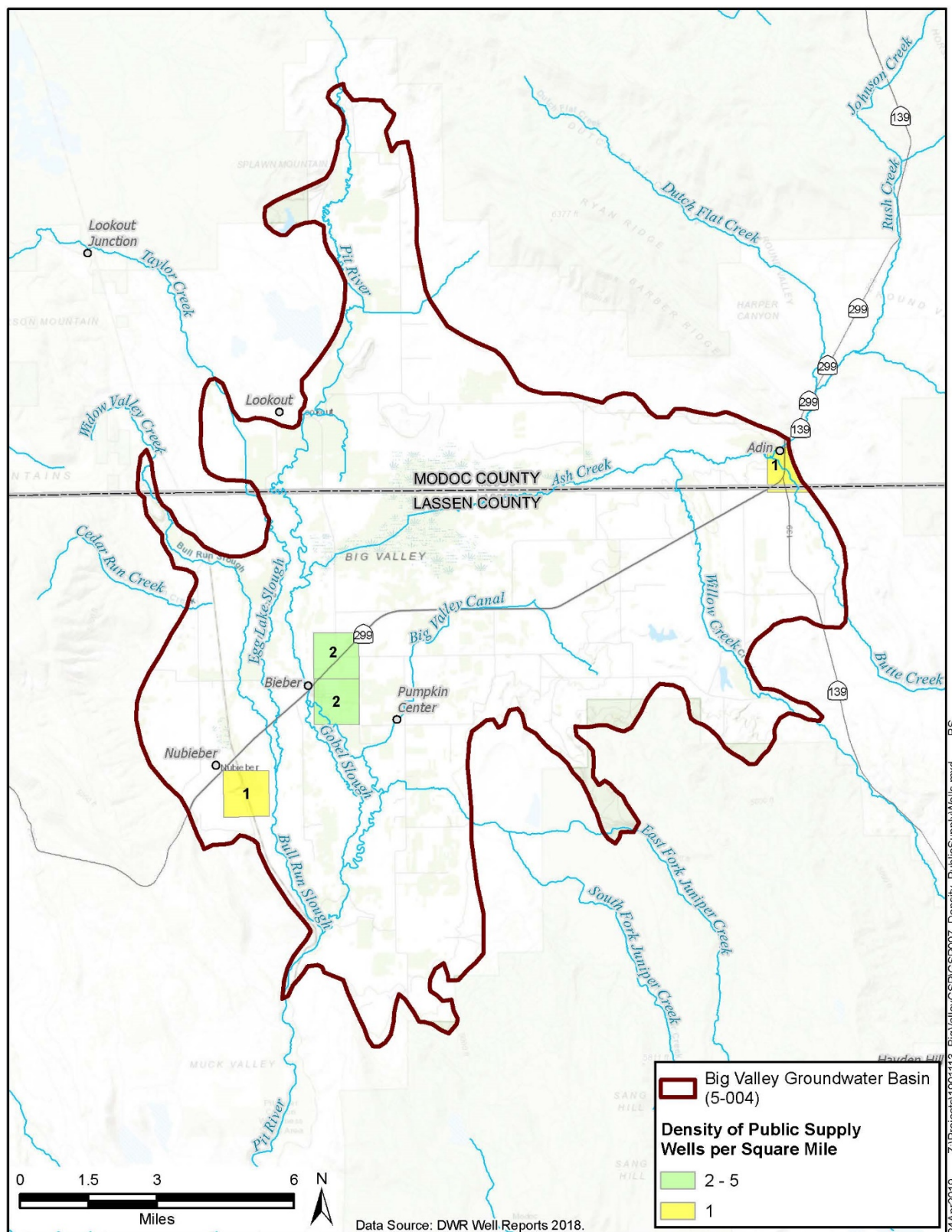


Figure 3-8 Density of Public Supply Wells

reasonable approximations of well distributions, but do not include the five additional well types, which account for approximately 25 percent of the total number of wells in the inventory for the BVGB.

Figure 3-6 shows that domestic wells are located in 74 of the 180 sections (nominal total, including partial sections) that comprise the BVGB. The density varies from 0 to 18 wells per square mile (section) with a median value of 2 wells per section and an average of 3 wells per section. The highest densities of domestic wells are located near Adin, Bieber, and Lookout and in a section to the east of Lookout and a section south of Adin. In addition, moderate densities are present in the four sections around Nubieber.

Figure 3-7 shows that production wells (primarily assumed to be for irrigation) are located in 93 of the 180 sections with a maximum density of 9 wells per section (median: 2 wells per section, average: nearly 3 wells per section). The highest densities of production wells are located between Bieber and Adin, to the southeast of Bieber, and one section northeast of Lookout.

Figure 3-8 shows that public supply wells are in four sections, including one well near Adin, one well near Nubieber, and two wells in two sections near Bieber. It should be noted that these are wells that have been drilled, but not all may be currently active.

3.6 Existing Monitoring, Management, and Regulatory Programs

3.6.1 Groundwater Monitoring

Levels

Lassen and Modoc Counties are the monitoring entities for the California Statewide Groundwater Elevation Monitoring (CASGEM) program. Each county has an approved CASGEM monitoring plan which provides for monitoring twice a year (spring and fall) at 22 wells. The monitoring is performed by staff from DWR on behalf of the Counties. All but one of the wells have depth information ranging from 73 to 800 feet bgs (median: 270 ft bgs, mean: 335 ft bgs). **Figure 3-9** shows the locations of the CASGEM wells.

Lassen and Modoc Counties drilled five monitoring well clusters in 2019-2020. Each cluster consists of three shallow wells and one deep well. The locations of these clusters and the depth of the deep well at each site is shown on **Figure 3-9**.

The LMFCWCD monitors biannual water levels at 85 wells throughout the basin. The locations of these wells is not readily available.

Pumping

The LMFCWCD monitors pumping at 85 wells throughout the basin. The locations of these wells is not readily available.



Quality

Historic groundwater quality monitoring has been performed under programs with the SWRCB, DWR, and USGS. The SWRCB has compiled the data from these programs and made it available on their GAMA Groundwater Information System website (SWRCB 2019). The locations of wells with historic water quality data are shown on **Figure 3-10**.

The only current programs that monitor groundwater quality on an ongoing basis are the SWRCB's Division of Drinking Water (DDW) and monitoring associated with cleanup sites. The BVGB contains two active public water suppliers: Lassen County Water District #1 in Bieber, and the Forest Service station in Adin. Water quality monitoring at their wells through the DDW can be used for ongoing monitoring in the basin and their locations are shown on **Figure 3-10**. The five newly constructed monitoring well clusters were sampled for water quality after construction and are shown on the figure.

The basin has five active groundwater cleanup sites in various stages of assessment and remediation, all located in Bieber. These sites are not appropriate for ongoing monitoring for groundwater resources in the basin, as they monitor only the shallow aquifer and represent a localized condition that may not be representative of the overall quality of groundwater resources in the Basin. There is ongoing water quality monitoring at the Bieber Class III Solid Waste Municipal Landfill. The Lookout Transfer Station also has ongoing water quality monitoring, but is located outside the boundaries of the BVGB.

Growers in Big Valley participate in the Irrigated Lands Regulatory Program (ILRP) through the Sacramento Valley Water Quality Coalition (SVWQC). However, the Monitoring and Reporting Plan for the SVWQC does not include any wells within the BVGB.

3.6.2 Surface Water Monitoring

Streamflow

Streamflow gages have historically been constructed and monitored within the BVGB, but active, maintained streamflow gages for streams in BVGB are limited. For the Pit River, the closest active gage that monitors streamflow is located at Canby, 20 miles upstream of Big Valley. Flow on Ash Creek was measured at a gage in Adin from 1981 to 1999. The Adin gage is being reactivated by DWR under SB-19, passed in September 2019 to expand California's stream gaging network. There is a gage where the Pit River exits the Basin in the south at the diversion for the Muck Valley Hydro Power Plant. However, the data is not readily and publicly available. Stream gauges are shown on **Figure 3-11**.

Diversions

Surface water diversions greater than 10 acre-feet per year must be reported to the SWRCB in compliance with state legislation (SB-88). The Big Valley Water Users Association (BVWUA) employs a watermaster service to measure diversions from the Pit River. Ash Creek and Willow Creek diversions are measured as part of the Ash Creek watermaster service.

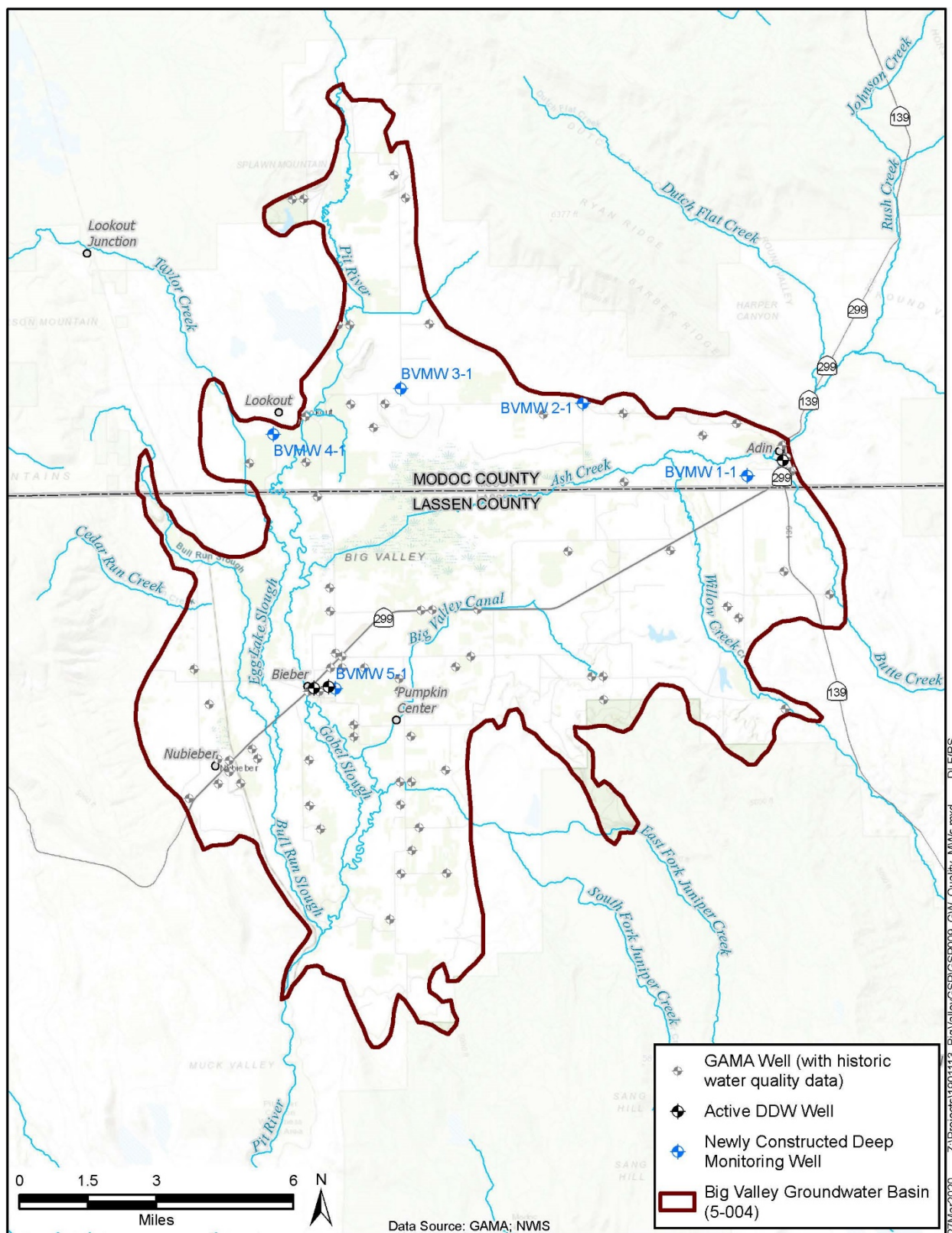


Figure 3-10 Water Quality Monitoring

3.6.3 Climate Monitoring

The Basin has limited climate monitoring. The National Oceanic and Atmospheric Administration (NOAA) has two stations located in the Basin: Bieber 4 NW and Adin RS. Both of these stations are no longer active, thus only contain historic data. Annual precipitation at the Bieber station is shown for 1985 to 1995 in **Table 3-3**.

The closest California Irrigation Management Information System (CIMIS) station, number 43, is in MacArthur, CA, and measures a number of climatic factors that allow a calculation of daily reference evapotranspiration for the area. This station is approximately 10 miles southwest of the western boundary of the Basin. **Table 3-4** provides a summary of average monthly rainfall, temperature, and reference evapotranspiration (ET_o) for the Basin, and **Figure 3-12** shows annual rainfall for 1984 through 2018. The locations of all climate monitoring stations are shown on **Figure 3-11**.

Table 3-3 Annual Precipitation at Bieber from 1985 to 1995

Water Year	Precipitation at Station ID: BBR (inches)
1985	14.1
1986	25.4
1987	11.6
1988	10.9
1989	20.2
1990	16.1
1991	16.5
1992	10.4
1993	28.2
1994	16.3
1995	31.8
Minimum	10.4
Maximum	31.8
Average	18.3

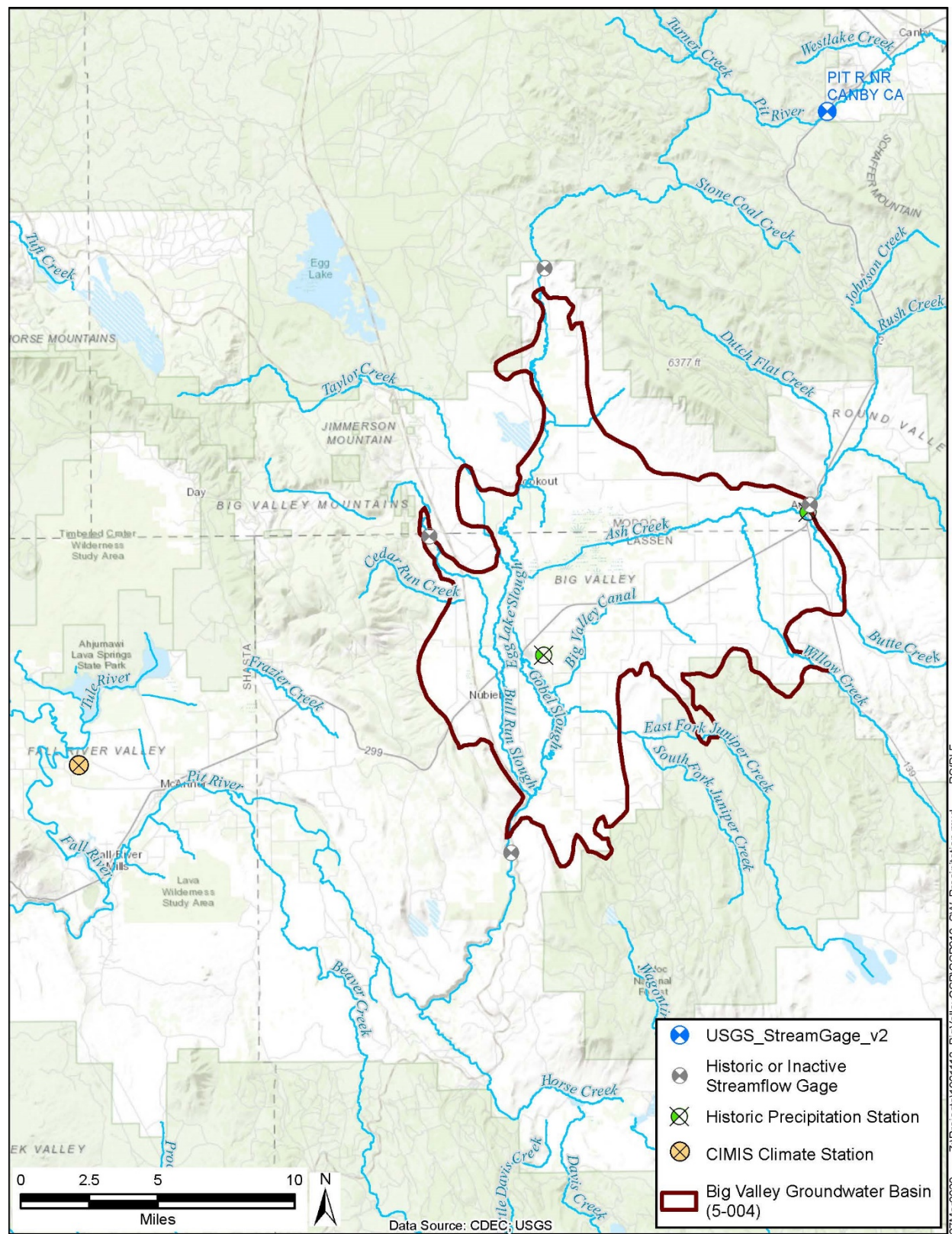


Figure 3-11 Surface Water and Climate Monitoring

Table 3-4 Monthly Climate Data from CIMIS Station in McArthur (1984-2018)

Month	Average Rainfall (inches)	Average ET _o (inches)	Average Daily Temperature (°F)
October	1.4	3.02	49.5
November	2.3	1.21	38.2
December	2.9	0.75	32.1
January	2.5	0.89	32.5
February	2.6	1.57	36.8
March	2.4	3.01	42.4
April	1.8	4.39	48.2
May	1.6	5.93	55.1
June	0.7	7.24	62.8
July	0.2	8.17	69.1
August	0.2	7.18	66.1
September	0.4	5.02	59.5
Monthly Average	1.6	4.03	49.4
Average Water Year	18.8	48.3	49.4

3.6.4 Subsidence Monitoring

Subsidence monitoring is available in the BVGB at a single continuous global positioning satellite station (P347) on the south side of Adin. P347 began operation in September 2007 and provides daily readings. The five recently constructed monitoring wells will be surveyed and a benchmark will be established at each site. These sites and can be reoccupied in the future to determine subsidence at those points.

In addition, DWR has provided data processed from interferometric synthetic aperture radar (InSAR) collected by the European Space Agency. The InSAR data currently available provides vertical displacement information between January 2015 and September 2019. InSAR is a promising, cost-effective technique, and DWR will likely provide additional data and information going forward.

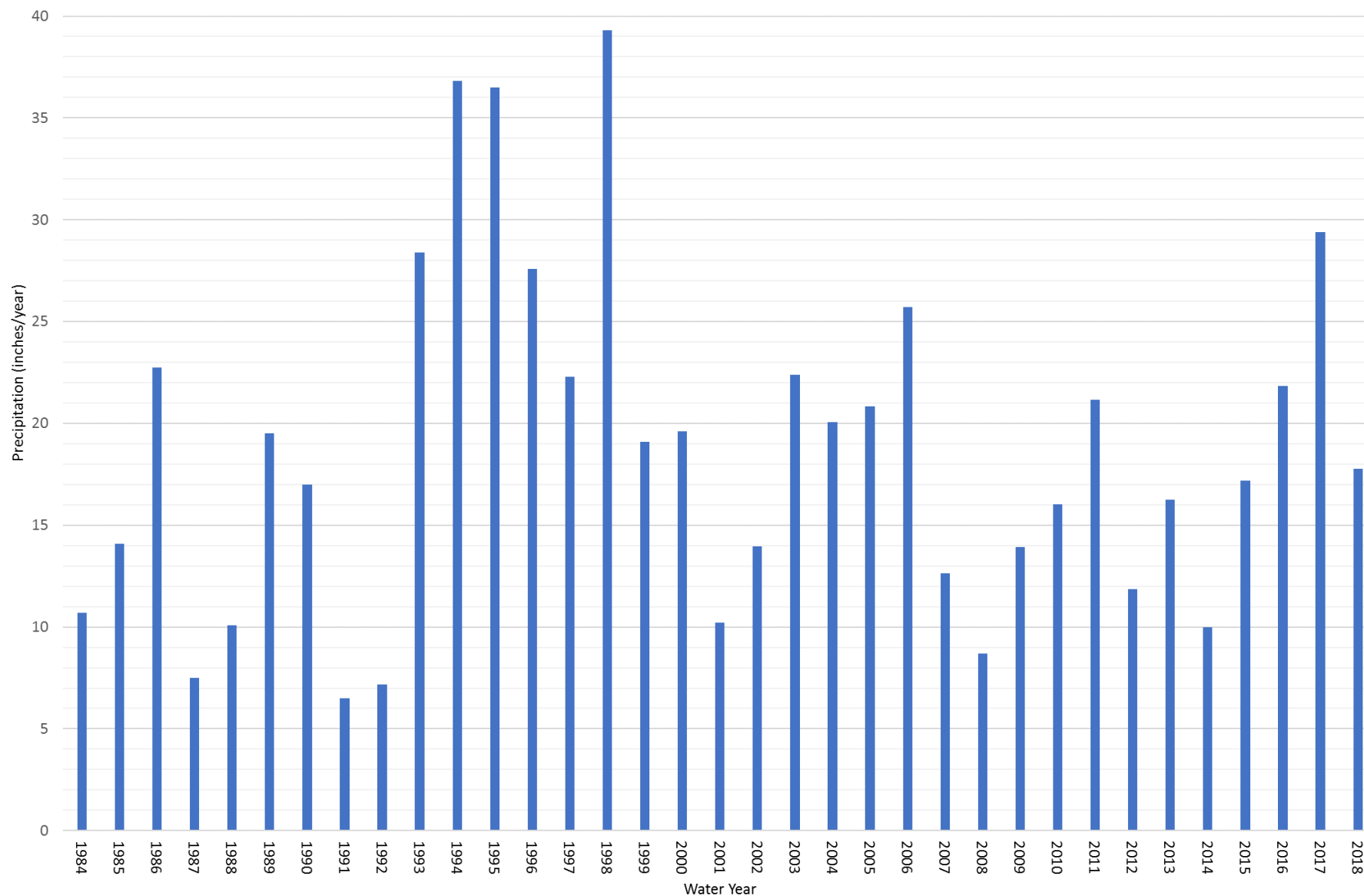


Figure 3-12 Annual Precipitation at the McArthur CIMIS Station

3.6.5 Existing Water Management Plans

Two water management plans exist that cover the BVGB: the Lassen County Groundwater Management Plan (LCGMP) and the Upper Pit River Integrated Regional Water Management Plan (IRWMP).

Lassen County Groundwater Management Plan

The LCGMP was completed in 2007 and covers all groundwater basins in Lassen County, including the Lassen County portion of the BVGB. The goal of the LCGMP is to “...maintain or enhance groundwater quantity and quality, thereby providing a sustainable, high-quality supply for agricultural, environmental, and urban use...” (Brown and Caldwell 2007). The LCGMP achieves this through the implementation of Basin Management Objectives³ (BMOs), which establish key wells for monitoring groundwater levels and define “action levels,” which, when exceeded, activate stakeholder engagement to determine actions to remedy the exceedance. Action levels are similar to minimum thresholds in SGMA. A BMO ordinance was passed by Lassen County in 2011.

Upper Pit River Watershed IRWMP

The Upper Pit IRWMP was adopted by the Regional Water Management Group in 2013. Twenty five regional entities were involved in the plan development, which included water user groups, federal, state and county agencies, tribal groups, and conservation groups. The management of the IRWMP has now transferred to the North Cal-Neva Resource Conservation and Development Council (NCNRCDC) who has been working to update the Plan. The goal of the IRWMP is to:

“...maintain or improve water quality within the watershed; maintain availability of water for irrigation demands and ecological needs (both ground and surface water); sustain/improve aquatic, riparian, and wetland communities; sustain and improve upland vegetation and wildlife communities; control & prevent the spread of invasive noxious weeds; strengthen community watershed stewardship; reduce river and stream channel erosion and restore channel morphology; support community sustainability by strengthening natural-resource-based economies; support and encourage better coordination of data, collection, sharing, and reporting in the watershed; improve domestic drinking water supply efficiency/reliability; address the water-related needs of disadvantaged communities; conserve energy, address the effects of climate variability, and reduce greenhouse gas emissions.”

The Upper Pit IRWMP contains the entire Watershed above Burney and extends past Alturas to the northeast. The area includes the entire BVGB.

³ Codified as Chapter 17.02 of Lassen County Code.

3.6.6 Existing Regulatory Programs

Water Quality Control Plan for the Sacramento River and San Joaquin River Basins

The Basin is located within the jurisdiction of the RWQCB-R5 and subject to a Water Quality Control Plan (WQCP), which is required by the California Water Code (Section 13240) and supported by the Federal Clean Water Act. This WQCP was first adopted by the RWQCB in 1975 and covers the entire area of the Sacramento and San Joaquin River drainage basins. The Pit River, which runs through the BVGB, is one of the principal streams and one of the largest tributaries of the Sacramento River. The Porter-Cologne Water Quality Control Act requires that basin plans address beneficial uses, water quality objectives, and a program of implementation for achieving water quality objectives. The designated beneficial uses of the Pit River are: municipal and domestic supply, irrigation and stock watering, water contact and non-contact water recreation, warm and cold fresh water habitat and spawning, and wildlife habitat. Water Quality Objectives for both groundwater (drinking water and irrigation) and surface water are provided in the Basin Plan.

Lassen County Water Well Ordinance

Lassen County adopted a water well ordinance in 1988 to provide for the construction, repair, modification and destruction of wells in such a manner that the groundwater of Lassen County will not be contaminated or polluted, and that water obtained from wells will be suitable for beneficial use and will not jeopardize the health, safety or welfare of the people of Lassen County. The ordinance includes requirements for permits, fees, appeals, standards and specifications, inspection, log of the well (lithology and casing), abandonment, stop work, enforcement and violations and well disinfection. Lassen County Environmental Health Department is responsible for the code enforcement related to wells.

Modoc County Water Well Requirements

Modoc County Environmental Health Department established its requirements for the permitting of work on water wells in 1990, based on the requirements of the California Water Code (Section 13750.5). The fee structure was last revised in 2018. Modoc County also has an ordinance prohibiting the extraction of groundwater for use outside of the groundwater basin from which it was extracted. (Title 20 Chapter 20.04)

California DWR Well Standards

DWR is responsible for setting the minimum standards for the construction, alteration, and destruction of wells in California in order to protect groundwater quality, as allowed by California Water Code Sections 13700 to 13806. DWR began this effort in 1949 and has published several versions of standards in Bulletin 74, beginning in 1962, and is working on a significant update for 2021. Current requirements are provided in Bulletin 74-81, Water Well Standards: State of California, and in Bulletin 74-90 (Supplement), California Well Standards.

Cities, counties, and water agencies have regulatory authority over wells and can adopt local well ordinances that meet or exceed the state standards.

Title 22 Drinking Water Program

The SWRCB Division of Drinking Water (DDW) was established in 2014 when the regulatory responsibilities were transferred from the California Department of Public Health. DDW regulates public water systems that provide “water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year,” as defined by the Health and Safety Code (Section 116275 (h)). DDW further defines public water systems as:

- Community (C): Serves at least 15 service connections used by year-round residents or regularly serves 25 year-round residents. Lassen County Water District #1 serves groundwater in Bieber.
- Non-Transient Non-Community (NTNC): Serves at least the same 25 non-residential individuals during 6 months of the year. The Adin Ranger Station utilizes a well for its water supply.
- Transient Non-Community (NC): Regularly serves at least 25 non-residential individuals (transient) during 60 or more days per year.

Private domestic wells, industrial wells, and irrigation wells are not regulated by the DDW.

The SWRCB-DDW enforces the monitoring requirements established in Title 22 of the California Code of Regulations (CCR) for public water system wells, and all the data collected must be reported to the DDW. Title 22 designates the regulatory limits (e.g., maximum contaminant levels [MCLs]) for various constituents, including naturally-occurring inorganic chemicals and metals, and general characteristics; and also for man-made contaminants, including volatile and non-volatile organic compounds, pesticides, herbicides, disinfection byproducts, and other parameters.)

Irrigated Lands Regulatory Program

The Irrigated Lands Regulatory Program, established in 2003 and overseen by the SWRCB, regulates discharges from irrigated agriculture to surface and ground waters and establishes waste discharge orders for selected regions. The Irrigated Lands Regulatory Program focuses on priority water quality issues, such as pesticides and toxicity, nutrients, and sediments. Under the program, wells that are part of the Monitoring and Reporting Program (MRP) are sampled biannually. However, no MRP wells are located in Big Valley.

3.6.7 Incorporation Into GSP

Information in these various programs may be incorporated into this GSP and used during the preparation of Sustainability Management Criteria (minimum thresholds, measurable objectives,

interim milestones) and will be considered during development of Projects and Management Actions.

3.6.8 Limits to Operational Flexibility

Some of the existing management programs and ordinances may affect operational flexibility. Examples include:

- The Basin Plan and the Title 22 Drinking Water Program specify the quality of water that can be recharged into the BVGB.
- The Modoc County groundwater pumping ordinance prohibits the export of water out of the basin where it is pumped.

3.7 Conjunctive Use Programs

Formally established conjunctive use programs are not currently operating within the Basin.

3.8 Land Use Plans

Modoc and Lassen Counties have land use authority in the BVGB. Land use is an important factor in water management, as described below, and the following sections provide a general description of the land use plans and how implementation may affect groundwater.

3.8.1 Modoc County General Plan

The 1988 Modoc County General Plan was developed in order to meet a state requirement and to serve as the “constitution” for the community development and use of land. The plan discusses the mandatory elements of a general plan, including land use, housing, circulation (transportation), conservation and open space, noise, and safety, as well as economic development and an action program in the County. The plan was intended to serve as a guide for growth and change in Modoc County for the 15 years following its publication. Under the Conservation Element, Modoc County recognizes the importance of “use-capacity” for groundwater, among other issues, and the minimization of “adverse resource-use,” such as “groundwater mining.” The Water Resources section advocates the “wise and prudent” management of groundwater resources to support a sustainable economy as well as maintaining adequate supplies for domestic wells for rural subdivisions. Groundwater quality was recognized as generally good to excellent within the numerous basins, although some basins contain groundwater with high natural concentrations of boron and/or arsenic (Big Valley).

Policy items from the Modoc General Plan related to groundwater include:

- Cooperate with responsible agencies and organizations to solve water quality problems..
- Work with the agricultural community to resolve any groundwater overdraft problems.
- Require adequate domestic water supply for all rural subdivisions.

The action program included several general statements for water, including:

- Initiate a cooperative effort among state and local agencies and special districts to explore appropriate actions necessary to resolve long-term water supply and quality problems in the county.
- Require as a part of the review of any subdivision approval a demonstration to the satisfaction of the County that the following conditions exist for every lot in the proposed development:
 - An adequate domestic water supply.
 - Suitable soil depth, slope and surface acreage capable of supporting an approved sewage disposal system.

In 2018, a general plan amendment was adopted to update the housing element section.

3.8.2 Lassen County General Plan

The Lassen County General Plan 2000 was adopted in 1999 by the Lassen County Board of Supervisors (Resolution 99-060) to address the requirements of California Government Code Section 65300 et seq, and related provisions of California law pertaining to general plans. The General Plan (GP) reflects the concerns and efforts of the County to efficiently and equitably address a wide range of development issues which confront residents, property owners, and business operators. Many of these issues also challenge organizations and agencies concerned with the management of land and resources and the provisions of community services within Lassen County.

The goals of the plan are to:

- Protect the rural character and culture of Lassen County life.
- Maintain economic viability for existing industries such as agriculture, timber and mining.
- Promote new compatible industries to provide a broader economic base.
- Create livable communities through carefully planned development which efficiently utilize natural resources and provide amenities for residents.
- Maintain and enhance natural wildlife communities and recreational opportunities.
- Sustain the beauty and open space around use in this effort.

The GP addresses the mandatory elements (land use, circulation, housing, conservation, open space, noise, and safety) via several plan documents and alternate element titles. The 1999 GP elements include land use, natural resources (conservation), agriculture, wildlife, open space, circulation, and safety. Separate documents were produced for housing, noise, and energy. The land use element designates the proposed general distribution and intensity of uses of the land, serves as the central framework for the entire general plan, and correlates all land use issues into

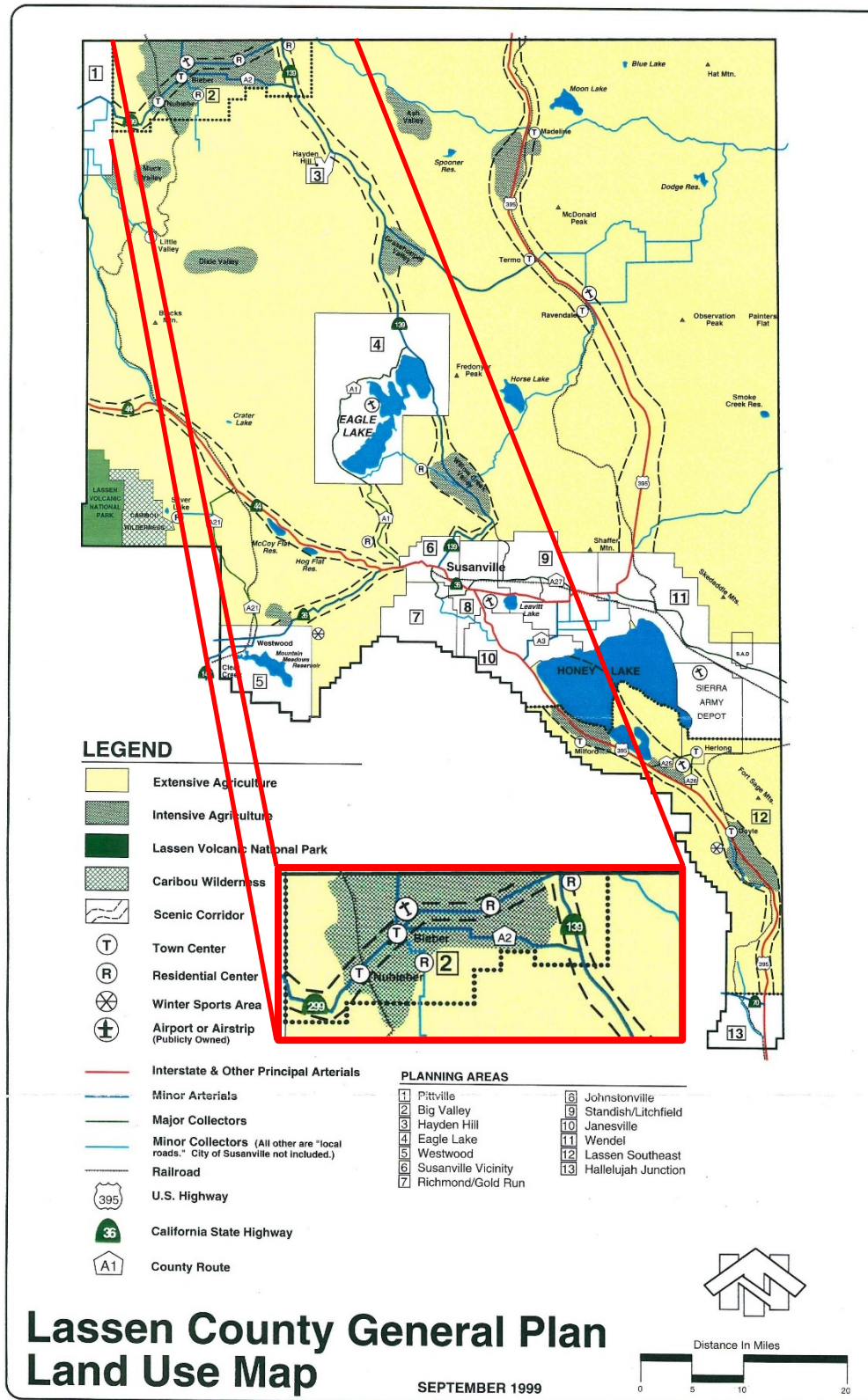
a set of coherent development policies. The Lassen County GP land use map from 1999 is shown in **Figure 3-13**, and shows intensive agriculture as the dominant land use within the Big Valley area, along with scattered population (small) centers. Otherwise Extensive Agriculture is the dominant land use.

Groundwater is addressed in several elements, including agriculture, land use, and natural resources. The GP identified the BVGB as a ‘major ground water basin’ due to the operation of wells at over 100 gallons per minute. Moreover, the GP expressed concern about water transfers and their impact on local water needs and environmental impacts due to water marketers pumping groundwater from the BVGB into the Pit River and selling it to downstream water districts or municipalities or using groundwater to augment summer flow through the Delta. The GP recognized that safe yield is dependent on recharge and that overdraft pumping would increase operating costs due to a greater pumping lift and could result in subsidence and water quality degradation. In addition, the GP referred to 1980s legislation that authorized the formation of water districts in Lassen County to manage and regulate the use of groundwater resources and to the 1959 Lassen-Modoc County Flood Control and Water Conservation District, as discussed above. The SGMA process established the requirements for a GSP in the BVGB and creation of the two GSAs.

The land use element identified several issues related to groundwater, including public services where 62 percent of rural, unincorporated housing units relied on individual (domestic) wells for their water. Another issue included open space and the managed production of resources, which includes areas for recharge of groundwater among others. The GP referred to the 1972 Open Space Plan, which required that residential sewage disposal systems would not contaminate groundwater supplies. The agriculture element identified an issue with incompatible land uses where agricultural pumping lowers the groundwater level and impacts the use of domestic wells. The wildlife element recognized that changes in groundwater storage could impact wet meadow habitat and threaten fish and wildlife species.

Groundwater is included in policies under the water resources section of the Natural Resources (NR) and Open Space (OS) Elements, as listed below.

- NR15 POLICY: The County advocates the cooperation of state and Federal agencies, including the State Water Resources Control Board and its regional boards, in considering programs and actions to protect the quality of ground water and surface water resources.
- NR17 POLICY: The County supports measures to protect and insure the integrity of water supplies and is opposed to proposals for the exportation of ground water and surface waters from ground water basins and aquifers located in Lassen County (in whole or part) to areas outside those basins.
 - Implementation Measure:
 - NR-H: The County will maintain ground water ordinances and other forms of regulatory authority to protect the integrity of water supplies in Lassen County and regulate the exportation of water from ground water basins and aquifers in the county to areas outside those basins.



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Figure 3-13 Lassen County General Plan Land Use Map

- NR19 POLICY: The County supports control of water resources at the local level, including the formation of local ground water management districts to appropriately manage and protect the long-term viability of ground water resources in the interest of County residents and the County's resources.
- OS27 POLICY: The County recognizes that its surface and ground water resources are especially valuable resources which deserve and are in need of appropriate measures to protect their quality and quantity.
- OS28 POLICY: The County shall, in conjunction with the Water Quality Control Board, adopt specific resource policies and development restrictions to protect specified water resources (e.g., Eagle Lake, Honey Lake, special recharge areas, etc.) to support the protection of those resources from development or other damage which may diminish or destroy their resource value.
 - Implementaion Measure:
 - OS-N: When warranted, the County shall consider special restrictions to development in and around recharge areas of domestic water sources and other special water resource areas to prevent or reduce possible adverse impacts to the quality or quantity of water resources.

3.8.3 GSP Implementation Effects on Existing Land Use

The implementation of this GSP is not expected to have an effect on existing designation of land use.

3.8.4 GSP Implementation Effects on Water Supply

The implementation of this GSP is not expected to have an effect on Water Supply. Prior to the development of this plan, the Counties had established several policies and ordinances for the management of water and land use in the BVGB. This GSP will incorporate the previous work and will establish sustainable management criteria to continue the successful use of the groundwater resources during the SGMA implementation period and beyond.

3.8.5 Well Permitting

Lassen and Modoc Counties both require a permit to install a well as discussed above. The Lassen County Municipal Code (Section 7.28.030) states that “no person, firm, corporation, governmental agency or any other legal entity shall, within the unincorporated area of Lassen County, construct, repair, modify or destroy any well unless a written permit has first been obtained from the health officer of the county.” Modoc County states that “a valid permit to drill, destory, deepen, or recondition a water well is required in Modoc County. Permits are obatined from the Environmental Health Department after acceptance of a completed application, plot plan and fees.”

3.8.6 Land Use Plans Outside of the Basin

The stakeholders submitting this GSP have not included information regarding the implementation of land use plans outside of the BVGB, as these nearby basins are also subject to the land use plan in either Lassen County or Modoc County. These nearby basins are not adjacent to the BVGB and are separated by mountain ranges. Moreover, the nearby basins are all classified as very low or low priority and are not currently subject to SGMA.

3.9 Management Areas

Because the GSP is still under development, the GSAs have not defined management areas within the BVGB. SGMA allows for the basin to be delineated into management areas which:

“...may be defined by natural or jurisdictional boundaries, and may be based on differences in water use sector, water source type, geology, or aquifer characteristics. Management areas may have different minimum thresholds and measurable objectives than the basin at large and may be monitored to a different level. However, GSAs in the basin must provide descriptions of why those differences are appropriate for the management area, relative to the rest of the basin.” (DWR 2017)

It should be noted that minimum thresholds and measurable objectives can vary throughout the basin even without established management areas. In deciding whether to implement management areas, the GSAs will need to weigh the added degree of complexity management areas bring to the GSP. For the final GSP, this section will be rewritten to reflect the GSAs decisions related to management areas.

3.10 Additional GSP Elements, if Applicable

The plan elements from California Water Code Section 10727.4 require GSPs to address numerous components listed in **Table 3-5**. The table lists the agency or department with whom the GSA will coordinate or where it will be addressed in the GSP.

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572 **Table 3-5** Plan Elements from CWC Section 10727.4

Element of Section 10727.4	Approach
(a) Control of saline water intrusion	Not applicable
(b) Wellhead protection areas and recharge areas	To be coordinated with county environmental health departments
(c) Migration of contaminated groundwater	Coordinated with RWQCB
(d) A well abandonment and well destruction program	To be coordinated with county environmental health departments
(e) Replenishment of groundwater extractions	Chapter 9, Projects and Management Actions
(f) Activities implementing, opportunities for, and removing impediments to, conjunctive use or underground storage	Chapter 9, Projects and Management Actions
(g) Well construction policies	To be coordinated with county environmental health departments
(h) Measures addressing groundwater contamination cleanup, groundwater recharge, in-lieu use, diversions to storage, conservation, water recycling, conveyance, and extraction projects	Coordinated with RWQCB and in Chapter 9, Projects and Management Actions
(i) Efficient water management practices, as defined in Section 10902, for the delivery of water and water conservation methods to improve the efficiency of water use	To be coordinated with county farm advisors
(j) Efforts to develop relationships with state and federal regulatory agencies	Chapter 8, Plan Implementation
(k) Processes to review land use plans and efforts to coordinate with land use planning agencies to assess activities that potentially create risks to groundwater quality or quantity	To be coordinated with appropriate county departments.
(l) Impacts on groundwater dependent ecosystems	Chapter 5, Groundwater Conditions

573

3.11 References

- Department of Water Resources (DWR), 2016. California Department of Water Resources Emergency Groundwater Sustainability Plan Regulations.
- DWR, 2017. Sustainable Management Criteria BMP (Best Management Practices). Draft, November 2017. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT_ay_19.pdf
- DWR, 2018. Department of Water Resources Well Completion Report Map Application. Available at: <https://www.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37>
- DWR, 2020. California Department of Water Resources Water Management Planning Tool. Available at: <https://gis.water.ca.gov/app/boundaries/>.
- Lassen County Local Agency Formation Commission (LAFCo), 2018. Lassen-Modoc Flood Control and Water Conservation District Municipal Service Review and Sphere of Influence Update, October 2018.

Memorandum

BVAC Meeting May 6, 2020

Subject: Introduction to hydrologic soils maps and solicitation of input
Prepared for: Lassen and Modoc County Groundwater Sustainability Agencies
Big Valley Groundwater Basin Advisory Committee
Prepared by: David Fairman
Date: 4-22-2020

This Memorandum (Memo) has been prepared to introduce the existing hydrologic soils maps to members of the Big Valley Groundwater Sustainability Agencies (GSAs), the Big Valley Groundwater Basin Advisory Committee (BVAC), and public stakeholders. The hydrologic properties of the soil are key to understand in the basin, as the hydrologic properties of the soil are one of the factors that determine where and how much groundwater recharge occurs and where potential managed recharge projects could be located. The purpose of this Memo is to introduce the maps and solicit input from the BVAC and local residents who may have better or different understanding of the soils that could inform future projects and management actions.

Information about soils is published by the National Resources Conservation Service (NRCS) and is provided for use by the public in the Soils Survey Geographic Database (SSURGO). SSURGO includes many categories of soils information, one of which is the hydrologic soils group (HSG) data. These HSG data categorize the soils by their ability to transmit water under saturated conditions. In other words, the groups characterize how easily water will infiltrate into the underlying material and potentially provide recharge to the groundwater aquifer. Below are summary descriptions of the NRCSs hydrologic soils groups.

- Hydrologic Group A: Soils with less than 10% clay and more than 90% sand and gravel. This group has high infiltration rates greater than 5.67 inches per hour (in/hr).
- Hydrologic Group B: Soils with 10-20% clay and 50-90% sand. This group has moderate infiltration rate from 1.42 to 5.67 in/hr.
- Hydrologic Group C: Soils with 20-40% clay and less than 50% sand. This group has relatively low infiltration rates of 0.14 to 1.42 in/hr.
- Hydrologic Group D: Soils with greater than 40% clay and less than 50% sand. This group has very low infiltration rates of less than 0.14 in/hr.

Attachment A contains the HSG maps from the NRCS. The HSG data is shown with two backgrounds for reference: topography and aerial imagery. These maps show that the NRCS does not classify any soils

in Big Valley under Hydrologic Group A and very few areas under Group B. The bulk of the Valley is classified as Group C or D (having low or very low infiltration rates)¹.

It should be noted that the NRCS develops these maps using a variety of information including remote sensing and some limited field data collection. These maps represent the NRCS's best estimate of the distribution of these soils characteristics given the data available and does not always capture variations that may occur on a small scale. Landowners likely have a better on-the-ground understanding of which of their fields drain well and which retain irrigation water. The purpose of this memo is to solicit input from local landowners and identify which areas have soils that infiltrate readily based on their historical experience. Any information received from local landowners will be used in the development of the Big Valley Groundwater Sustainability Plan (GSP) and may be used to identify areas for potential recharge projects. It should be noted that soil infiltration rates are only one of the factors that will be used to identify potential recharge areas. Other factors include the characteristics of the underlying aquifer and the accessibility of winter storm flows to use for recharge.

All landowners are encouraged to print these maps, mark on them areas that are well drained or poorly drained based on their experience and return them to GSA staff or consultants using the contact information below.

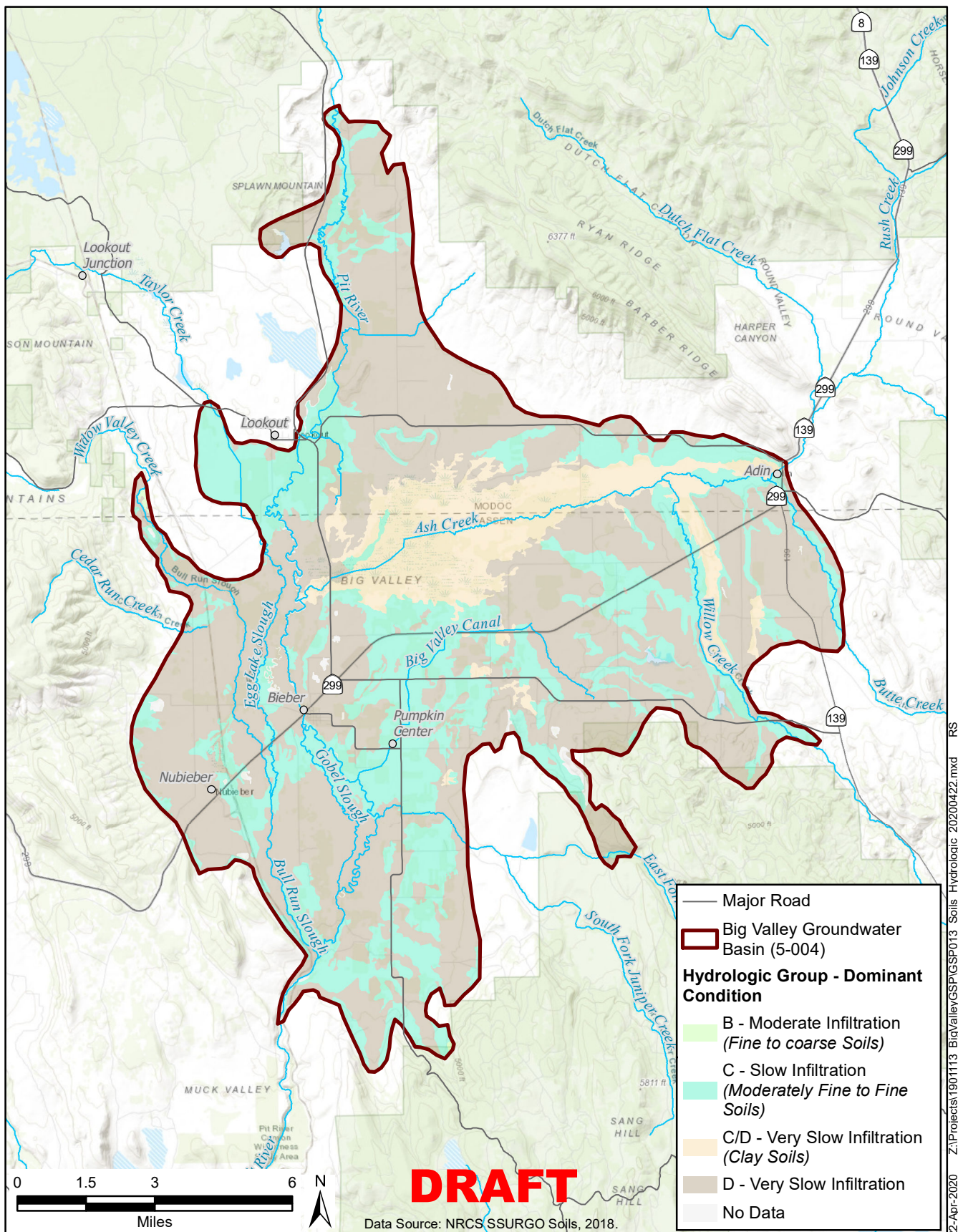
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¹ This soils data characterizes the top 5 feet of soil and low rates does not preclude recharge occurring, as there are methods to improve permeability of the shallow subsurface. However, this mapping emphasizes the need to identify areas that are higher permeability.

1 Attachment A: Soils Maps



Big Valley Groundwater Sustainability Plan
Lassen and Modoc Counties, California

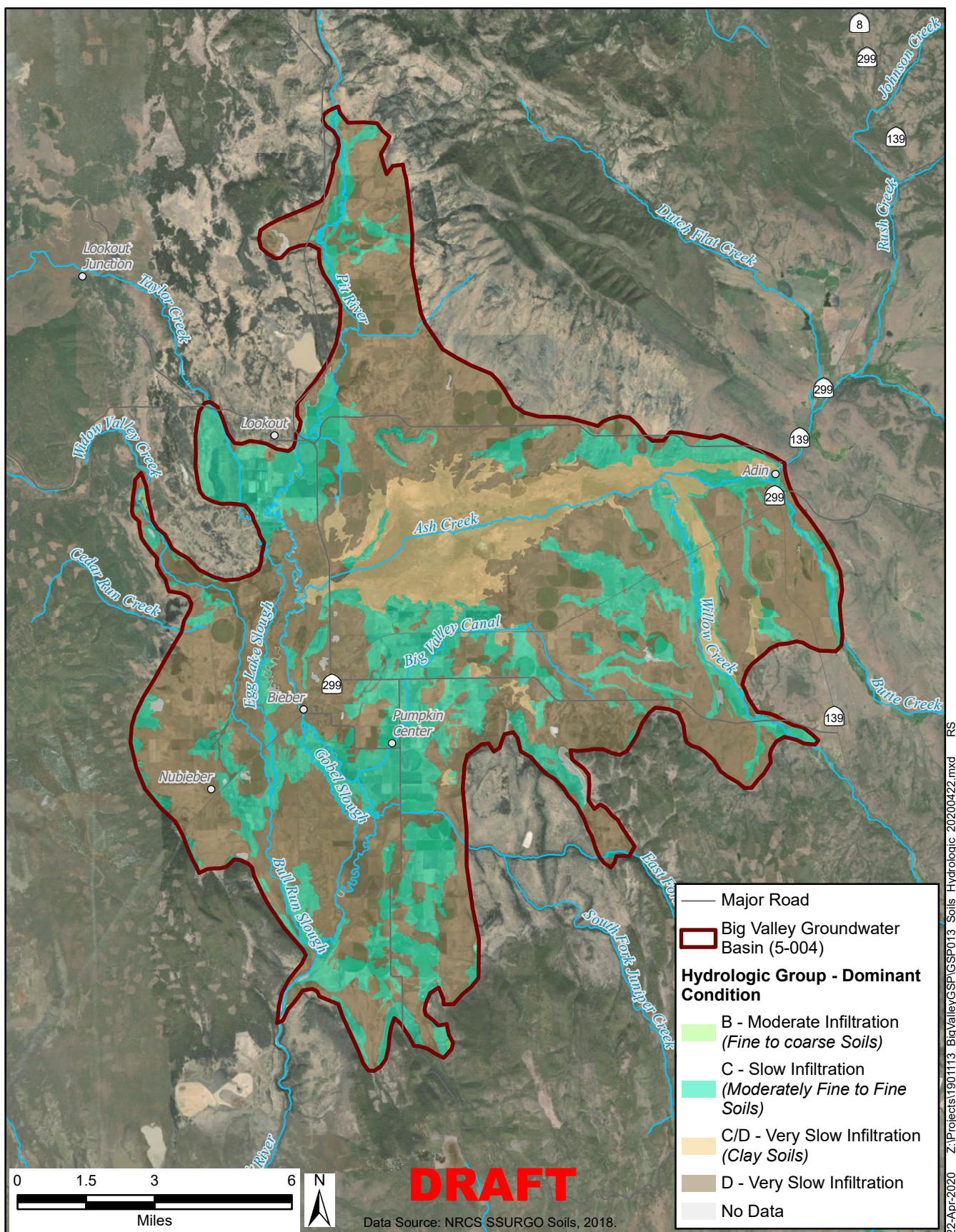
Big Valley GSA



MARCH 2020

Hydrologic Soil Groups

FIGURE 4-2



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Big Valley Groundwater Sustainability Plan
Lassen and Modoc Counties, California

Big Valley GSA



Hydrologic Soil Groups

MARCH 2020

FIGURE 4-2