CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY

SPECIAL STANDING ADVISORY COMMITTEE

Committee Members

Roberta Jaffe (Chair)	Brad DeBranch	Joe Haslett
Brenton Kelly (Vice Chair)	Louise Draucker	Mike Post
Claudia Alvarado	Jake Furstenfeld	Hilda Leticia Valenzuela

AGENDA

February 28, 2019

Agenda for a meeting of the Cuyama Basin Groundwater Sustainability Agency Standing Advisory Committee to be held on Thursday, February 28, 2019 at 2:00 PM, at the Cuyama Valley Family Resource Center, 4689 CA-166, New Cuyama, CA 93254. To hear the session live, call (888) 222-0475, code: 6375195#.

Teleconference Locations:

Cuyama Valley Family Resource Center 4689 CA-166 New Cuyama, CA 93254	7870 Fairchild Ave Winnetka, CA 91306

The order in which agenda items are discussed may be changed to accommodate scheduling or other needs of the Committee, the public or meeting participants. Members of the public are encouraged to arrive at the commencement of the meeting to ensure that they are present for Committee discussion of all items in which they are interested.

In compliance with the Americans with Disabilities Act, if you need disability-related modifications or accommodations, including auxiliary aids or services, to participate in this meeting, please contact Taylor Blakslee at (661) 477-3385 by 4:00 p.m. on the Friday prior to this meeting. Agenda backup information and any public records provided to the Committee after the posting of the agenda for this meeting will be available for public review at 4689 CA-166, New Cuyama, CA 93254. The Cuyama Basin Groundwater Sustainability Agency reserves the right to limit each speaker to three (3) minutes per subject or topic.

1. Call to Order
2. Roll Call
3. Pledge of Allegiance
4. Approval of Minutes
5. Groundwater Sustainability Plan
    a. Groundwater Sustainability Plan Update
    b. Technical Forum Update
    c. Discussion on Water Budgets
    d. Discussion on Sustainability Thresholds
    e. Direction on Management Areas
    f. Projects and Management Actions

i. Direction on Projects

ii. Direction on Pumping Allocation Approach

g. Direction on Implementation Plan

h. Stakeholder Engagement Update

6. Groundwater Sustainability Agency

   a. Report of the Executive Director

   b. Board of Directors Agenda Review

   c. Report of the General Counsel

7. Items for Upcoming Sessions

8. Committee Forum

9. Public comment for items not on the Agenda

   At this time, the public may address the Committee on any item not appearing on the agenda that is within the subject matter jurisdiction of the Committee. Persons wishing to address the Committee should fill out a comment card and submit it to the Executive Director prior to the meeting.

10. Adjourn

Cuyama Basin Groundwater Sustainability Agency Standing Advisory Committee Meeting

January 31, 2019

Draft Meetings Minutes

Cuyama Valley Family Resource Center, 4689 CA-166, New Cuyama, CA 93254

PRESENT:
Jaffe, Roberta – Chair
Kelly, Brenton – Vice Chair
Draucker, Louise
Post, Mike
Valenzuela, Hilda Leticia
Beck, Jim – Executive Director
Hughes, Joe – Legal Counsel

ABSENT:
Alvarado, Claudia
DeBranch, Brad
Furstenfeld, Jake
Haslett, Joe

1. **Call to Order**
   Chair Roberta Jaffe called the Standing Advisory Committee (SAC) to order at 4:00 p.m.

2. **Roll Call**
   Hallmark Group Project Coordinator Taylor Blakslee called roll of the Committee (shown above).

   A UC Santa Barbara Film and Anthropology student was present and introduced himself announcing that he would be filming the meeting to gain a further understanding of what is happening with the groundwater in the basin for a school project.

3. **Pledge of Allegiance**
   The pledge of allegiance was led by Chair Jaffe.

4. **Approval of Minutes**
   Cuyama Basin Groundwater Sustainability Agency (CBGSA) Executive Director Jim Beck presented the January 8, 2019 SAC minutes.

   Chair Jaffe asked what the status of the Groundwater Conditions chapter is regarding the conditions set by the Board for approval. Woodard & Curran (W&C) Project Manager Brian Van Lienden reported that they received the Cuyama Community Services District (CCSD) water quality data and included it in the revised Monitoring Networks chapter.

MOTION
Committee member Louise Draucker made a motion to adopt the January 8, 2019 CBGSA SAC minutes. The motion was seconded by Committee Member Valenzuela, a roll call vote was made, and the motion passed with a simple majority of Committee Members present.

AYES:	Committee Members Draucker, Kelly, Post and Valenzuela
NOES:	None
ABSTAIN:	Committee Member Jaffe
ABSENT:	Committee Members Alvarado, DeBranch, Furstenfeld and Haslett

5. Groundwater Sustainability Plan

a. Groundwater Sustainability Plan Update
Mr. Van Lienden provided an update on GSP activities, which is included in the SAC packet.

Mr. Van Lienden reported that W&C is looking for volunteers to implement sensors in the monitoring wells. Mr. Beck said the CBGSA may want to set a joint Board and SAC ad hoc committee to determine the strategy of installing ten (10) sensors in existing wells. He also mentioned that we would need agreements with the landowners.

Chair Jaffe asked what the purpose of the effort is and Mr. Van Lienden replied that it is to work towards bridging the data gap.

Vice Chair Kelly asked if the sensors will be provided by Lee Knudtson with Wellntel, and Mr. Van Lienden said W&C will need to determine which technology to recommend. He reported that they also have funds for installing surface stream flow meters once the agreements are executed. He said the sensors would likely be for the next season.

In regard to the schedule, Mr. Van Lienden reported that release of the revised Undesirable Results Narrative chapter is being postponed to coincide with the revised Sustainability Threshold chapter.

i. Water Budget Update
Cuyama Valley Family Resources Center Executive Director Lynn Carlisle asked Mr. Van Lienden if, during the implementation phase, can groundwater levels decline. Mr. Van Lienden confirmed that you temporarily could, and Mr. Beck added that this is a part of the glide path discussion during the Implementation Plan chapter; however, while levels could temporarily decline the California Department of Water Resources (DWR) would need to see a move toward your sustainability goal for the Groundwater Sustainability Plan (GSP) to remain viable.

Mr. Van Lienden presented the components of the water budget.

Chair Jaffe asked what the Sustainable Groundwater Management Act (SGMA) requires regarding implementing climate change. Mr. Van Lienden said SGMA requires looking at the 50-year projection and, once the base case is established, W&C will model climate change.

Mr. Van Lienden reported that at last month's SAC meeting they discussed sustainability goals and this month, they are discussing the water budget, possible water supply projects and demand management allocation approaches. He said this month, W&C would review the information received regarding the supply projects and demand management approaches, and next month W&C will bring modeling scenarios illustrating pumping reductions with and without water supply projects.

Mr. Van Lienden discussed the water budget assumptions for historical, current and future conditions.

Committee member Draucker commented that Cuyama Basin has looked very different historically and in recent years the land use has changed a lot, for example the sage land has been converted to agricultural land.

Ms. Carlisle asked if W&C has discussed implementing mini rainfall models in the different threshold regions. Mr. Van Lienden said they have 30-40 sub-watersheds and each one simulates the inflow and outflows for each section on the Basin.

CBGSA Board Director Jane Wooster asked if the average annual precipitation came from the model or a database. Mr. Van Lienden said it came from the PRISM database, which is actual data that has been extrapolated.

Mr. Van Lienden said the model's land use data is spatial and does not assume future land use expansion. He said they are using the model to see where in each region they need to reduce pumping to achieve sustainability.

Mr. Beck said the Board will be updating the assumptions every five years, but the CBGSA can elect to update this more frequently.

Vice Chair Kelly asked if the crops are listed with their consumptive use in the model, and Mr. Van Lienden said the types of land use have been applied in the model, however they are not in order of consumption. Vice Chair Kelly suggested that staff can address the manipulation of the bar graph through reducing pumping over acreage. Vice Chair Kelly expressed interest in identifying each crop's water use in the future.

Landowner Steve Gliessman said that he has observed a more common agricultural practice recently that involves farming perennials for 20-25 years and then pulling the whole crop out and planting something else which can affect the water usage quite dramatically. He asked if the model can consider this practice. Mr. Beck said this is a good point, but due to timing, suggested it would be appropriate to document this in future model development.

Mr. Van Lienden reported that W&C took the inflows and outflows and ran the model to develop two water budgets: (1) a basin-wide future conditions *land surface* water budget and (2) a basin-wide future conditions *groundwater* budget.

Ms. Carlisle asked how the applied water value changed from the December 3, 2018 Public Workshop presentation for the model results. Mr. Van Lienden said the value shown in December 2018 was a very rough first cut and improvements have been made to the model since then. She commented that the model results changed fairly drastically and said it would be good to know what and why things changed.

Mr. Beck said a decision was made to present a preliminary version, but now they are presenting something that is much closer to the final version. He said the information in the final budget will be well documented, however W&C does not have the time or budget to go back and capture the reasons for the water budget change. Ms. Carlisle said from a process standpoint, it is important to make those numbers very defensible.

Vice Chair Kelly asked why the precipitation for the water budget was 11.4 when it should be 13.1 for the entire basin. Mr. Van Lienden said W&C will look into this.

Mr. Van Lienden reported that for the groundwater budget, the model showed an annual deficit of 26 thousand acre-feet (TAF) using current conditions assumptions.

He reported that W&C modeled the annual average storage change conditions for each threshold region and virtually all threshold regions are in balance except the central basin which was modeled with a deficit of 25 TAF. Mr. Beck asked if the sensitivity reference for minus one TAF shown in the northwestern and eastern regions is significant. Mr. Van Lienden said that it is statistical noise and indicates that those regions are essentially in balance. Mr. Beck clarified that threshold regions were used to look at numbers and we are not recommending using those threshold regions for management areas.

Chair Jaffe commented that reporting that the northwestern region of the basin will be in balance in the future conditions model should be clarified to include that we do not have robust data yet and do not know the true impacts.

Chair Jaffe asked how her well (Opti well No. 571) level is projected to increase when those levels are currently decreasing somewhat. Mr. Van Lienden said the model is showing that the wells are essentially in balance in that area.

Mr. Van Lienden said in the central region, CCSD Opti well No. 72 levels have increased since an adjacent landowner stopped pumping thus allowing groundwater conditions to improve in that localized area.

Mr. Van Lienden said the most challenging region was modelling the eastern region. He said since minimum thresholds were set with consideration to the nearby well, levels are shown to be below those minimum thresholds. Vice Chair Kelly said it would be important to track the bottom of the wells. Mr. Beck said it is important to consider both the minimum thresholds and the model results when evaluating the results.

Committee member Post asked if there is prioritization between residential domestic usage and commercial crop usage. He said there is a domestic water crisis in Ventucopa at the moment and asked if that takes a different priority within the GSP than the irrigation of crops. Mr. Van Lienden said that is not prioritized in the model, but this would be addressed in the projects and management actions.

Mr. Van Lienden reported that groundwater level changes focused in the central basin and somewhat in the Ventucopa river channel area are due to agricultural use.

Grapevine Capital's Ray Shady asked if precipitation is modeled within the groundwater bulletin 118 boundary, or the Cuyama watershed, and Mr. Van Lienden said the latter.

ii. Preliminary Discussion on Project and Management Actions

Mr. Van Lienden presented an overview of several proposed projects and management actions. He said these ideas were developed through Santa Barbara's water augmentation study, CBGSA public workshops, other basin presentations and the technical forum. Mr. Van Lienden said he is looking for feedback on what projects make sense to pursue so W&C can include them in the modelling to run with and without scenarios.

Committee member Post asked if we know what restrictions are placed on us by Cuyama's downstream users. Mr. Van Lienden said we do not have a clear picture on that but will address this more during the Stormwater Capture project.

New Pumping Well in the CCSD and Ventucopa Areas – **Recommended** by W&C
Mr. Van Lienden reported that the new pumping well is more of a mitigation effort.

Committee member Draucker asked why the water problems in old Cuyama are not being considered. Mr. Van Lienden said he was unaware of water complications in old Cuyama and will have staff look into this.

Committee member Post asked what the cost split is for the two wells. Mr. Van Lienden said about 80-90% for the CCSD well. He reported that a well in Ventucopa would cost a couple thousand dollars. Committee member Draucker said the new wells are probably the most logical projects to include.

Vice Chair Kelly asked what the conditions of the old townsite is. Mr. Van Lienden said that during his discussions with Paul Chounet he had indicated that he was unaware of an issue in old Cuyama. Mr. Van Lienden said W&C would not include this information in the model but would provide a narrative in the GSP.

Committee member Post said Ventucopa is trucking water and they are not on an even playing field. Mr. Beck said projects that mitigate against undesirable affects can be prioritized in the Implementation Plan Chapter.

Flood & Stormwater Capture – **Recommended** by W&C to do more analysis
Ms. Wooster said Paso Robles Basin has done surface recharge areas on grazing land and it does not involve taking any land out of production.

Mr. Van Lienden said a study could look at groundwater decline areas and overlay soil conditions with recharge rates and estimate a rough number for recharge on those areas for the model.

Municipal Area Rainwater Capture – **Not** Recommended by W&C
Mr. Van Lienden said the municipal area rainwater capture is fairly expensive.

Committee member Post said there is a linkage between a new well and this program. He asked why taxpayers would subsidize a new well if they are not trying this type of conservation program first.

Mr. Beck said you need to evaluate projects considering the economics as well as water supply improvements.

Committee member Post said he does not think he could vote for a new well if they have not implemented significant water conservation/reduction strategies first.

Vice Chair Kelly commented that the majority of homes in Cuyama use swamp coolers and use more water which can be addressed through a conservation effort; however, he stated it would likely be via a separate effort.

Mr. Van Lienden suggested that a domestic conservation strategy could be included in the plan, but would not be included in the model. Vice Chair Kelly supported not including the municipal area rainwater capture.

Rangeland and Forest Management – **Not** Recommended by W&C
Committee member Post commented that this option is at risk to significant litigation.

Vice Chair Kelly said the forest service would be behind this since they are in favor of managing wildfires and he would recommend this option. Committee member Post said the forest is such a small part of the basin it is not worth discussing.

Mr. Van Lienden asked if anyone knows how much forest is in the basin. Vice Chair Kelly said he will get more information from the forest service. Mr. Beck said the question is if it will it be worth it to commission a study to determine the yield and feasibility of this project.

Water Supply Imports via Pipeline – **Not** Recommended by W&C

Water Supply Imports via Exchange – W&C Recommends adding this option to a future study list. The idea is to capture flows that would be captured by Twitchell Reservoir and purchase the water. This will allow you to capture additional stormwater.

Precipitation Enhancement – **Recommended** by W&C
Committee member Post said this is not a very effective option. Mr. Beck said it is very challenging to apply the with and without analysis to cloud seeding. Vice Chair Kelly said the nature conservancy has determined that cloud seeding over the Sierras has not resulted in higher levels of toxicity.

USDA Forest Service Mount Pinos Ranger District Resource Officer, Los Padres National Forest Ivana Noell said the mountains that would be seeded would need permission by the forest service and Los Padres Hydrologist Heidi George expressed concerns with cloud seeding and would like her to comment on this proposal.

Summary chart of SAC direction on projects:

Project	W&C Recommendation	SAC Recommendation
New Pumping Well in the CCSD and Ventucopa Areas	Yes	Yes
Flood & Stormwater Capture	More analysis	Yes
Municipal Area Rainwater Capture	No	Mixed. Possible add this under a new project category titled "Ensure Reliable Water Supply for Domestic Areas" to include: Conservation Strategy, New Wells, Rainwater Capture, and others.
Rangeland and Forest Management	No	Future study list
Water Supply Imports via Pipeline	No	No
Water Supply Imports via Exchange	Future study list	Future study list
Precipitation Enhancement	Yes	2 – No (Draucker and Post) 1 – Yes (Kelly) 2 – More study (Jaffe and Valenzuela)

Demand Management / Allocation Approach:
Mr. Van Lienden discussed examples of safe yield allocation methods and let the SAC know we will have a more in-depth discussion next month and is not looking for a decision or recommendation. He presented four options for consideration: (1) pro rata allocation per overlying acre, (2) pro rata allocation per irrigated overlaying acre, (3) allocation based on fraction of historic pumping, and (4) hybrid option (combination of all three).

Ms. Carlisle asked what the terms appropriative and correlative rights related to. Mr. Beck said they apply to surface and groundwater rights. He said appropriative is based on historical use and correlative rights determine rights in groundwater based on ownership of land. He said a prescriptive right is obtained through the adverse possession of someone else's water right.

GSP Outreach Catalyst Group's Principle Charles Gardiner made the comment that we are presenting an allocation methodology, but SGMA and GSAs cannot dictate who can and cannot pump groundwater.

Pro Rata on irrigated acres
Committee member Post said this is a litigation concern, and Mr. Beck agreed that this method has a greater risk of litigation.

Mr. Beck clarified that under this option landowners not using their groundwater are not compensated for landowners using groundwater since the safe yield would be allocated to those using it and reallocated when a landowner wants to start using groundwater.

Committee Member Post left the meeting at 6:37 pm and the SAC lost a quorum
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<u>*Fraction of Historic Use*</u>
Vice Chair Kelly asked if the data is extrapolated or based on meters. Mr. Van Lienden replied that ideally it would be on meters.

Mr. Beck said in most basins, allocations are set up so that costs follow allocation and you should be thinking of who will be paying for SGMA implementation.

Ms. Carlisle asked if the option to only allocate problem areas has been considered. Mr. Beck said you can do this, but it can be challenging to determine the fringe of impacts. He said you can also create more than one allocation.

Committee Member Draucker asked if New Cuyama is in the red zone. Mr. Van Lienden said it is in the drawdown, but you can treat Municipal and Industrial separately.

Lastly, Mr. Van Lienden reported on key components of the Implementation Plan.

iii. Presentation on Groundwater Dependent Ecosystems
W&C Senior Hydrogeologist John Ayres described the SGMA regulations related to Groundwater Dependent Ecosystems (GDE). He said the law requires you to identify and describe impacts of management actions on the GDEs, but the regulations and legislation does not require GSPs to do any specific management actions to protect GDEs.

Mr. Ayres said that he will be presenting W&C's analysis of GDEs in the basin using the National Conservancy data set as recommended by DWR.

Mr. Ayres recommended using piezometers to monitor GDEs. He explained that a piezometer is shorthand for a small, shallow, localized well that is used for a 20+ year period.

Vice Chair Kelly asked what the protocols were for determining the verified GDEs. Mr. Ayres said the biologist described the biotics of each GDE and an update will be included in the Groundwater Conditions section.

Vice Chair Kelly asked if the biologist was able to visit all of the sites in the field over a day. Mr. Ayres said his approach was based on visual and aerial analysis. For the sites that he was not sure of a GDE, he visited those sites in-person and applied that information to other similar areas.

Chair Jaffe said she was astounded that 1,500 acres have been removed from the GDEs and asked Mr. Ayres what his opinion was on this. Mr. Ayres said he was not surprised since Cuyama has been dry for a very long time. He said there are geologic faults and features that cause water to upwell and support the GDEs shown in the report.

Vice Chair Kelly said there is a lot more going on in Cuyama than 500 acres of GDEs and asked if this is more of an issue of defining a GDE. Mr. Ayres said the memo describes the biologist's decision-making process and criteria, which focused on plant life present and remote sensing. Mr. Ayres stressed that GDEs can be evaluated, researched and updated.

Vice Chair Kelly said he appreciated the slide that showed regional monitoring is ineffective in monitoring GDEs and supports specific monitoring of GDEs.

b. Technical Forum Update

Mr. Van Lienden provided an overview of the January 25, 2019 technical forum call. A summary of the issues discussed is provided in the SAC packet.

c. Monitoring Networks Adoption

This item was covered earlier in the meeting to ensure a quorum for approval.

Mr. Van Lienden provided an overview of Monitoring Networks chapter.

Chair Jaffe and Vice Chair Kelly appreciated the redline strikeout version of the chapters.

MOTION

Vice Chair Kelly made a motion to recommend adoption of the Monitoring Networks chapter. The motion was seconded by Committee Member Draucker, a roll call vote was made, and the motion passed with a simple majority of Committee Members present.

AYES:	Committee Members Draucker, Jaffe, Kelly, Post and Valenzuela
NOES:	None
ABSTAIN:	None
ABSENT:	Committee Members Alvarado, DeBranch, Furstenfeld and Haslett

d. Data Management Adoption

This item was covered earlier in the meeting to ensure a quorum for approval.

Mr. Van Lienden provided an overview of Data Management chapter.

MOTION

Vice Chair Kelly made a motion to recommend adoption of the Data Management chapter. The motion was seconded by Committee Member Valenzuela, a roll call vote was made, and the motion passed with a simple majority of Committee Members present.

AYES:	Committee Members Draucker, Jaffe, Kelly, Post and Valenzuela
NOES:	None
ABSTAIN:	None
ABSENT:	Committee Members Alvarado, DeBranch, Furstenfeld and Haslett

Mr. Van Lienden said a number of improvements have been made to the Data Management System itself.

e. Stakeholder Engagement Update

GSP Outreach the Catalyst Group's Mary Currie provided an update on stakeholder engagement activity.

6. Groundwater Sustainability Agency

a. Report of the Executive Director

Nothing to report.

b. Board of Directors Agenda Review
Mr. Beck provided an overview of the February 6, 2019 CBGSA Board of Directors agenda.

c. Report of the General Counsel
Nothing to report.

7. Items for Upcoming Sessions
Nothing to report.

8. Committee Forum
Nothing to report.

9. Public comment for items not on the Agenda
Nothing to report.

10. Adjourn
Chair Jaffe adjourned the meeting at 7:26 p.m.

I, Jim Beck, Executive Director of the Cuyama Basin Groundwater Sustainability Agency, do hereby certify that the foregoing is a fair statement of the proceedings of the meeting held on Tuesday, January 8, 2019, by the Cuyama Basing Groundwater Sustainability Agency Standing Advisory Committee.

Jim Beck
Dated: February 28, 2019

TO: Standing Advisory Committee
Agenda Item No. 5a

FROM: Brian Van Lienden, Woodard & Curran (W&C)

DATE: February 28, 2019

SUBJECT: Groundwater Sustainability Plan Update

Issue
Update on the Cuyama Basin Groundwater Sustainability Agency Groundwater Sustainability Plan.

Recommended Motion
None – information only.

Discussion
Cuyama Basin Groundwater Sustainability Agency Groundwater Sustainability Plan (GSP) consultant Woodard & Curran's GSP update is provided as Attachment 1.

Attachment 1

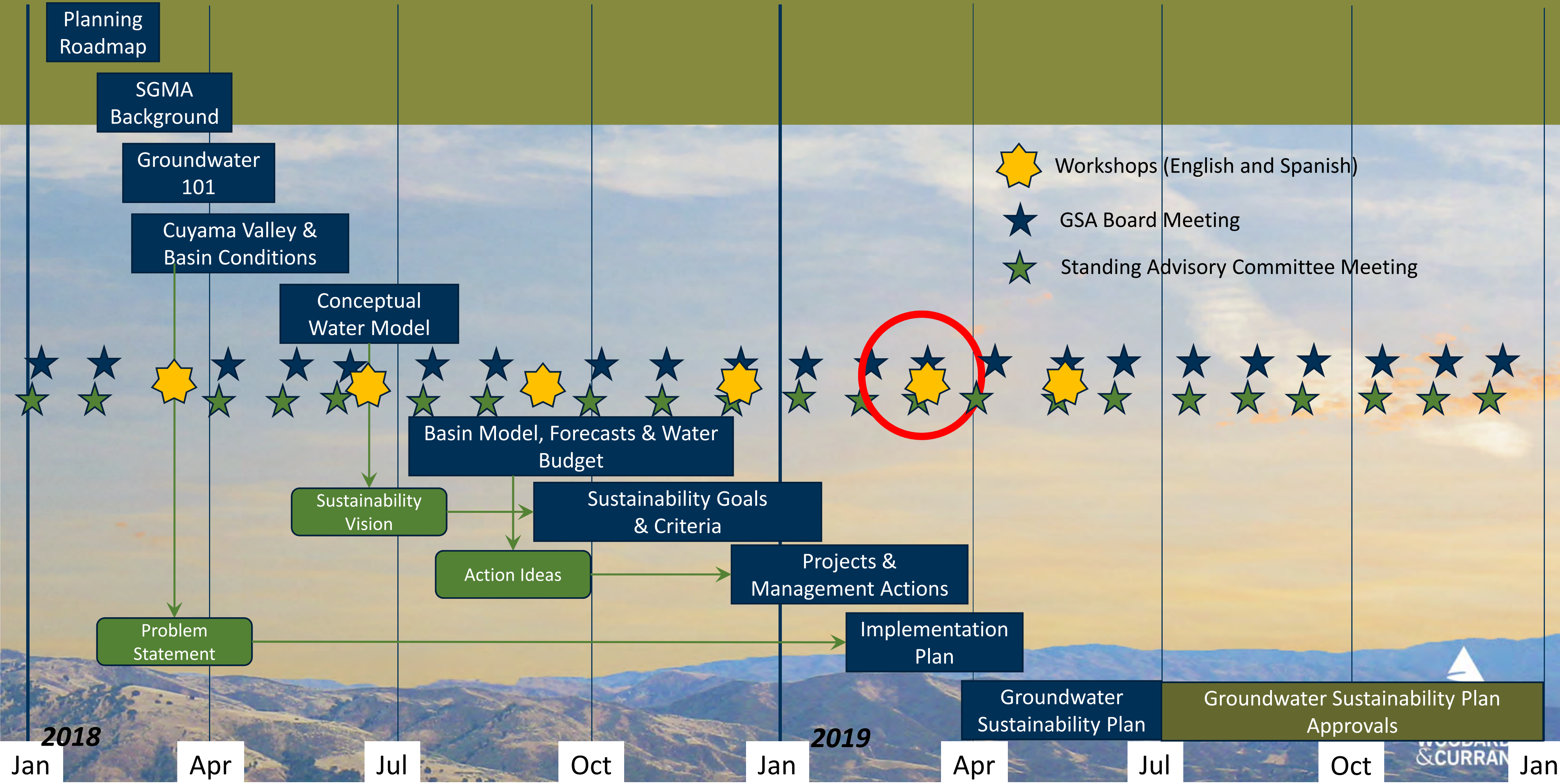
Cuyama Basin Groundwater Sustainability Agency

Groundwater Sustainability Plan Update

February 28, 2019

WOODARD & CURRAN

Cuyama Basin Groundwater Sustainability Plan – Planning Roadmap



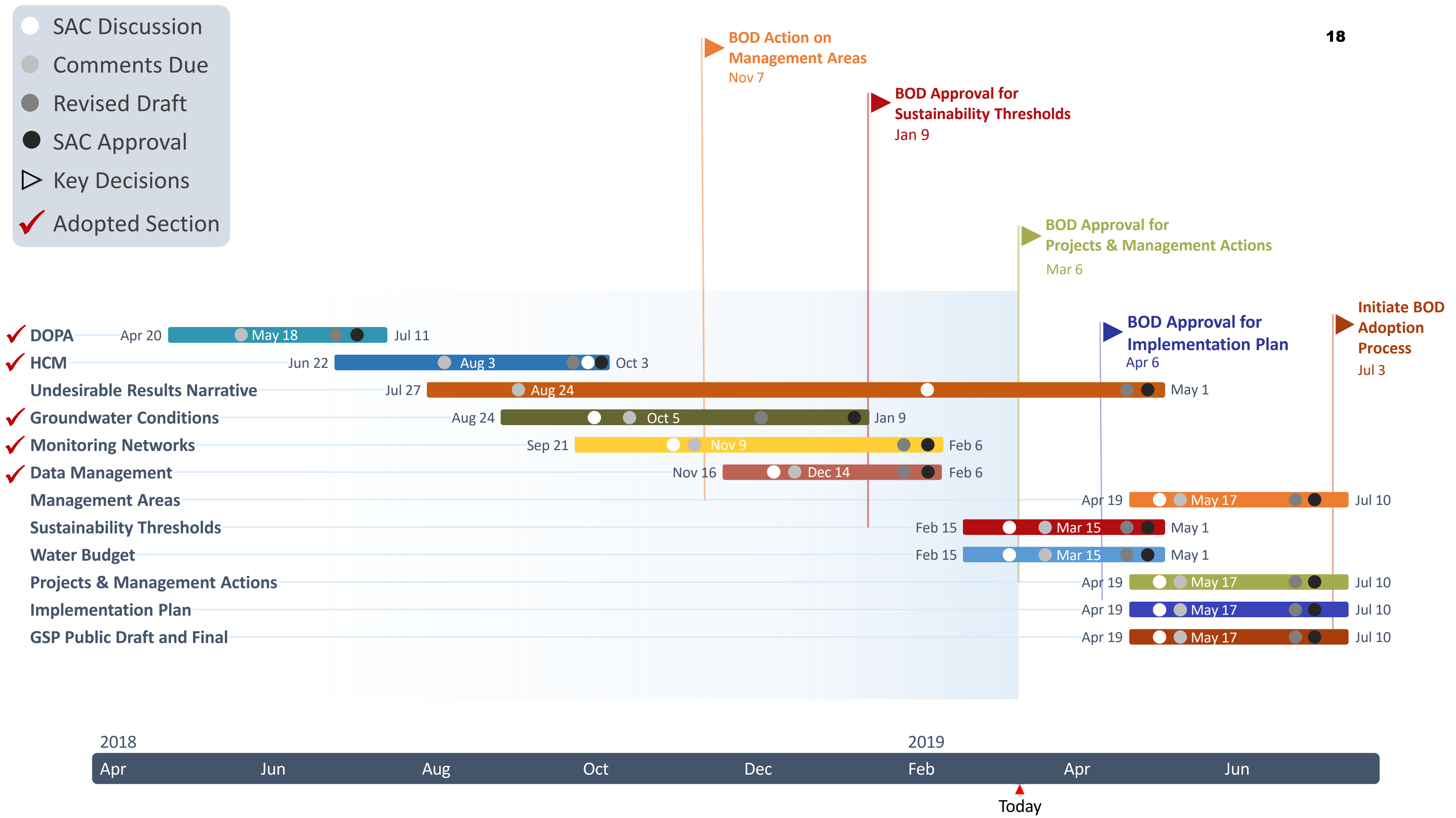
February GSP Accomplishments

- ✓ Submitted draft Water Budget GSP Section for review
- ✓ Submitted draft Sustainability Thresholds GSP Section for review
- ✓ Developed draft future sustainability scenario using the Cuyama Basin numerical model
- ✓ Performed technical analysis of potential water supply options using the Cuyama Basin numerical model
- ✓ Initiated development of invoice to DWR for payment on SGMA grant

GSP Sections

1. Introduction
   - 1.1 GSA Authority & Structure
   - 1.2 Plan Area
   - 1.3 Outreach Documentation
2. Basin Settings
   - 2.1. HCM
   - 2.2 GW Conditions
   - 2.3 Water Budget
     - *Appendix:* Numerical GW Model Documentation
3. Undesirable Results
   - 3.1 Sustainability Goal
   - 3.2 Narrative/Effects
   - 3.2 ID Current Occurrence
4. Monitoring Networks
   - 4.1 Data Collection/Processing
   - 4.2 GSP Monitoring Networks
5. Sustainability Thresholds
   - 5.1 Threshold Regions
   - 5.2 Minimum Thresholds, Measurable Objectives, Margin of Operational Flexibility, Interim Milestones
6. Data Management System
   - *Appendix:* DMS User Guide
7. Projects & Management Actions
8. GSP Implementation

WOODARD & CURRAN



SAC Discussion
Comments Due
Revised Draft
SAC Approval
Key Decisions
Adopted Section
BOD Action on Management Areas
Nov 7
BOD Approval for Sustainability Thresholds
Jan 9
BOD Approval for Projects & Management Actions
Mar 6
BOD Approval for Implementation Plan
Apr 6
Initiate BOD Adoption Process
Jul 3
DOPA
Apr 20
May 18
Jul 11
HCM
Jun 22
Aug 3
Oct 3
Undesirable Results Narrative
Jul 27
Aug 24
May 1
Groundwater Conditions
Aug 24
Oct 5
Jan 9
Monitoring Networks
Sep 21
Nov 9
Feb 6
Data Management
Nov 16
Dec 14
Feb 6
Management Areas
Apr 19
May 17
Jul 10
Sustainability Thresholds
Feb 15
Mar 15
May 1
Water Budget
Feb 15
Mar 15
May 1
Projects & Management Actions
Apr 19
May 17
Jul 10
Implementation Plan
Apr 19
May 17
Jul 10
GSP Public Draft and Final
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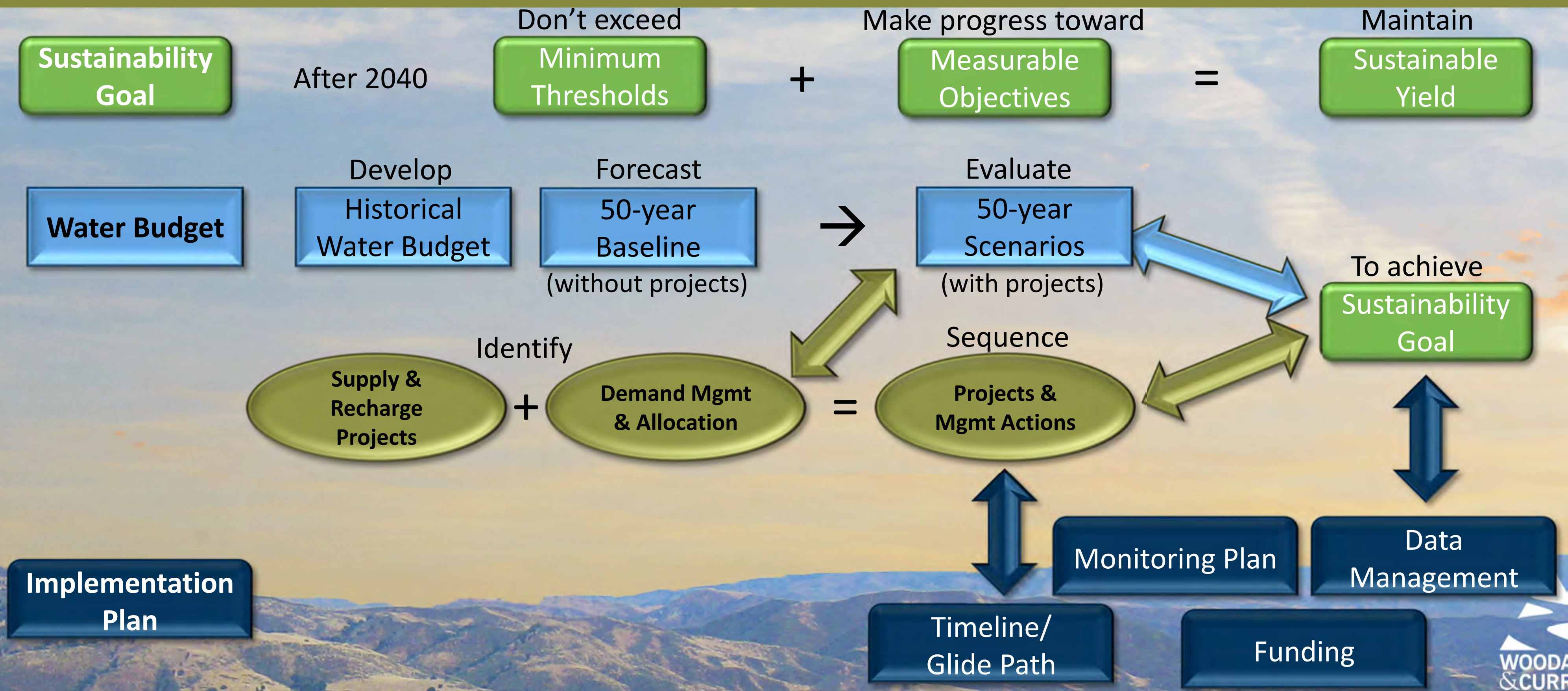
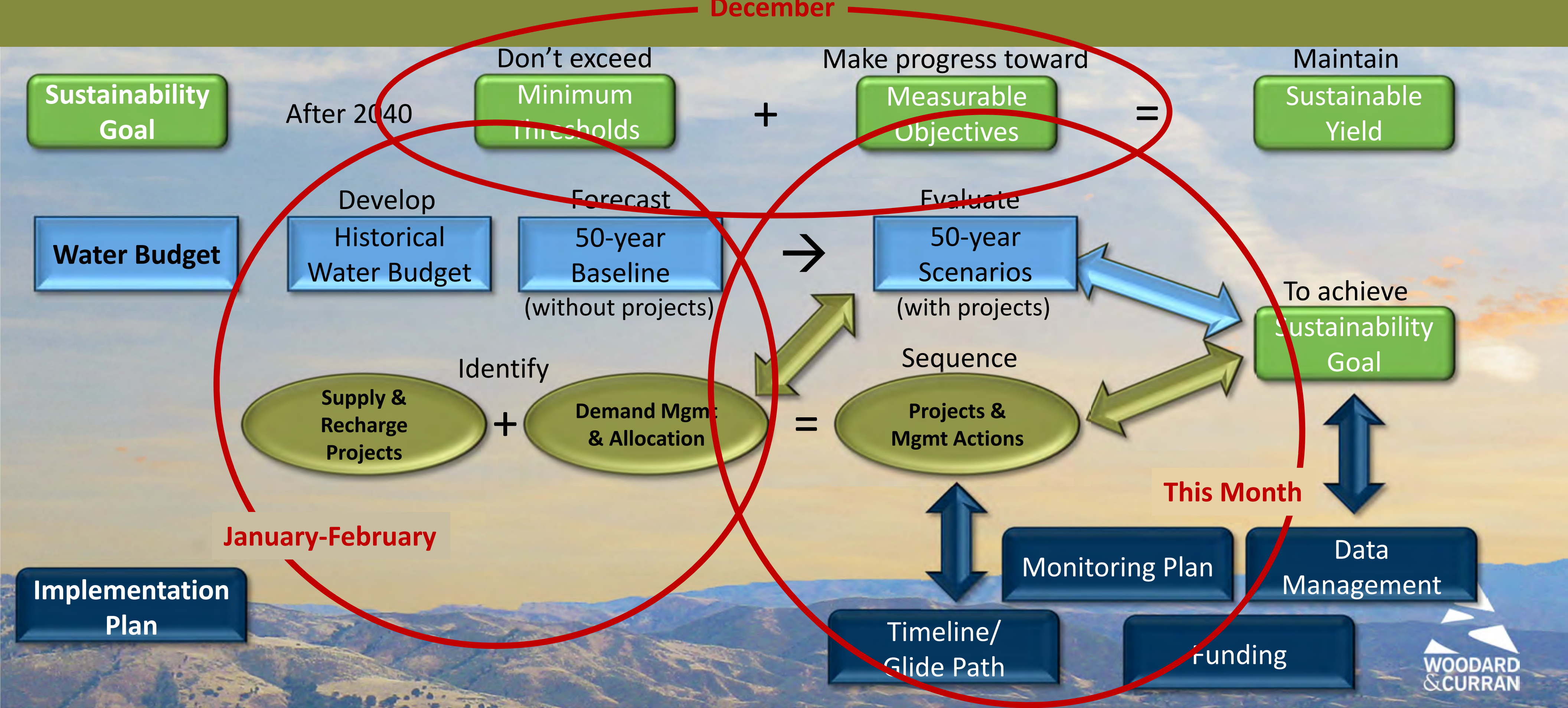
GSP Discussion Approach & Terminology



GSP Discussion Approach & Terminology



TO: Standing Advisory Committee
Agenda Item No. 5b

FROM: Brian Van Lienden, Woodard & Curran (W&C)

DATE: February 28, 2019

SUBJECT: Technical Forum Update

Issue
Update on the Technical Forum.

Recommended Motion
None – information only.

Discussion
At the request of Cuyama Valley landowners, Cuyama Basin Groundwater Sustainability Agency Groundwater Sustainability Plan (GSP) consultant Woodard & Curran (W&C) has been meeting monthly with technical consultants representing landowners to discuss W&C's approach and to provide input where appropriate.

A summary of the topics discussed at the February 22, 2019 technical forum meeting is provided as Attachment 1, and the next forum date is March 22, 2019.

COMMITMENT & INTEGRITY
DRIVE RESULTS

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 2/22/2019

MEETING: Technical Forum Conference Call

ATTENDEES: Matt Young (Santa Barbara County Water Agency)
Fray Crease (Santa Barbara County Water Agency)
Spencer Harris (Cleath-Harris Geologists)
Neil Currie (Cleath-Harris Geologists)
John Fio (EKI)
Jeff Shaw (EKI)
Dave Leighton (EKI)
Matt Klinchuch (Provost & Pritchard)
Dennis Gibbs (Santa Barbara Pistachio Company)
Brian Van Lienden (Woodard & Curran)
Sercan Ceyhan (Woodard & Curran)
Micah Eggleton (Woodard & Curran)
Ali Taghavi (Woodard & Curran)
Sebastien Poore (Woodard & Curran)

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1. AGENDA

- Numerical Model and Water Budget Update
- Projects and Management Actions
- Groundwater Dependent Ecosystems

2. DISCUSSION ITEMS

The following table summarizes comments raised during the conference call and the response and plan for resolution (if appropriate) identified for each item.

Item No.	Comment	Commenter	Response/Plan for Resolution
1	The model input and output files were provided to the Technical Forum members earlier this week.	W&C	The Technical Forum members did not have any questions or comments on them at the time of the call.
2	How does the integrated model account for precipitation onto upper watershed areas that would flow into the Basin area?	Spencer Harris	Areas outside of the groundwater basin are simulated in the model based on precipitation and assumed land cover to estimate runoff and subsurface inflow from each upper watershed area.
3	Can you add an accounting of the water flows in the upper watershed areas?	Spencer Harris	W&C will provide the Technical Forum members with the model data files for the upper watersheds.

4	Do the sustainability runs maintain the same crop mix as current conditions?	Dennis Gibbs	For modeling purposes, the sustainability runs assumed that annual crops would be reduced proportionally while perennial crops would be unchanged.
5	It is not appropriate to make a distinction between annual and perennial crops in implementing pumping reductions.	Multiple	This assumption was used for modeling purposes and does not reflect a recommendation for implementation. To avoid confusion, the language used in the SAC and Board slides has been modified to remove the distinction.
6	Is there any opportunity to switch to less water intensive crops to reduce the financial impact?	Spencer Harris	This is something that could be evaluated using economic analysis, most likely during the GSP implementation phase.
7	It would be helpful to see some error bars – have you done any sensitivity analysis on model inputs?	Jeff Shaw	This has not been done yet for Cuyama GSP, but it could be considered in future analysis.
8	The assumptions used for cloud seeding probably overestimate the benefit because in practice cloud seeding would typically be applied only on a subset of storms throughout the year.	Matt Young	The current analysis is only intended to provide an initial estimate of the benefits that may be accrued. However, to improve this initial analysis, W&C has requested additional information from Santa Barbara Co staff on the timing of when cloud seeding would be applied.
9	On the North side of Highway 166 where the river is the widest, that is the historical channel. There are areas there that are prime for detention storage.	Dennis	Alternative areas for recharge of stormwater can be considered in a future study.
10	The estimates of benefits for the three water supply projects are reasonably accurate for use in the GSP.	Dennis	Comment noted.
11	Has climate change analysis been applied to any of these scenarios?	Jeff	Climate change has not yet been evaluated for the GSP. An analysis will be developed for inclusion in the Public Draft.

Attachment 2

Cuyama Basin Groundwater Sustainability Agency

Technical Forum Update

February 28, 2019

WOODARD & CURRAN

February 22nd Technical Forum Discussion

- Numerical Model Development Update
  - Water Budgets
  - Projects Analysis
- Discussion on Sustainability Thresholds

- Next Meeting – Friday, March 22

Technical Forum Members

- Catherine Martin, San Luis Obispo County
- Matt Young, Santa Barbara County Water Agency
- Matt Scrudato, Santa Barbara County Water Agency
- Matt Klinchuch, Cuyama Basin Water District
- Jeff Shaw, EKI
- Anona Dutton, EKI
- John Fio, EKI
- Dennis Gibbs, Santa Barbara Pistachio Company
- Neil Currie, Cleath-Harris Geologists
- Matt Naftaly, Dudek

TO:	Standing Advisory Committee Agenda Item No. 5c
FROM:	Brian Van Lienden, Woodard & Curran (W&C)
DATE:	February 28, 2019
SUBJECT:	Discussion on Water Budgets

Issue
Discussion on the Water Budget chapter.

Recommended Motion
None – information only.

Discussion
An overview of the Water Budget chapter is provided as Attachment 1 and the draft Water Budget chapter is provided as Attachment 2.

Attachment 1

Cuyama Basin Groundwater Sustainability Agency

Discussion on Water Budgets

February 28, 2019

Water Budget GSP Section

- Draft GSP Section provided to SAC and Board for on February 19th
- Water Budget section describes:
  - Water budget information and hydrologic periods
  - Usage of IWFM model and associated data
  - Water Budget definitions and assumptions
  - Water Budget estimates
    - Historical water budget
    - Current and projected water budget
  - Sustainable yield estimate (placeholder)
- Comments are due on March 15th

Water Budgets - Time Frames

Historical Conditions

Historical hydrology, land use and population (1995-2015)

Current Conditions

2017 land use and population

1967 - 2017 historical hydrology

Future Conditions

Year 2040 land use and population

- Assumed to be the same as Current Conditions

1967- 2017 historical hydrology

With and without climate change

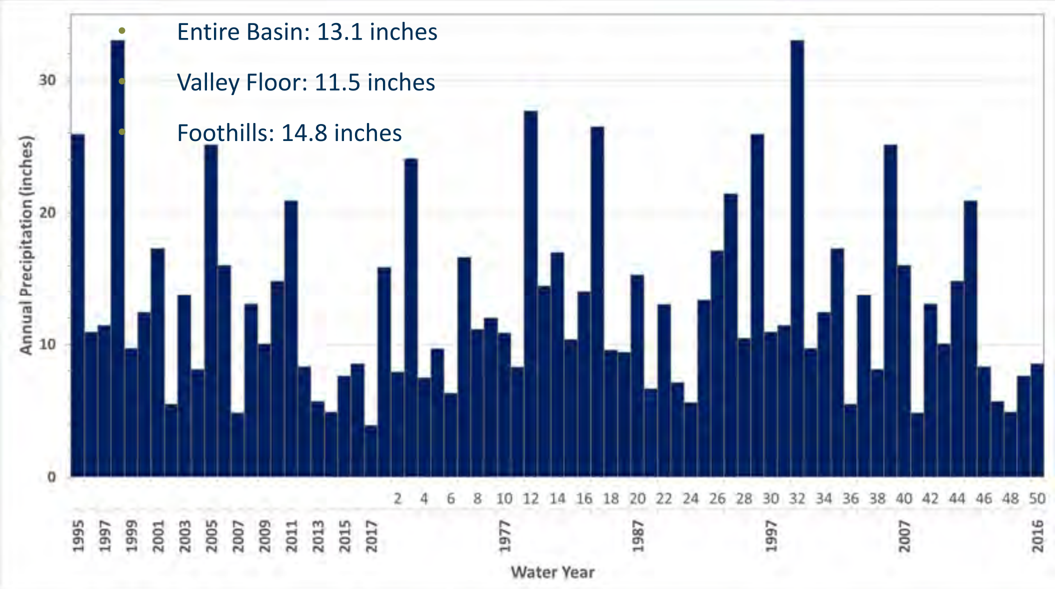
WOODARD & CURRAN

Future Conditions

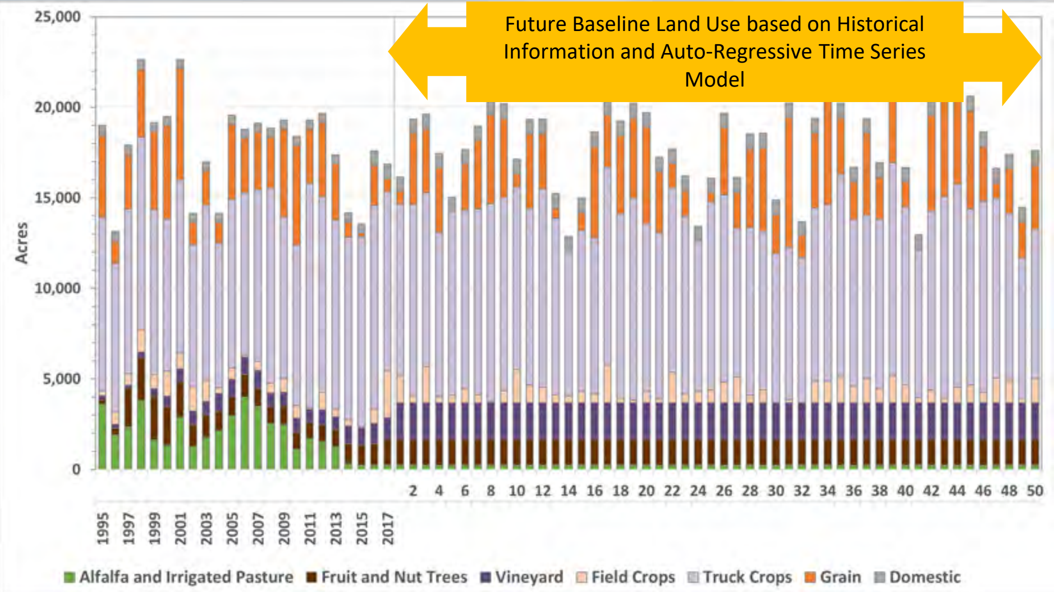
Annual Precipitation
(based on adjusted PRISM dataset)

Average Annual Precipitation (50 years)

- Entire Basin: 13.1 inches
- Valley Floor: 11.5 inches
- Foothills: 14.8 inches

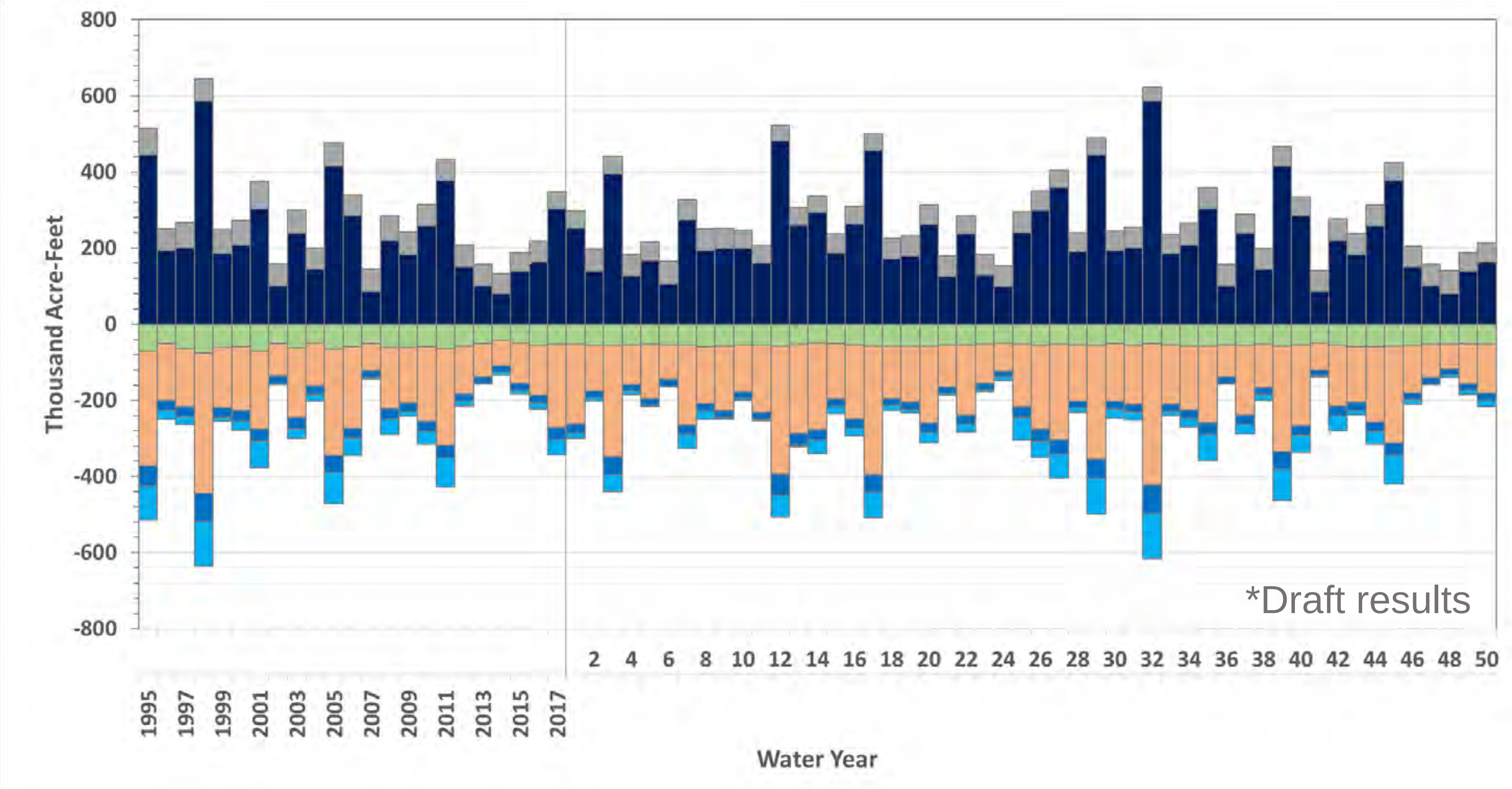


Land Use
(based on historical information and ARMA Model)



Future Conditions Land Surface Water Budget: Basin-Wide

DRAFT



Average Annual (50 years)

Inflows

Precipitation (~11.4")	230 TAF
Applied Water	60 TAF

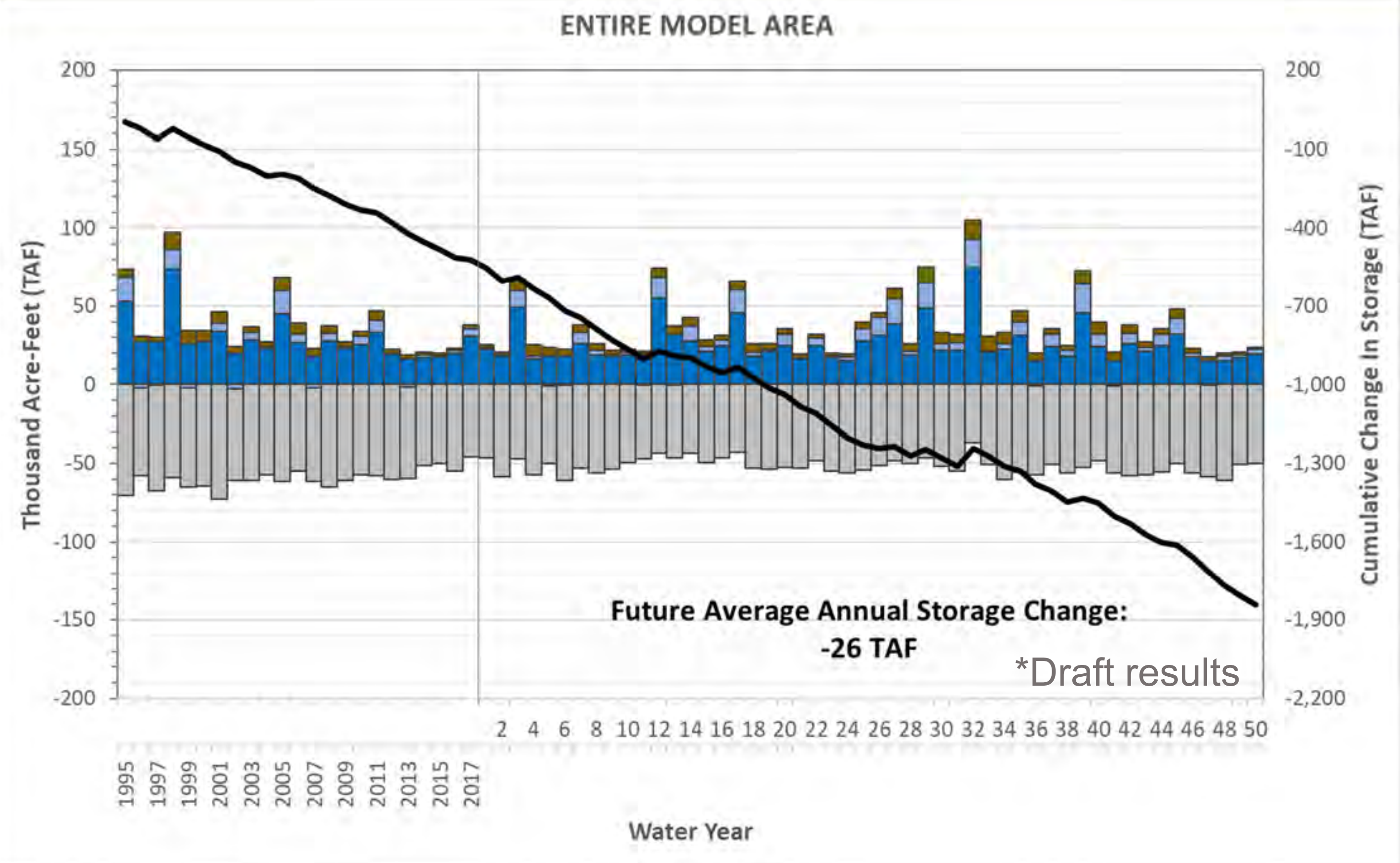
Outflows

Agriculture Evapotranspiration	57 TAF
Native Vegetation Evapotranspiration	182 TAF
Domestic Evapotranspiration	<0.1 TAF
Deep Percolation	24 TAF
Runoff	27 TAF

WOODARD &CURRAN

Future Conditions Groundwater Budget: Basin-Wide

DRAFT



Average Annual (50 years)

Inflows:

Deep Percolation	24 TAF
Stream Seepage	5 TAF
Boundary Flow	5 TAF

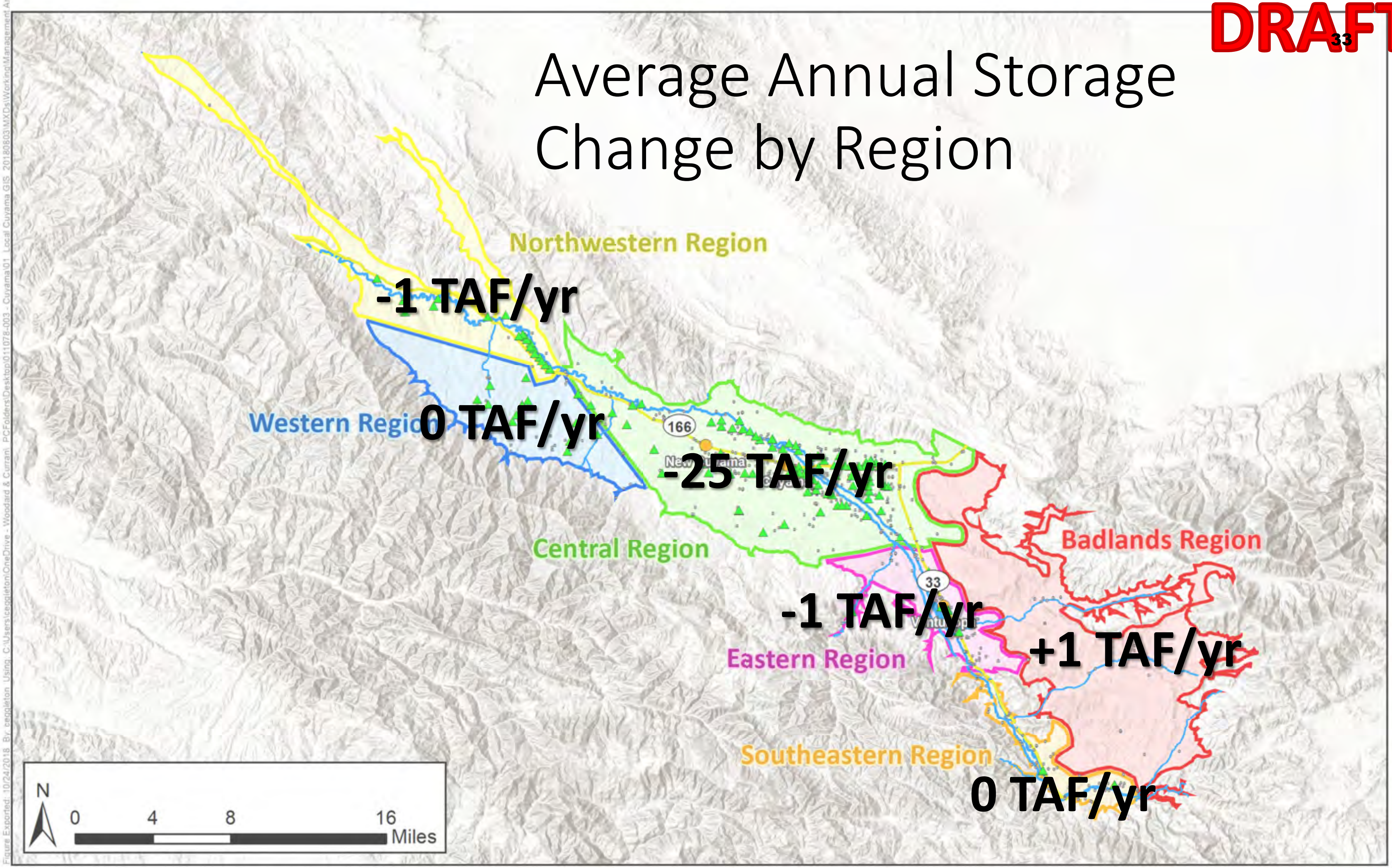
Outflows:

GW Pumping	60 TAF

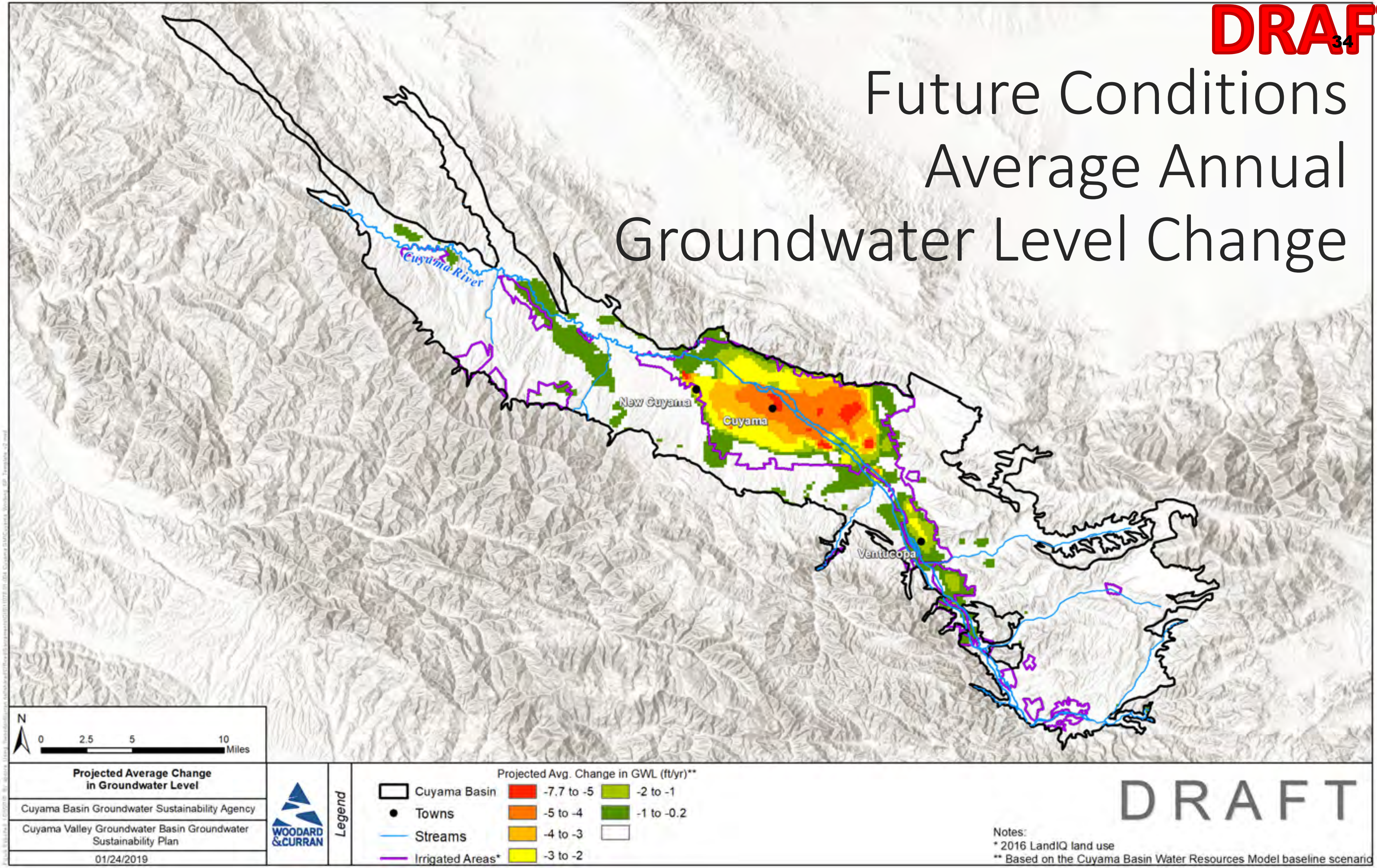
WOODARD & CURRAN

DRAFT

Average Annual Storage Change by Region



Future Conditions Average Annual Groundwater Level Change



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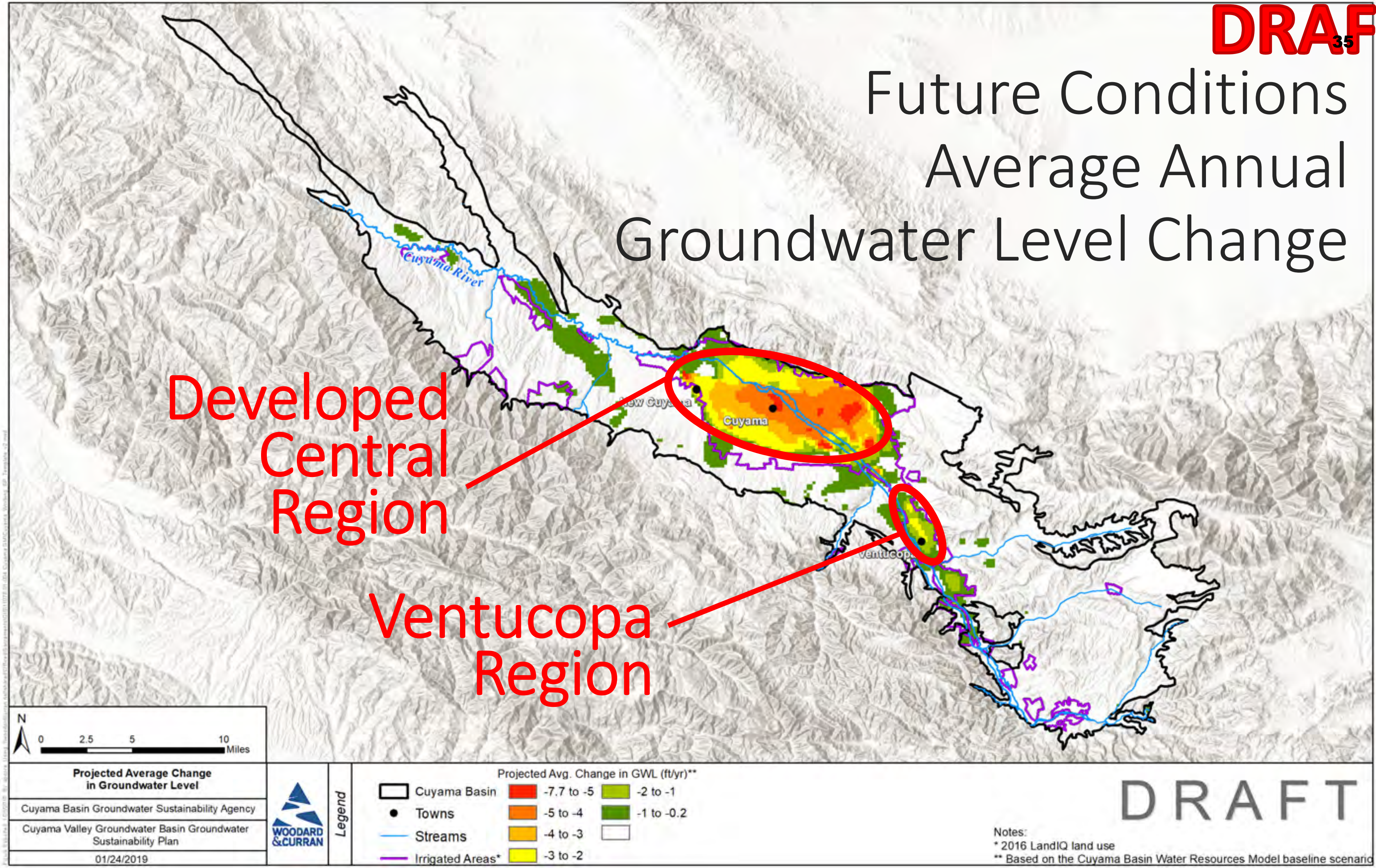
Future Conditions Average Annual Groundwater Level Change



Future Conditions – Pumping Reductions Only Scenario

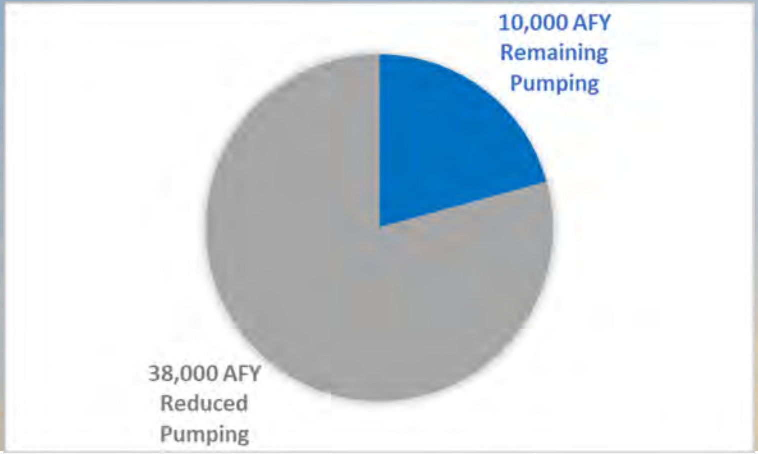
Assumptions for reducing pumping volumes:

- Idle lands are converted to native vegetation.
- In each scenario run, total crop acreage was reduced by a constant percentage through the 50 year period.
- Reduction applied independently for Central Developed Area and Ventucopa.
- Decrease in crop acreage results in a decrease in groundwater pumping and agricultural evapotranspiration.

WOODARD & CURRAN

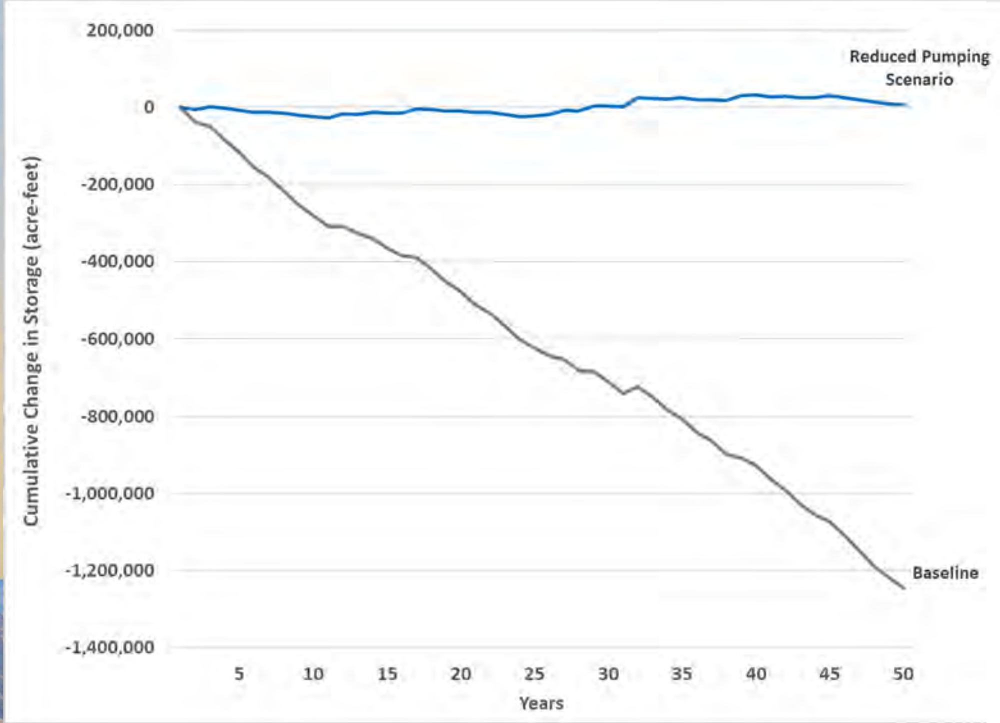
Future Conditions – Pumping Reductions Only Scenario – Central Developed Region

Pumping reductions required to eliminate cumulative decline in storage



	BASELINE	REDUCED PUMPING SCENARIO
INFLOWS		
Deep Percolation (+)	17,000	4,000
Gain from Stream (+)	5,000	5,000
Subsurface Inflow(+)	1,000	1,000
OUTFLOWS		
Pumping (-)	48,000	10,000
STORAGE CHANGE	**-25,000**	**0**

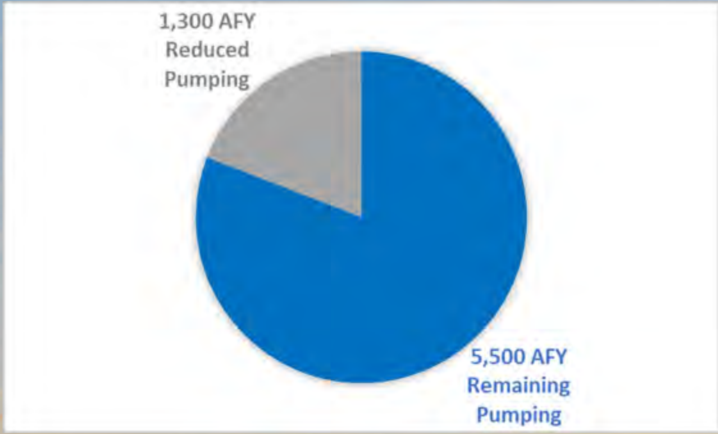
Projected change in Storage under Baseline and reduced pumping conditions



Future Conditions – Pumping Reductions Only Scenario – Ventucopa Region

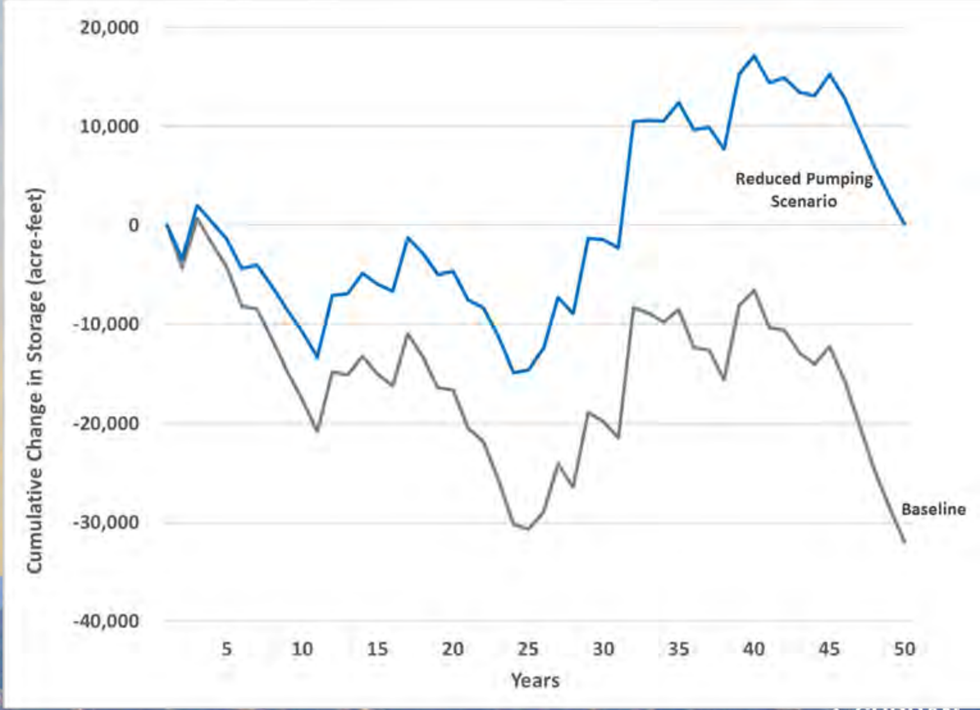
DRAFT

Pumping reductions required to eliminate cumulative decline in storage



	BASELINE	REDUCED PUMPING SCENARIO
INFLOWS		
Deep Percolation (+)	4,200	3,500
Gain from Stream (+)	1,300	1,300
Subsurface Inflow(+)	700	700
OUTFLOWS		
Pumping (-)	6,800	5,500
STORAGE CHANGE	**-600**	**0**

Projected change in storage under Baseline and reduced pumping conditions

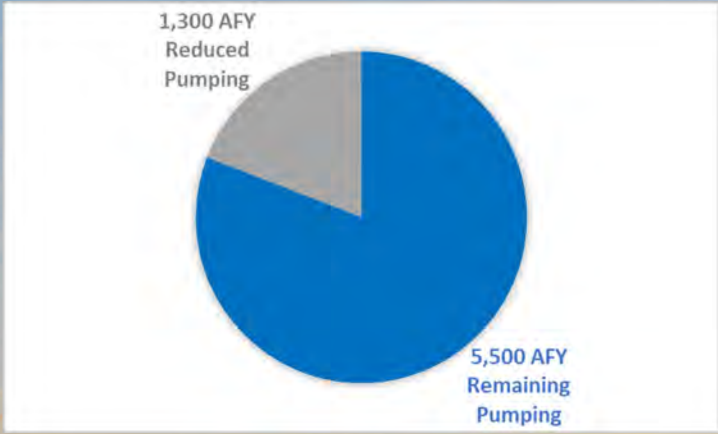


&CURRAN

Future Conditions – Pumping Reductions Only Scenario – Ventucopa Region

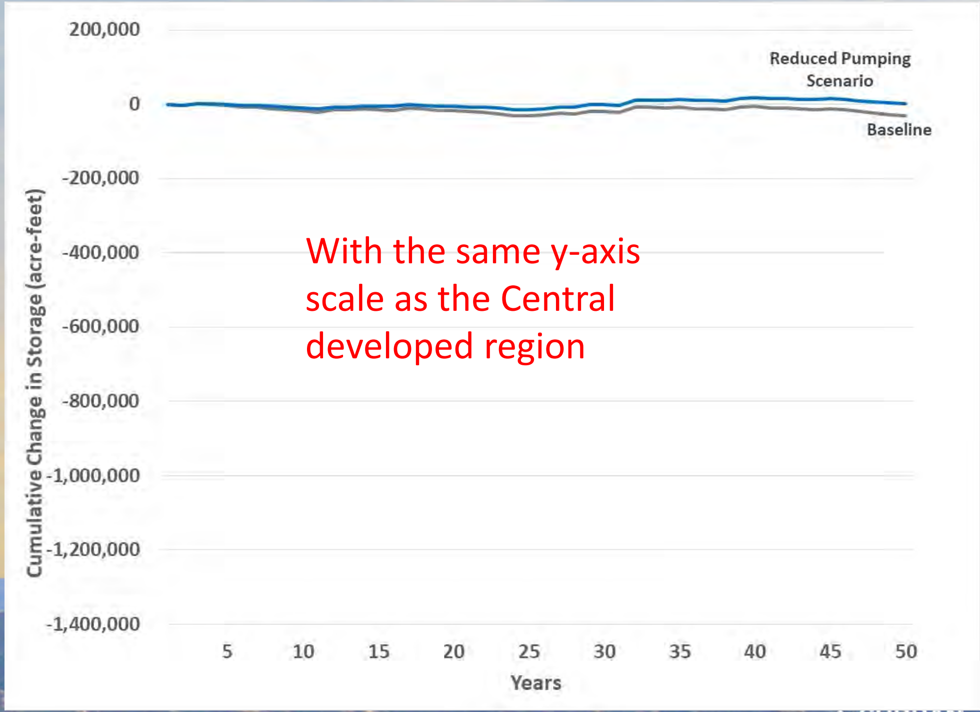
DRAFT

Pumping reductions required to eliminate cumulative decline in storage



	BASELINE	REDUCED PUMPING SCENARIO
INFLOWS		
Deep Percolation (+)	4,200	3,500
Gain from Stream (+)	1,300	1,300
Subsurface Inflow(+)	700	700
OUTFLOWS		
Pumping (-)	6,800	5,500
STORAGE CHANGE	**-600**	**0**

Projected change in storage under Baseline and reduced pumping conditions



Cuyama Valley Groundwater Basin Groundwater Sustainability Plan Water Budget Draft

Prepared by:

February 2019

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Chapter 2 Basin Setting

This document includes the Water Budget Section will be included as part of a report section in the Cuyama Basin Groundwater Sustainability Plan that satisfies § 354.18 of the Sustainable Groundwater Management Act Regulations. The Water Budget section is a portion of the Basin Settings portion of a Groundwater Sustainability Plan. The Basin Settings contains three main subsections:

- Hydrogeologic Conceptual Model – This section provides the geologic information needed to understand the framework that water moves through in the basin. It focuses on geologic formations, aquifers, structural features, and topography.
- Groundwater Conditions - This section describes and presents groundwater trends, levels, hydrographs and level contour maps, estimates changes in groundwater storage, identifies groundwater quality issues, addresses subsidence and surface water interconnection.
- Water Budget – This section, presented here, provides the data used in water budget development, discusses how the budget was calculated, and provides water budget estimates for historical conditions, current conditions and projected conditions.

Acronyms

AF	Acre-feet
AFY	Acre-feet per year
Basin	Cuyama Valley Groundwater Basin
CALSIMETAW	California Simulation of Evapotranspiration of Applied Water
CBGSA	Cuyama Basin Groundwater Sustainability Agency
CCSD	Cuyama Community Services District
DWR	Department of Water Resources
ET	Evapotranspiration
IDC	IWFM Demand Calculator
IWFM	Integrated Water Flow Model
METRIC	Mapping Evapotranspiration at High Resolution and Internalized Calibration
PRISM	Precipitation-Elevation Regressions on Independent Slopes Model

2.3 Water Budget

This section describes the historical, current and projected water budgets for the Cuyama Valley Groundwater Basin (Basin).

As defined by the Groundwater Sustainability Plan (GSP) regulations promulgated by the California Department of Water Resources (DWR), the water budgets section is intended to quantify the following:

(1) Total surface water entering and leaving a basin by water source type.

(2) Inflow to the groundwater system by water source type

(3) Outflows from the groundwater system by water use sector

(4) The change in the annual volume of groundwater in storage between seasonal high conditions

(5) If overdraft conditions occur, a quantification of overdraft over a period of years during which water year and water supply conditions approximate average conditions.

(6) The water year type associated with the annual supply, demand, and change in groundwater stored.

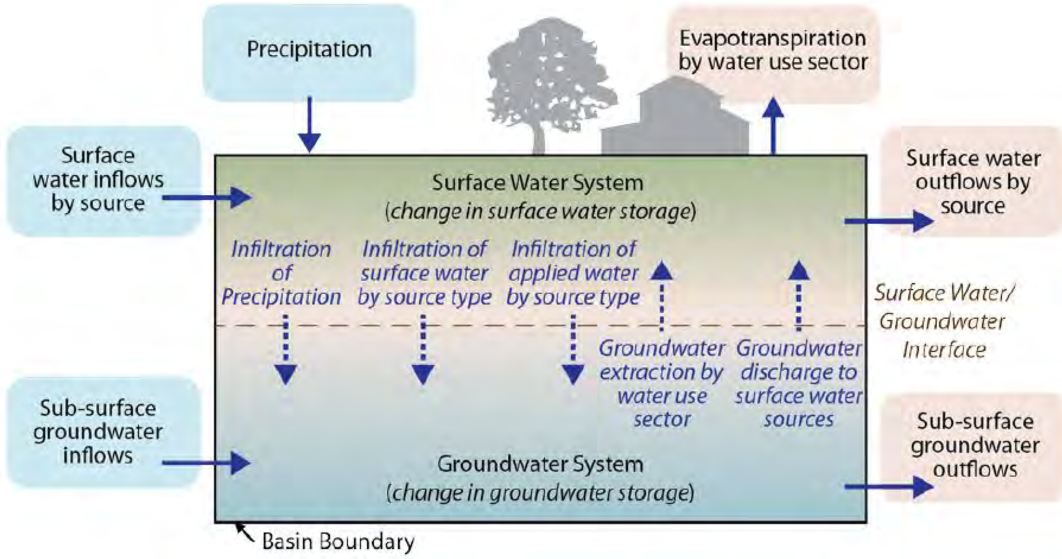
(7) An estimate of sustainable yield for the basin.

2.3.1 Water Budget Information

Water budgets were developed to provide a quantitative accounting of water entering and leaving the Basin. Water entering the Basin includes water entering at the surface and entering through the subsurface. Similarly, water leaving the Basin leaves at the surface and through the subsurface. Water enters and leaves naturally, such as precipitation and streamflow, and through human activities, such as pumping and recharge from irrigation. Figure 2.3-1 presents a vertical slice through the land surface and aquifer to summarize the water balance components utilized in this analysis.

The values presented in the water budget provide information on historical, current, and projected conditions as they relate to hydrology, water demand, water supply, land use, population, climate change, sea level rise (not applicable in the Basin), groundwater and surface water interaction, and subsurface groundwater flow. This information can assist in management of the Basin, by identifying the scale of different uses, highlighting potential risks, and identifying potential opportunities to improve water supply conditions, among others.

Figure 2.3-1: Generalized Water Budget Diagram



(source: DWR)

Water budgets can be developed on different spatial scales. In agricultural use, water budgets may be limited to the root zone, improving irrigation techniques by estimating the inflows and outflows of water from the upper portion of the soil accessible to plants through their roots. In a pure groundwater study, water budgets may be limited to water flow within the subsurface, aiding in understanding how water flows beneath the surface. Global climate models simulate water budgets that incorporate atmospheric water, allowing for simulation of climate change conditions. In this document, consistent with the Regulations (California Code of Regulations), the water budgets investigate the combined surface water and groundwater system in the Basin.

Water budgets can also be developed at different temporal scales. Daily water budgets may be used to demonstrate how evaporation and transpiration increase during the day and decrease at night. Monthly water budgets may be used to demonstrate how groundwater pumping increases in the dry, hot summer months and decreases in the cool, wet winter months. In this document, consistent with the Regulations, the water budgets focus on the full water year (12 months spanning October of the previous year to September), with some consideration to monthly variability.

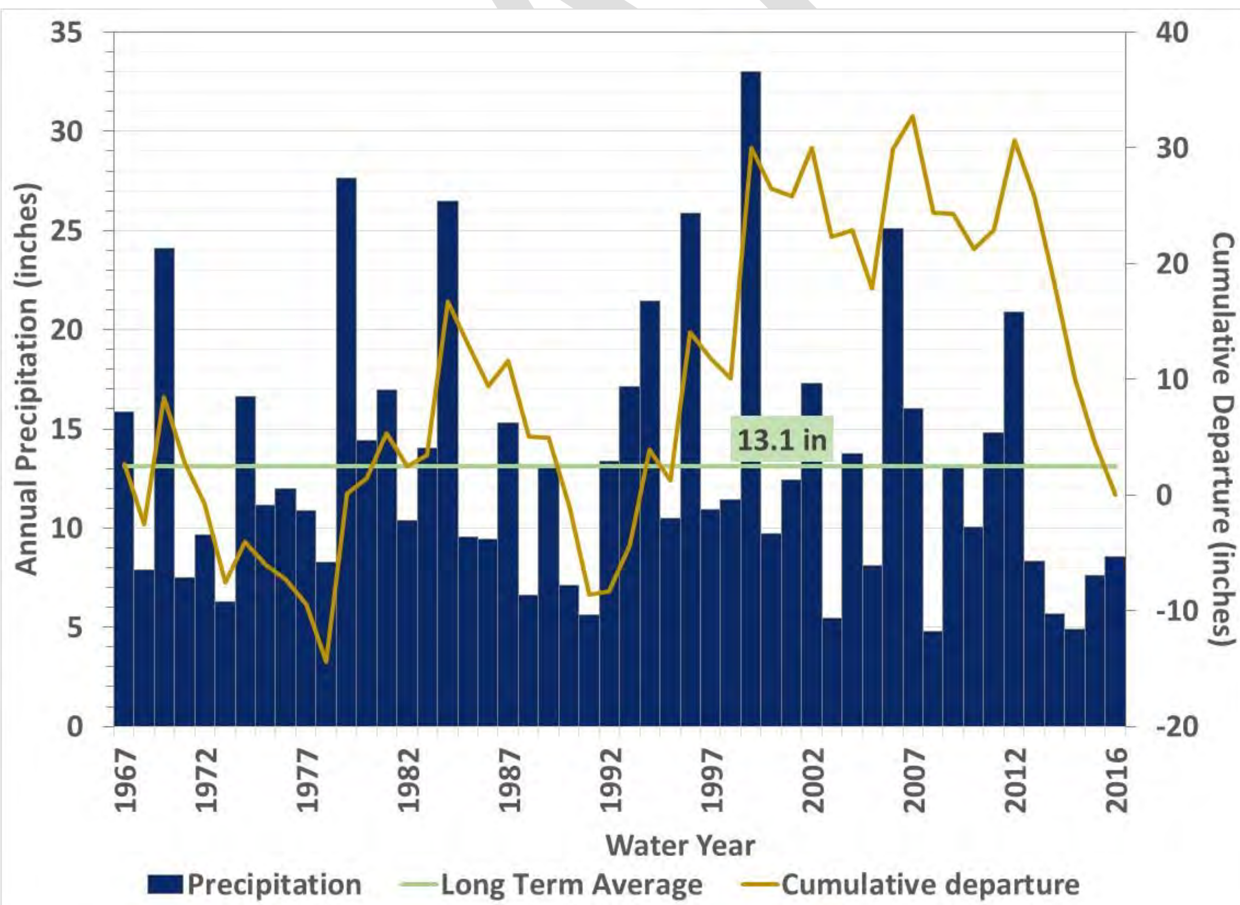
The Regulations require the annual water budgets be based on three different conditions: historical, current, and projected. Budgets are developed to capture typical conditions during these time periods. Typical conditions are developed through averaging over hydrologic conditions that incorporate droughts, wet periods, and normal periods. By incorporating these varied conditions within the budgets, analysis of the system under certain hydrologic conditions, such as drought, can be performed along with analysis of long-term averages. Information is provided in the following subsections on the hydrology dataset used to identify time periods for budget analysis, the usage of the Cuyama Basin Integrated Water Flow Model (IWFM) and associated data in water budget development, and on the budget estimates.

2.3.2 Identification of Hydrologic Periods

Hydrologic periods were selected to meet the needs of developing historical, current, and projected water budgets. The Regulations require that the projected water budget reflect 50 years of historical hydrology, in order to reflect long-term average hydrologic conditions. Historical precipitation data for the Basin was utilized to identify hydrologic periods that would provide a representation of wet and dry periods and long-term average conditions needed for budget analyses. Analysis of a long-term historical period time provides information that is expected to be representative of long-term future conditions.

Figure 2.3-2 shows annual precipitation in the Basin for water years 1968 to 2017. The chart includes bars displaying annual precipitation for each water year and a horizontal line representing the mean precipitation of 13.1 inches. Rainfall data for the Basin is derived from the PRISM (Precipitation-Elevation Regressions on Independent Slopes Model) dataset of the DWR's CALSIMETAW (California Simulation of Evapotranspiration of Applied Water) model. Identification of periods with a balance of wet and dry periods was performed using the cumulative departure from mean precipitation method. Under this method, the long-term average precipitation is subtracted from annual precipitation within each water year to develop the departure from mean precipitation for each water year. Wet years have a positive departure and dry years have a negative departure; a year with exactly average precipitation would have zero departure. Starting at the first year analyzed, the departures are added cumulatively for each year. So, if the departure for Year 1 is 5 inches and the departure for Year 2 is -2 inches, the cumulative departure would be 5 inches for Year 1 and 3 inches (5 plus -2) for Year 2. The cumulative departure of the spatially averaged of the rainfall within the Basin is shown on the figure. The cumulative departure from mean precipitation is based on these data sets and is displayed as a line that starts at zero and highlights wet periods with upward slopes and dry periods with downward slopes. More severe events are shown by steeper slopes and greater changes. Thus, the period from 2013 to 2014 illustrates a short period with a dramatically dry conditions (16-inch decline in cumulative departure over 2 years).

Figure 2.3-2: 50-Year Historical Precipitation and Cumulative Departure from Mean Precipitation in the Cuyama Valley Groundwater Basin



2.3.3 Usage of the IWFM Model and Associated Data in Water Budget Development

Water budgets were developed utilizing the Cuyama Basin IWFM model, a fully integrated surface and groundwater flow model that covers the entire Basin. The model integrates the groundwater aquifer with the surface hydrologic system and land surface processes and operations. The IWFM model was calibrated for the hydrologic period of October 1995 to September 2015 by comparing simulated evapotranspiration, groundwater levels, and streamflow records with historical observed records. Development of the model involved the study and analysis of hydrogeologic conditions, agricultural and urban water demands, agricultural and urban water supplies, and an evaluation of regional water quality conditions.

Additional information on the development and calibration of the IWFM model will be included as an appendix to the GSP.

IWFM model simulations were developed to allow for the estimation of water budgets. Model simulations were used to develop the water budgets for historical, current, and projected conditions, which are discussed in detail below:

- The **historical water budget** was based on a simulation of historical conditions in the Basin.
- The **current water budget** was based on a simulation of current (2015) land and water use over historical hydrologic conditions, assuming no other changes in population, water demands, land use, or other conditions.
- The **projected water budget** was based on a simulation of future land and water use over the historical hydrologic conditions. Since future land and water use in the Cuyama Basin is assumed to be the same as current conditions, the projected water budget is the same as the current water budget.

2.3.4 Water Budget Definitions and Assumptions

Definitions and assumptions for the historical, current, and projected water budgets are provided below. Table 2.3-1 provides a summary of the assumptions.

Historical Water Budget

The historical water budget is intended to evaluate availability and reliability of past surface water supply deliveries, aquifer response to water supply, and demand trends relative to water year type. The hydrologic period of 1998 through 2017 was selected for the historical water budget to provide a period of representative hydrology while capturing recent Basin operations. The period 1998 through 2017 has an average annual precipitation of 12.2 inches, nearly the same as the long-term average of 13.1 inches and includes the recent 2012-2017 drought, the wet years of 1998 and 2005, and periods of normal precipitation.

Current and Projected Water Budget

While a budget indicative of current conditions could be developed using the historical calibration model, like the historical water budget, such an analysis would be difficult to interpret due to the extreme weather conditions of the past several years and its effect on local agricultural operations. Instead, in order to analyze the effects of current land and water use on groundwater conditions and to accurately estimate current inflows and outflows for the basin, a current and projected conditions baseline scenario was developed using the IWFM model. This baseline uses current land and water use conditions approximating year 2017 conditions with a historical precipitation sequence. Because there is no basis to assume any changes in Cuyama Basin population or land use in the future as compared to current conditions (in the absence of projects or actions), a single baseline has been developed that reflects both current and projected conditions.

The current and projected conditions baseline includes the following conditions:

- Hydrologic period:
  - Water Years 1968-2017 (50-year hydrology)
- Precipitation is based on:
  - PRISM dataset for the 1968-2017 period
- Land use is based on:
  - Land use estimates developed by the DWR and the CBGSA using remote sensing data
  - Land use information for historical years provided by private landowners
- Domestic water use is based on:
  - Current population estimates
  - Cuyama Community Services District (CCSD) delivery records
- Agricultural water demand is based on:
  - The IWFM Demand Calculator (IDC) in conjunction with historical remote sensing technology, Mapping Evapotranspiration at High Resolution and Internalized Calibration (METRIC)

Table 2.3-1: Summary of Groundwater Budget Assumptions

Water Budget Type	Historical	Current and Projected
Scenario	Historical Simulation	Current and Projected Conditions Baseline
Hydrologic Years	WY 1998-2017	WY 1968-2017
Development	Historical	Current
Ag Demand	Historical Land Use	Current Conditions
Domestic Use	Historical Records	Current Conditions

2.3.5 Water Budget Estimates

Land surface and groundwater budgets are reported for the historical period and for current and projected conditions.

The following components are included in the land surface water budget:

- Inflows:
  - Precipitation
  - Applied Water

- Outflows:
  - Evapotranspiration
    - Agriculture
    - Native vegetation
  - Domestic water use
  - Deep percolation
    - From precipitation
    - From applied water
  - Runoff
    - Stream seepage to groundwater
    - Flow out of Basin

The following components are included in the groundwater budget:

- Inflows:
  - Deep percolation
  - Stream seepage
  - Subsurface inflow
- Outflows:
  - Groundwater pumping
- Reduction in storage

The estimated average annual water budgets are provided in Tables 2.3-2 and 2.3-3 for the historical period and for current and projected conditions. The following sections provide additional information regarding each water budget.

Table 2.3-2: Average Annual Land Surface Water Budget

Component	Historical Water Volume (AFY)	Current and Projected Water Volume (AFY)
Inflows		
Precipitation	226,000	230,000
Applied Water	58,000	59,000
Total Inflow	285,000	289,000
Outflows		
Evapotranspiration		
Agriculture	58,000	63,000
Native vegetation	167,000	174,000
Domestic water use	300	400
Deep percolation		
From precipitation	18,000	15,000
From applied water	10,000	11,000
Runoff	32,000	26,000
Total Outflow	285,000	289,000

Table 2.3-3: Average Annual Groundwater Budget

Component	Historical Water Volume (AFY)	Current and Projected Water Volume (AFY)
Inflows		
Deep percolation	28,000	25,000
Stream seepage	3,000	5,000
Subsurface inflow	5,000	5,000
Total Inflow	36,000	35,000
Outflows		
Groundwater pumping	59,000	60,000
Total Outflow	59,000	60,000
Change in Storage	(23,000)	(25,000)

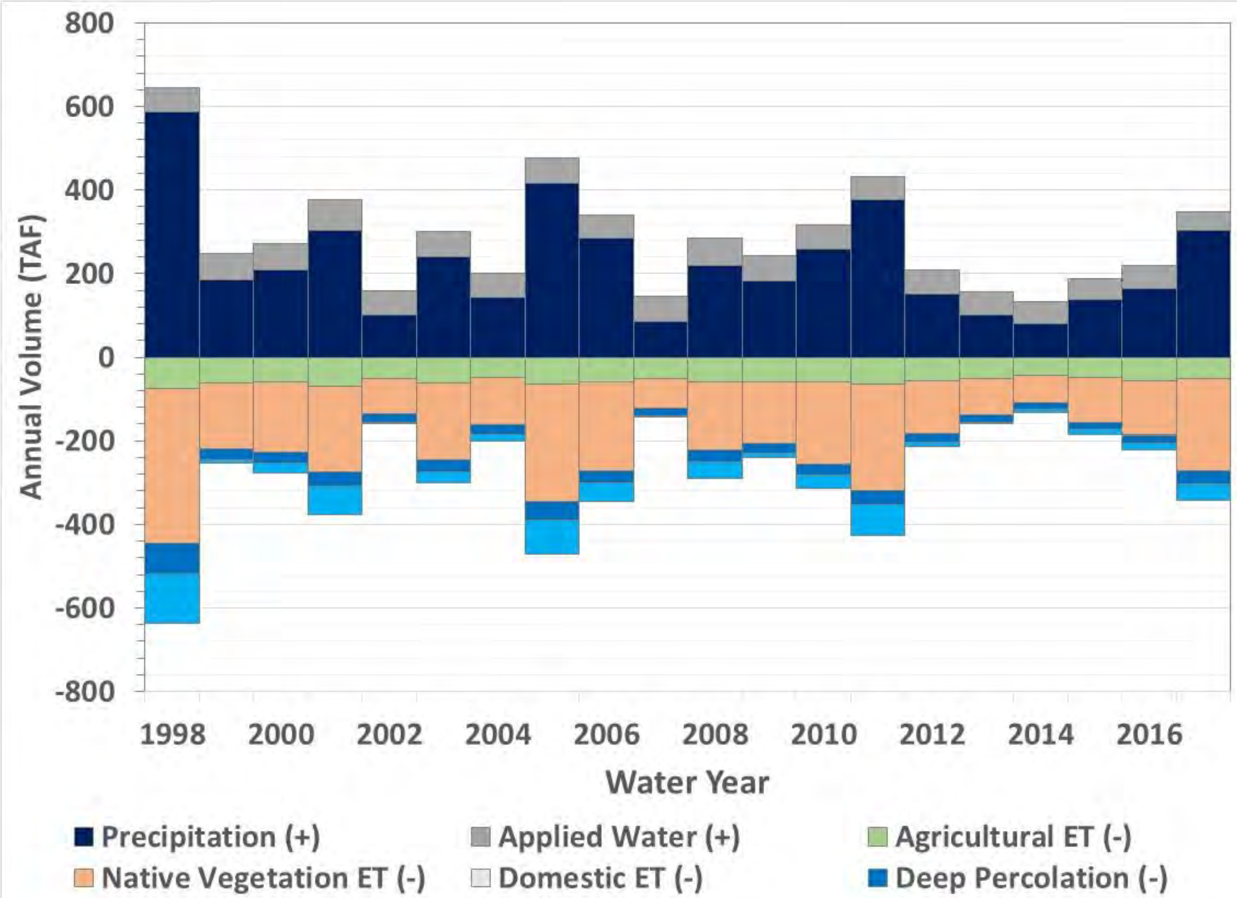
2.3.6 Historical Water Budget

The historical water budget is a quantitative evaluation of the historical surface and groundwater supply covering the 20-year period from 1998 to 2017. This period was selected as the representative hydrologic period to calibrate and reduce the uncertainty of the IWFM model. Proper analysis and calibration of water budgets within IWFM model ensures the hydrologic characteristics of the groundwater basin are accurately represented. The goal of the water budget analysis is to characterize the supply and demand, while summarizing the hydrologic flow within the Basin, including the movement of all primary sources of water such as rainfall, irrigation, streamflow, and subsurface flows.

Figure 2.3-3 summarizes the average annual historical land surface inflows and outflows in the Basin. Figure 2.3-4 shows the annual time series of historical land surface inflows and outflows.

Figure 2.3-3: Historical Average Annual Land Surface Water Budget

Figure 2.3-4: Historical Land Surface Water Budget Annual Time Series



The Basin experiences about 285,000 AF of inflows each year, of which 226,000 AF is from precipitation and the remainder is from applied water. About 225,000 AFY is consumed as evapotranspiration or domestic use, with the remainder either recharging the groundwater aquifer as deep percolation or stream seepage or leaving the Basin as river flow.

The annual time series shows large year-to-year variability in the availability of water, with land surface inflows ranging from a low of about 132,000 AF to a high of 645,000 AF. These year-to-year changes in inflows result in corresponding differences in outflows, with total annual agricultural, native vegetation and domestic evapotranspiration ranging from 108,000 AF to 444,000 AF.

Figure 2.3-5 summarizes the average annual historical groundwater inflows and outflows in the Basin. Figure 2.3-6 shows the annual time series of historical groundwater inflows and outflows. The Basin average annual historical groundwater budget has greater outflows than inflows, leading to an average annual decrease in groundwater storage of 23,000 AF. The groundwater storage decreases consistently over time, despite year-to-year variability in groundwater inflows.

Figure 2.3-5: Historical Average Annual Groundwater Budget

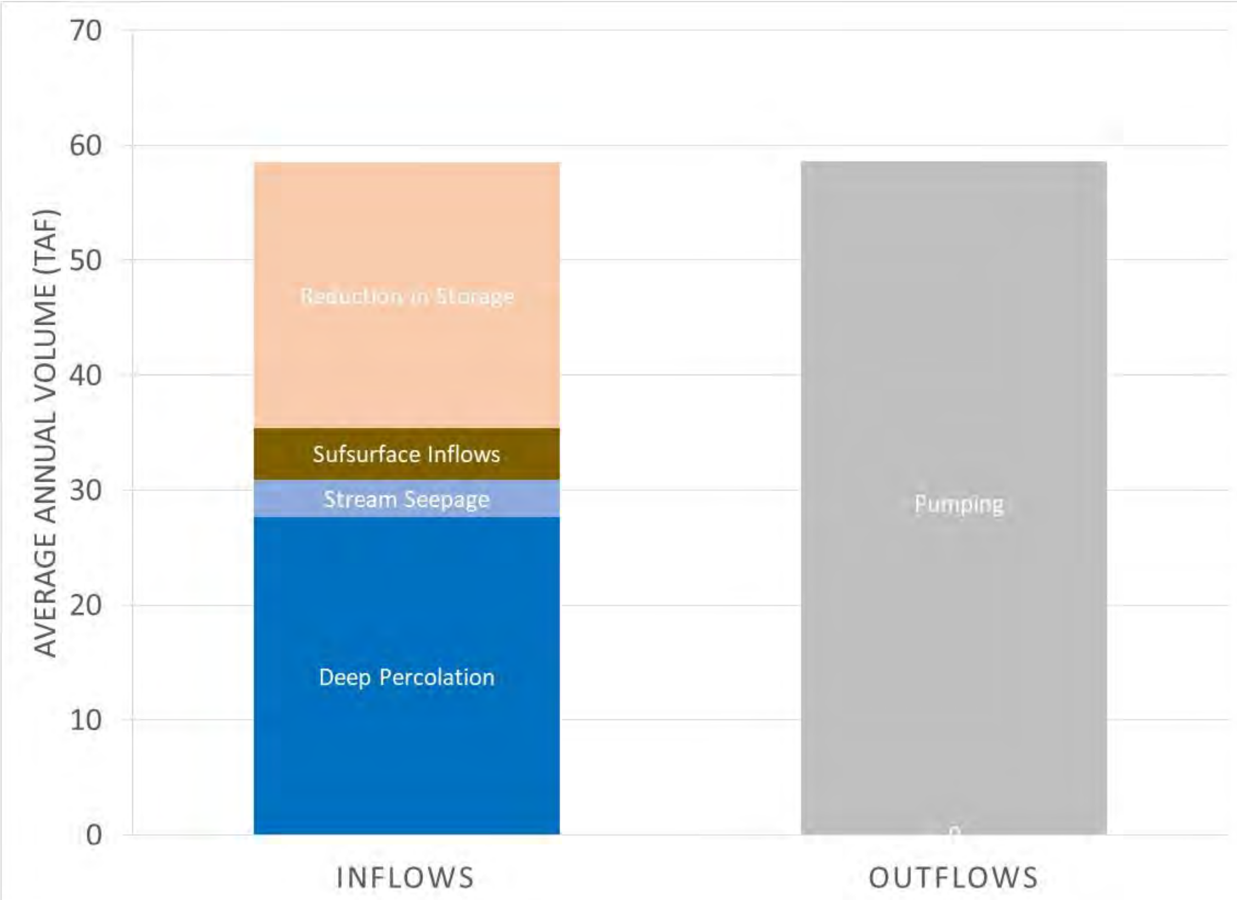
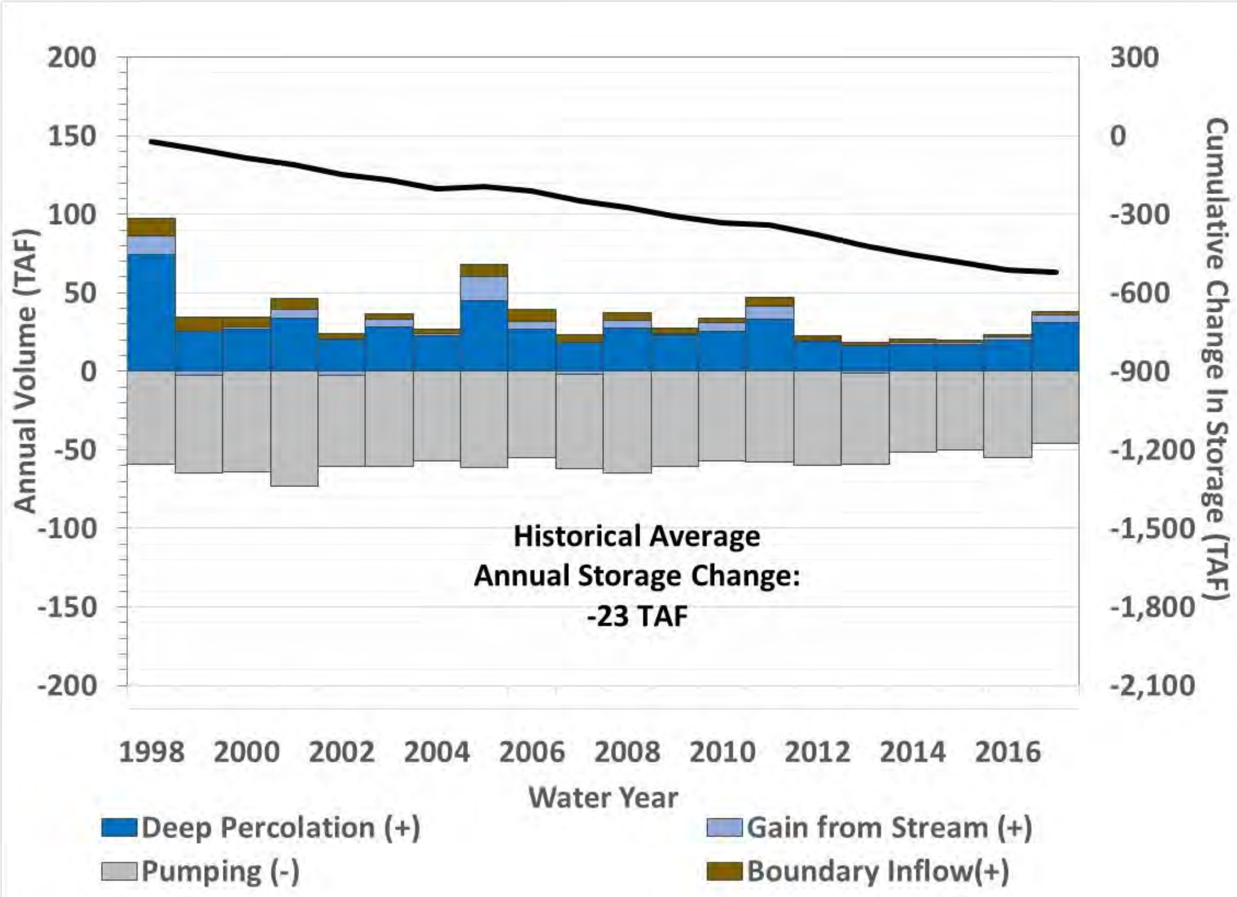


Figure 2.3-6: Historical Groundwater Budget Annual Time Series



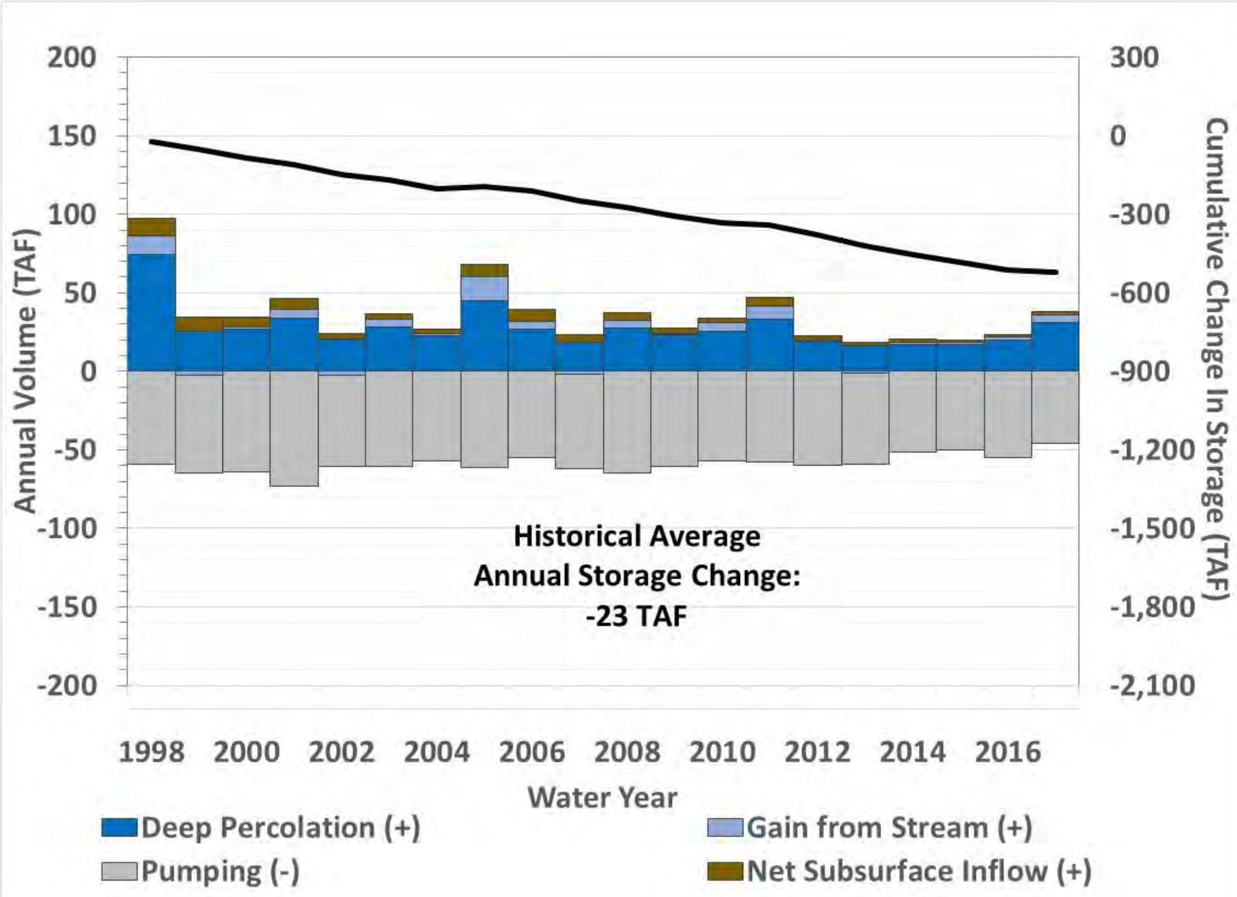
2.3.7 Current and Projected Water Budget

The current and projected water budget quantifies inflows to and outflows from the basin using 50-years of hydrology in conjunction with 2017 population, water use, and land use information.

Figure 2.3-7 summarizes the average annual current and projected land surface inflows and outflows in the Basin. Figure 2.3-8 shows the annual time series of current and projected land surface inflows and outflows.

Figure 2.3-7: Current and Projected Average Annual Land Surface Water Budget

Figure 2.3-8: Current and Projected Land Surface Water Budget Annual Time Series



Under current and projected conditions, the Basin experiences about 290,000 AF of inflows each year, of which 230,000 AF is from precipitation and the remainder is from applied water. About 238,000 AFY is consumed as evapotranspiration or domestic use, with the remainder either recharging the groundwater aquifer as deep percolation or stream seepage or leaving the Basin as river flow.

The annual time series shows the year-to-year variability in the availability of water, with land surface inflows ranging from a low of about 147,000 AF to a high of 628,000 AF. These year-to-year changes in inflows result in corresponding differences in outflows, with total annual agricultural, native vegetation and domestic evapotranspiration ranging from 127,000 AF to 429,000 AF.

Figure 2.3-9 summarizes the average annual historical groundwater inflows and outflows in the Basin. Figure 2.3-10 shows the annual time series of historical groundwater inflows and outflows. The Basin average annual historical groundwater budget has greater outflows than inflows, leading to an average annual decrease in groundwater storage of 25,000 AF. As with the historical conditions, the groundwater storage decreases consistently over time, despite year-to-year variability in groundwater inflows.

Figure 2.3-9: Current and Projected Average Annual Groundwater Budget

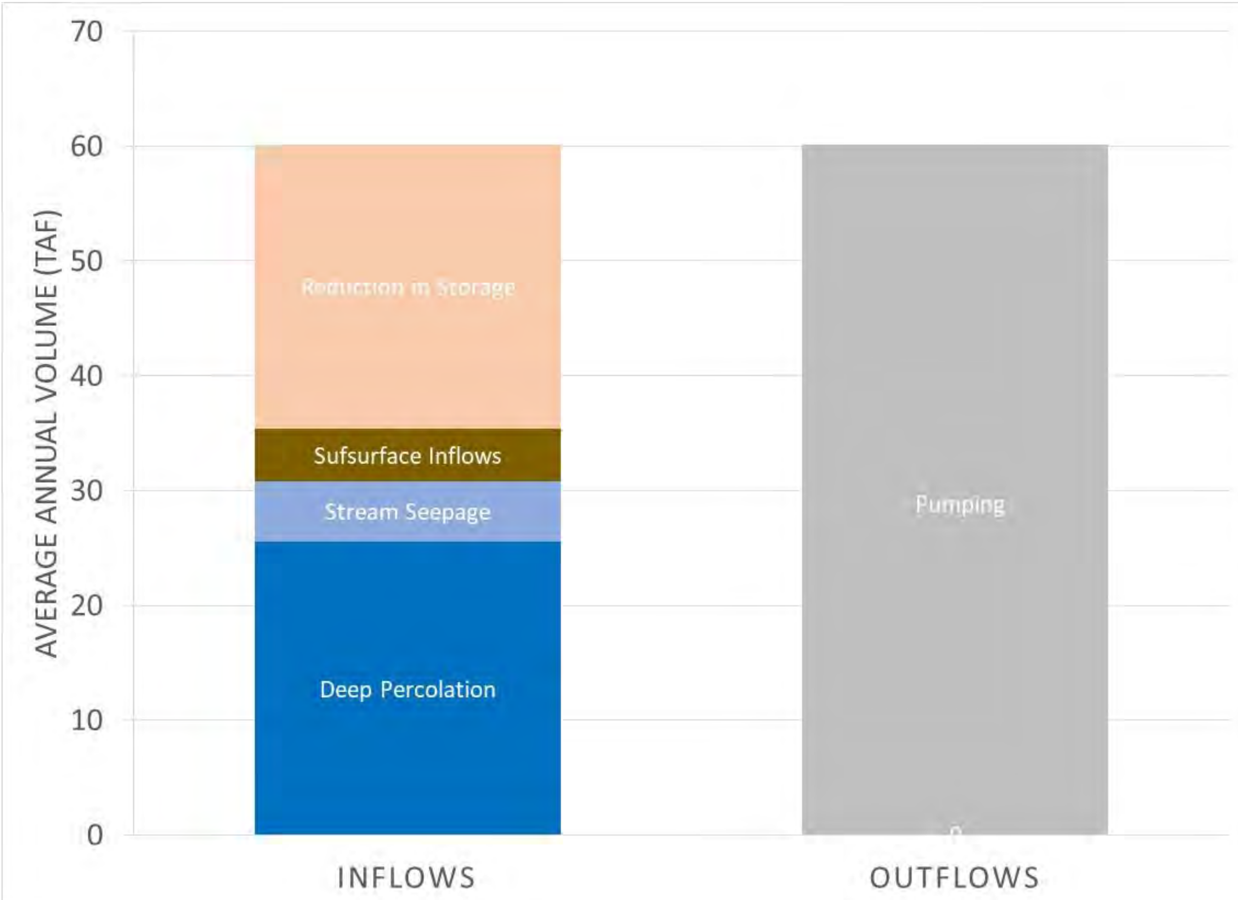
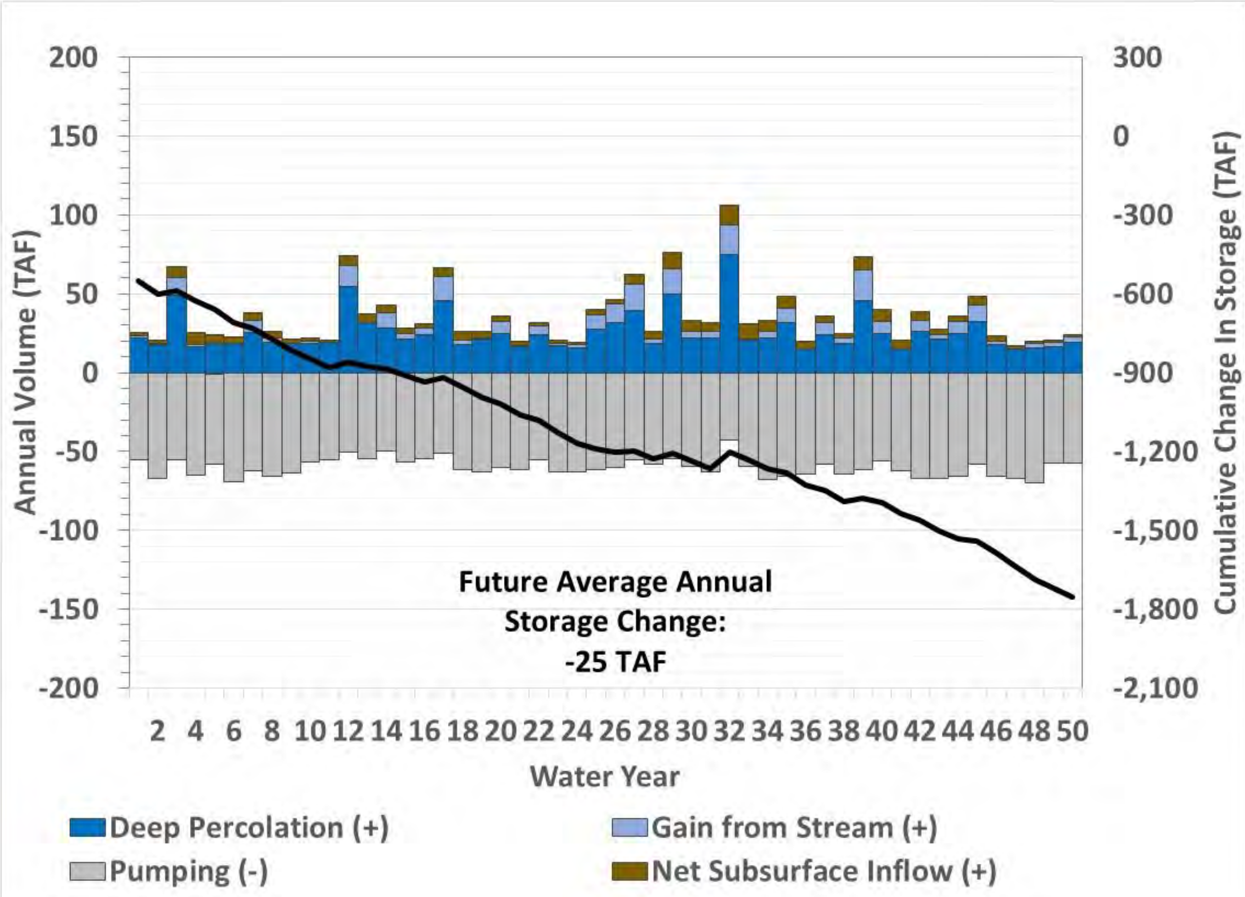


Figure 2.3-10: Current and Projected Groundwater Budget Annual Time Series



The current and projected water demand, water supply, and change in groundwater storage vary by water year type, as shown in Table 2.3-4. In wet years, precipitation meets a relative high proportion of the water demand, which reduces the need for groundwater. By contrast, in drier years more groundwater pumping is required to meet the agricultural demand not met by precipitation. This leads to an increase in groundwater storage in wet years and a decrease in the other year types.

Table 2.3-4: Current and Projected Average Annual Supply, Demand, and Change in Groundwater Storage by Water Year Type

Component	Water Year Type				
	Wet	Above Normal	Below Normal	Dry	Critical
Water Demand					
Agricultural ET	64,000	63,000	64,000	63,000	60,000
Domestic Use	500	400	400	300	200
Total Demand	64,000	63,000	64,000	63,000	60,000
Water Supply					
Groundwater Pumping	54,000	59,000	62,000	61,000	66,000
Total Supply	54,000	59,000	62,000	61,000	66,000
Change in Storage	18,000	(21,000)	(34,000)	(37,000)	(46,000)

2.3.8 Sustainable Yield Estimate

This section will be developed when the projects and management actions modeling analysis is complete.

TO: Standing Advisory Committee
Agenda Item No. 5d

FROM: Brian Van Lienden, Woodard & Curran (W&C)

DATE: February 28, 2019

SUBJECT: Discussion on Sustainability Thresholds

Issue
Discussion on the Sustainability Thresholds chapter.

Recommended Motion
None – information only.

Discussion
An overview of the Sustainability Thresholds chapter is provided as Attachment 1 and the draft Sustainability Thresholds chapter is provided as Attachment 2.

Attachment 1

Cuyama Basin Groundwater Sustainability Agency

Discussion on Sustainability Thresholds

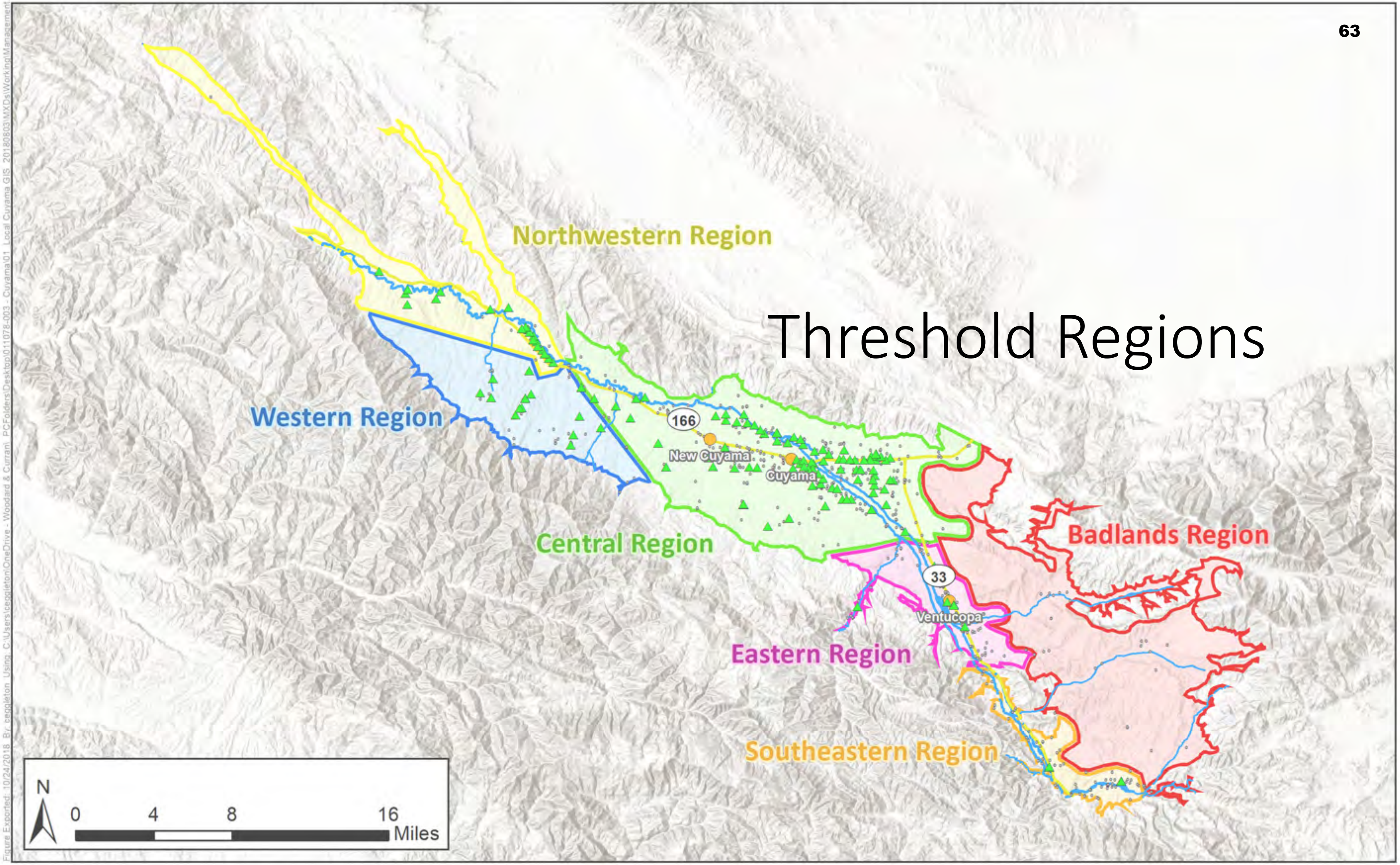
February 28, 2019

WOODARD &CURRAN

Sustainability GSP Section

- Draft GSP Section provided to SAC and Board for on February 21st
- GSP Section describes Minimum Thresholds, Measurable Objectives, and Interim Milestones for:
  - Chronic lowering of groundwater levels
  - Reduction of groundwater storage
  - Seawater intrusion
  - Degraded water quality
  - Subsidence
  - Depletions of interconnected surface water
- Comments are due on March 15th

Threshold Regions



Board Direction on Threshold Rationales

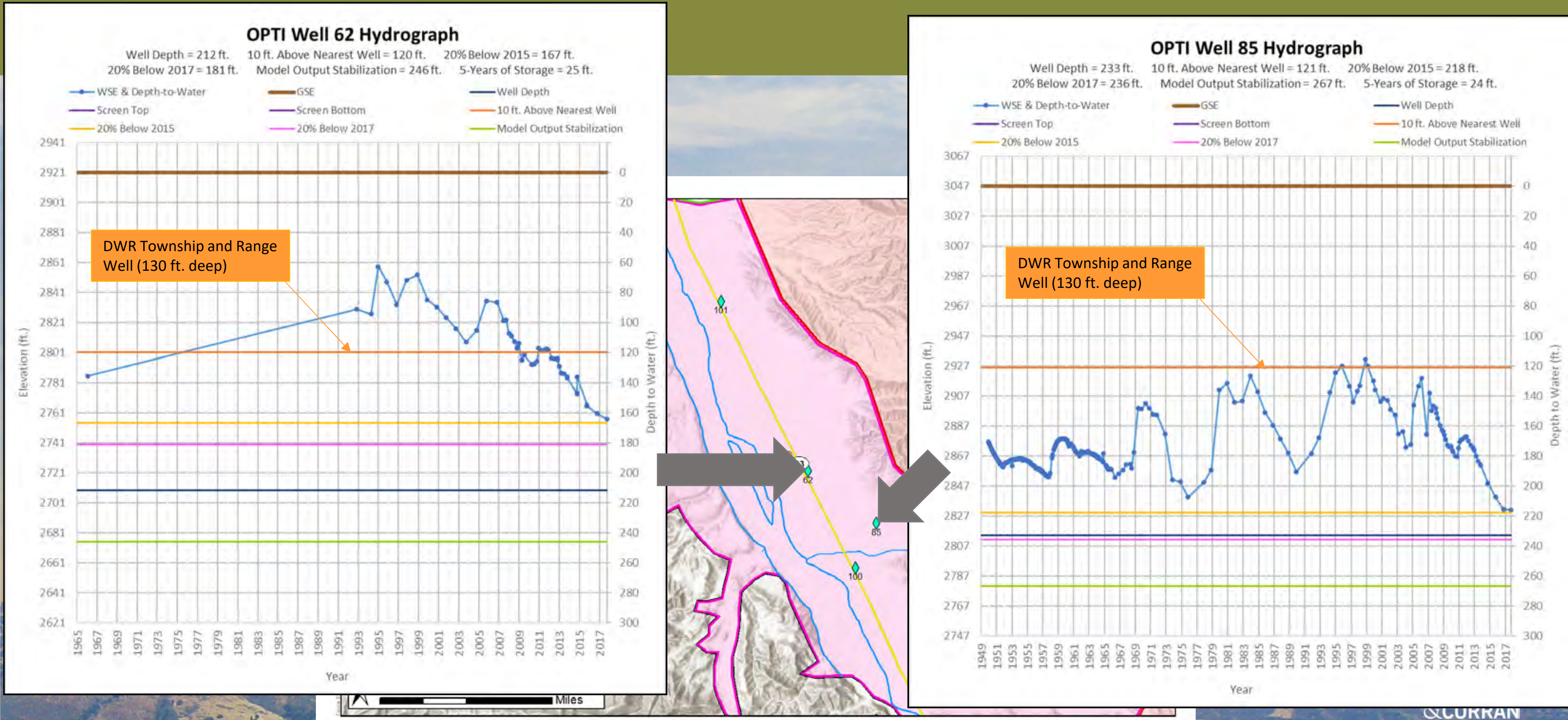
- Threshold rationales approved by Board at Dec 18 Board Meeting:

Threshold Region	Board-Approved Threshold Rationale
SOUTHEASTERN	MO = 2015 levels.
EASTERN	MT = 20% below 2015 levels, or 10’ above the shallowest nearby well, whichever is more restrictive.
CENTRAL	MT = 20% below 2015 levels.
WESTERN	MT = 15% of saturated portion of each representative well.
NORTHWESTERN	MT = 15% of saturated aquifer thickness.

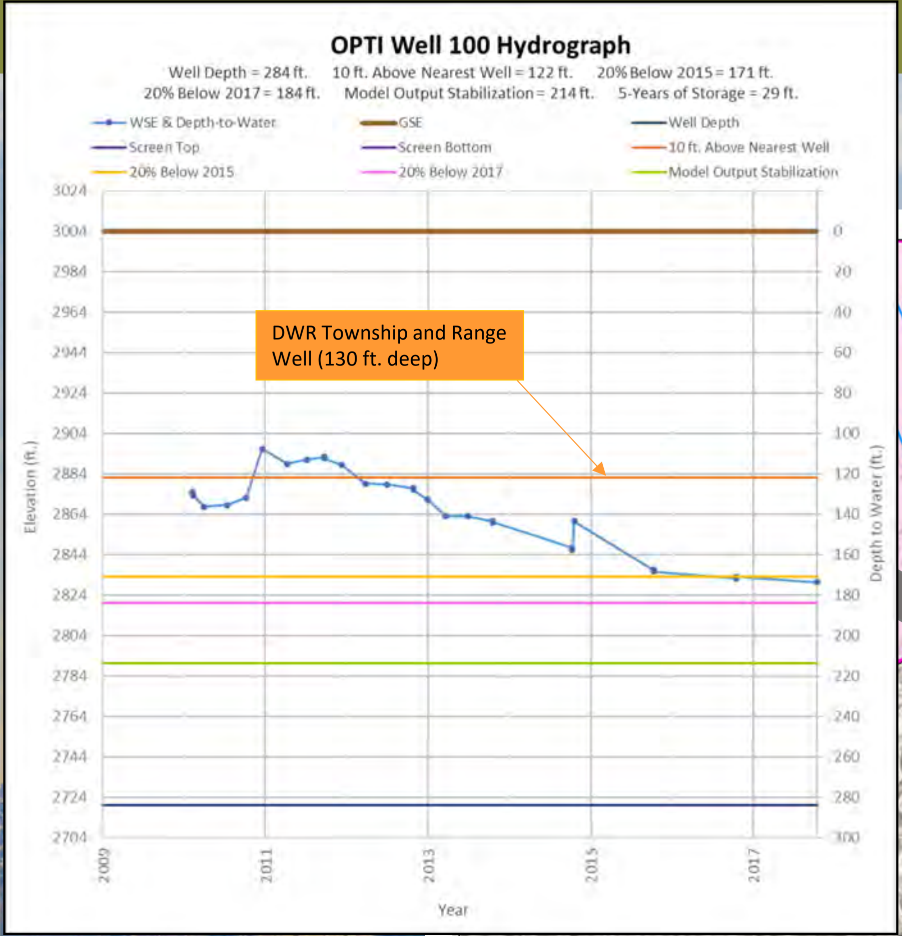
MO = Measurable Objective
MT = Minimum Threshold
**A supermajority vote of 75% is needed for each rationale to be passed by the Board.*

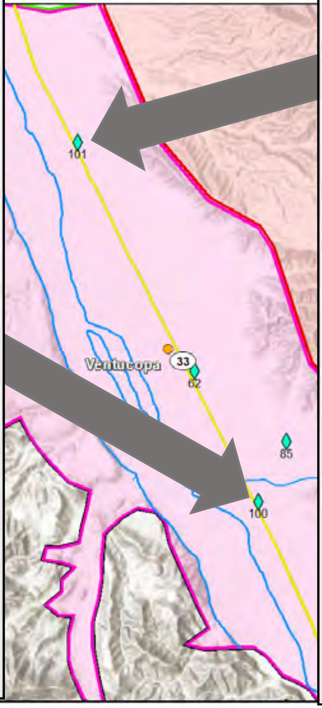
WOODARD &CURRAN

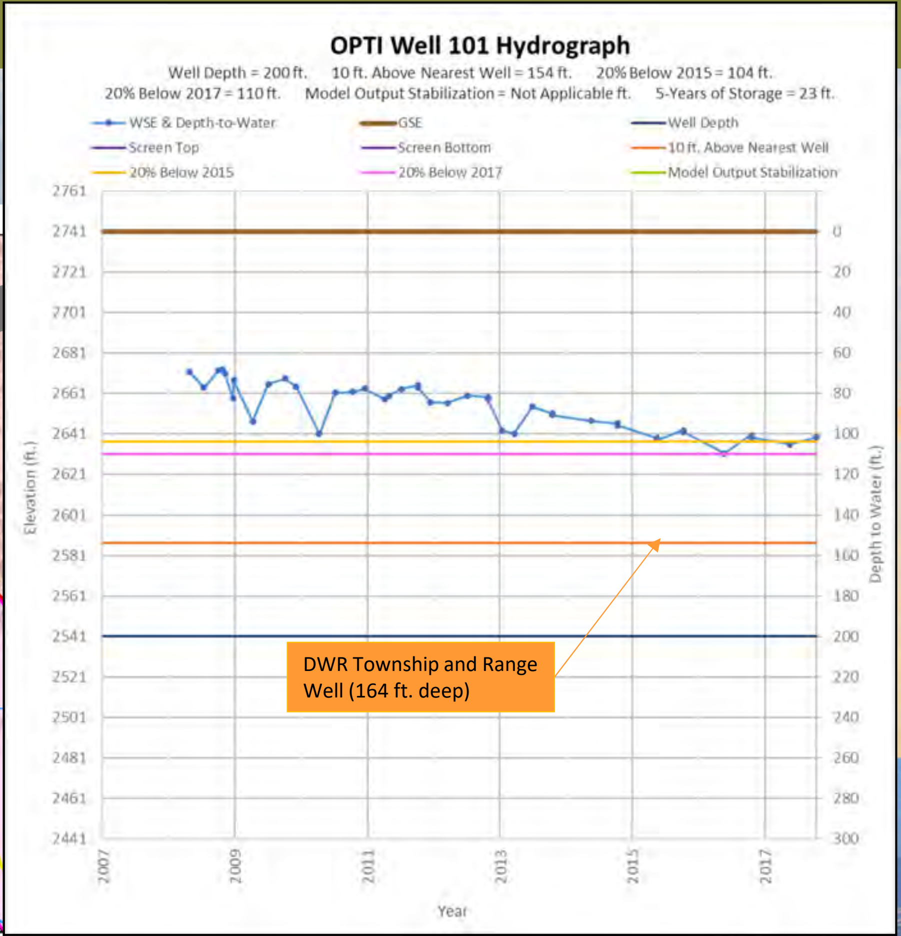
Reconsideration of Eastern Region Thresholds



Reconsideration of Eastern Region Thresholds







Staff Recommendation

- Reset Minimum Thresholds at year 2017 levels minus 20%
- Install additional representative well(s) going forward
- Review MTs and MOs as part of 2025 GSP Update

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan Minimum Thresholds, Measurable Objectives, and Interim Milestones Draft

Prepared by:

February 2019

Chapter 5 Minimum Thresholds, Measurable Objectives, and Interim Milestones

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Acronyms

AFY	Acre feet per year
Basin	Cuyama Groundwater Basin
GSP	Groundwater Sustainability Plan
IM	Interim Milestone
MCL	Maximum Contaminant Levels
MO	Measurable Objective
MT	Minimum Threshold
SGMA	Sustainable Groundwater Management Act
TDS	Total Dissolved Solids

This section of the Cuyama GSP defines the sustainability criteria used to avoid undesirable results during GSP implementation. SGMA requires the application of Minimum Thresholds (MT), Measurable Objectives (MO), and Interim Milestones (IM) on all Representative Monitoring Sites identified in the GSP. These values, or thresholds, guide the GSA and groundwater users within the Basin to identify sustainable values for the Sustainability Indicators as well as progress indicators throughout the 20-year plan implementation period.

5.1 Useful Terms

There are several terms that describe Basin conditions and the values calculated for the Representative Sites:

- **Sustainability Goals** – The culmination of conditions in the absence of undesirable results within 20 years of the applicable statutory deadline.
- **Undesirable Results** – The significant and unreasonable occurrence of conditions that adversely affect groundwater use in the basin, as defined in Section X – Undesirable Results
- **Measurable Objectives** – A specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions that have been included in an adopted Plan to achieve the sustainability goal for the basin.
- **Minimum Thresholds** – A numeric value for each sustainability indicator used to define when undesirable results occur, if minimum thresholds are exceeded in a percentage of sites in the monitoring network.
- **Interim Milestones** – A target value representing measurable conditions, in increments of five years, set by an Agency as part of a Plan that helps the basin reach sustainability by 2040.
- **Sustainability Indicators** – refers to any of the effects caused by groundwater conditions occurring throughout the basin that, when significant and unreasonable, cause undesirable results, as described in Water Code Section 10721(x). These include:
    - Groundwater levels,
    - Groundwater storage,
    - Seawater intrusion,
    - Water quality,
    - Land subsidence, and
    - Interconnected surface water

Thresholds, both MOs and MTs, are applied to all sustainability indicator representative sites. Sites included in monitoring networks but that are not classified as representative sites are not required to have MOs or MTs. All representative sites will also have interim milestones calculated for years 2025, 2030, and 2035 to help guide the GSA to 2040 sustainability goals.

The following subsections describe the process and results for establishing MOs, MTs, and MIs for each of the sustainability indicators described above.

5.2 Chronic Lowering of Groundwater Levels

The Undesirable Result for the chronic lowering of groundwater levels is a result that causes significant and unreasonable reduction in the long-term viability of domestic, agricultural, municipal, or environmental uses over the planning and implementation horizon of this GSP.

Groundwater conditions, as discussed in Section 2.2, vary across the Basin. These conditions are influenced by geographic, geologic, and land uses overlying the Basin. Because of the variety of conditions, threshold regions were used to establish the appropriate sustainability criteria for each region.

5.2.1 Threshold Regions

Six Threshold Regions were defined to allow areas with similar conditions to be grouped together for the MO, MT, and IM values to be calculated. Threshold Regions are shown in Figure 5-1.

The following subsections discuss the strategies used to calculate the MOs, MTs, and Milestones for each Threshold Region.

Southeastern Threshold Region

The Southeaster Threshold Region lies in the southeastern edge of the Basin and is characterized as having moderate agricultural land use with steep geographic features surrounding the valley. Groundwater is generally high in this area, with levels around 50 feet or less below the ground surface, which indicates that this region is likely in a ‘full’ condition. The northern boundary of this region is the narrows at the Cuyama river, and the eastern boundary is the extent of alluvium.

Eastern Threshold Region

The Eastern Threshold Region lies just east of the central part of the Basin and encompasses Ventucopa and much of the surrounding agricultural property. This part of the Basin has agricultural pumping. Hydrographs in this region indicate that groundwater levels have been, in general, declining for the past 20 years. The northern boundary of this region is the Santa Barbara Canyon Fault, and the southern boundary is where the Cuyama Valley significantly narrows due to geographic changes.

Central Threshold Region

The Central Threshold Region incorporates the majority of agricultural land use within the Basin, as well as the towns of Cuyama and New Cuyama. The greatest depths to groundwater are also found in the Central Threshold Region, and groundwater levels have generally been declining in this region since the 1950’s. The south-eastern boundary is defined by the Santa Barbara Canyon fault, and the western boundary by the Russell Fault.

Western Threshold Region

The Western Threshold Region is characterized by shallow depth to water, and hydrographs in this region indicate that it is likely that this portion of the basin is in a ‘full’ condition. It lies primarily on the north facing slope of the lower Cuyama Valley. The eastern boundary is defined by the Russell Fault, and the northern boundary was drawn to differentiate distinct land uses.

Northwestern Threshold Region

The Northwestern Threshold Region is the bottom of the Cuyama Basin and has new agricultural land use. Hydrographs in this portion of the Basin indicate that this portion is likely in a ‘full’ condition. The southeastern border was drawn to differentiate between the land uses of the Western and Northwestern Threshold Region.

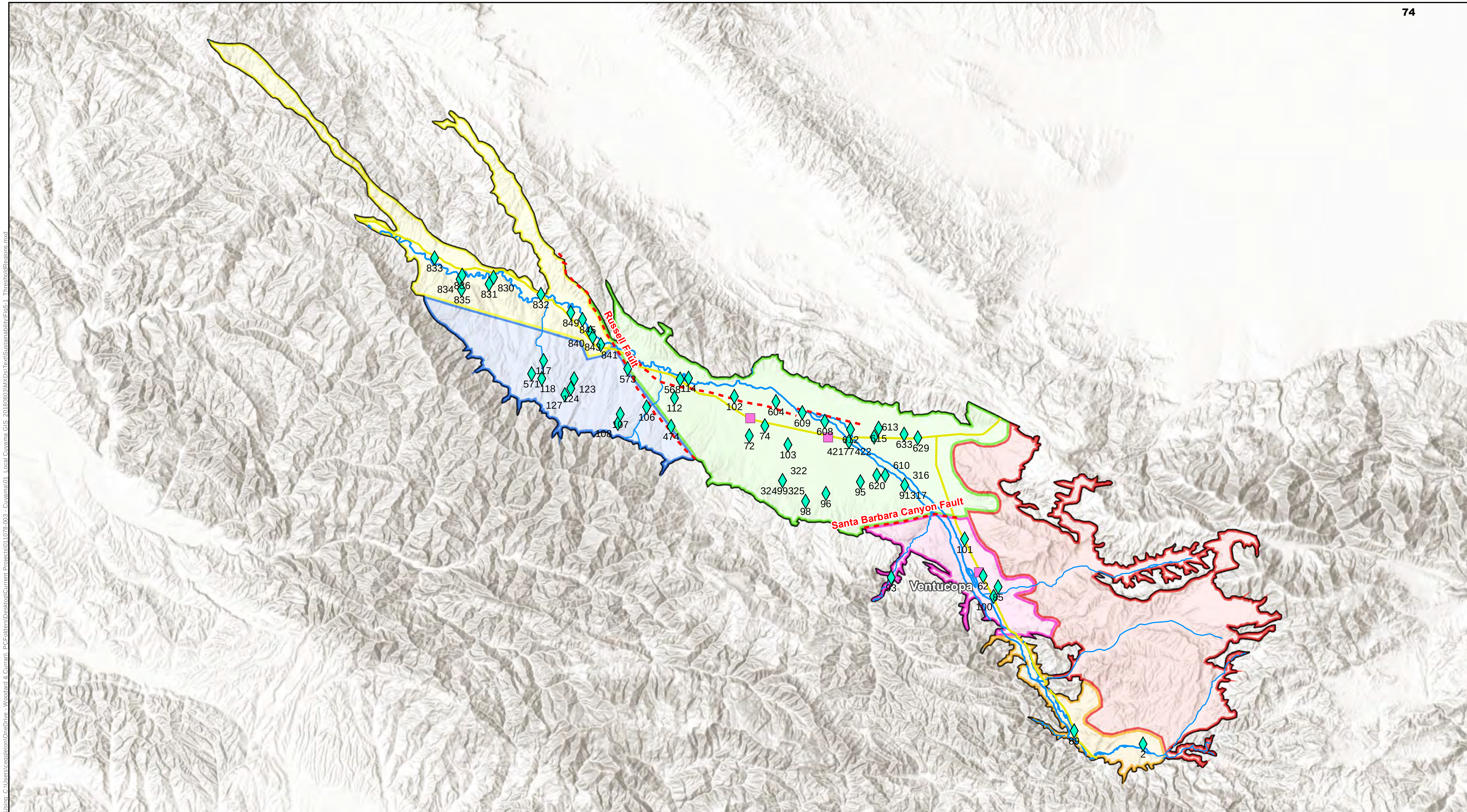

Figure 5-1: Cuyama GW Basin Groundwater Level Representative Wells & Threshold Regions
Cuyama Basin Groundwater Sustainability Agency
Cuyama Valley Groundwater Basin Groundwater Sustainability Plan
January 2019

WOODARD & CURRAN

Legend

- Cuyama Basin
- Towns
- Representative Wells
- Faults
- Highways
- Cuyama River
- Streams

Threshold Regions

- Badlands Region
- Central Region
- Eastern Region
- Northwestern Region
- Southeastern Region
- Western Region

N

0 2.75 5.5 11 Miles

Badlands Threshold Region

The Badlands Threshold Region includes the areas east of the Central, East, and Southeast Threshold Regions on the west facing slope of the Cuyama Valley. There are few active wells and little groundwater use in this area. There is no monitoring in this region, and this region does not have sustainability criteria.

5.2.2 Minimum Thresholds, Measurable Objectives, and Interim Milestones

This section describes the establishment of MTs, MOs, and IMs by threshold region, and explains the rationale behind each selected methodology.

Southeastern Threshold Region

Monitoring in this threshold region indicates levels are static except for the drought conditions period identified as from 2013 to 2018. Static groundwater levels indicate this area of the Basin is generally at capacity and therefore the MT is protective of domestic, private, public, and environmental uses.

The MT for the Southeastern Threshold Region was calculated by finding the measurement taken closest to (but not before) 1/1/2015 and not after 4/30/2015. If no measurement was taken during this 4-month period, then a linear trendline was applied to the data and the value for 1/1/2015 was extrapolated.

To provide an operational flexibility range, the MO was calculated by adding 5-years of groundwater storage to the MT. Five-years of storage was calculated by finding the decline in groundwater levels form 2013-2018, which was considered to be a period of drought conditions. If measurements were insufficient for this time period, a linear trendline was used to extrapolate the value decline value.

Placeholder for IM calculation

Levels will be measured using the frequency of measurement and monitoring protocols documented in Section 4 and Appendix XX.

Eastern Threshold Region

Monitoring in this region indicates a downward trend in groundwater levels. The MT for this region intends to protect domestic, private, public and environmental uses of the groundwater by allowing for managed extraction in areas that have beneficial uses and protecting those with at risk infrastructure.

Stakeholders reported concern about the dewatering of domestic wells in this region, and groundwater levels have been declining in monitoring wells in this region. The MT and MO consider the sustainability of water levels in regards to both domestic and agricultural users. The MT was calculated by comparing two separate mathematical methods and choosing the more restrictive (smaller depth to water value) between the two.

The first method found the total range of recorded groundwater levels and used 20% of the range. This 20% of the range was then added below the value closest to January 1, 2015 (as described in the previous subsection).

The second method was calculated by finding the shallowest nearby well depth and 10 feet were added to this value. A Geographic Information System (GIS) analysis was conducted to find the shallowest wells near each of the representative wells. This incorporated both the OPTI dataset, as well as the Department of Water Resources (DWR)'s Township and Range mapping application that utilizes well drilling reports. OPTI well analysis used a 1.5-mile radius circle to find nearby well depths, and the DWR data uses a 9 square mile grid to find the shallowest well.

The MT values calculated by the two methods were then compared, and the more restrictive value was applied to each representative well.

The MOs were calculated by subtracting 5-yrs of groundwater storage from the MT. 5-yrs of storage was found by calculating the decline in groundwater levels form 2013-2018 (a drought period). If measurements are insufficient for this time period, a linear trendline was used to extrapolate the value.

Placeholder for IM calculation

Levels will be measured using the frequency of measurement and monitoring protocols documented in Section 4 and Appendix XX.

Central Threshold Region

Monitoring in this region indicates a decline in groundwater levels, indicating an extraction rate that exceeds recharge rates. The MT for this region is set to allow current beneficial uses of groundwater while reducing extraction rates over the planning horizon to meet sustainable yield. The MO is intended to allow sufficient operational flexibility for future drought conditions.

The MT for the Central Threshold Region was calculated by taking finding the maximum and minimum groundwater levels for each representative well and calculating 20% of the historical range. This 20% of the historical range was then added to the depth to water measurement closest to, but not before, 1/1/2015 and no later than 4/30/2015. If no measurement was taken during this 4-month period, then a linear trendline was applied to the data and the value for 1/1/2015 was extrapolated.

The MO was calculated by subtracting 5-yrs of groundwater storage from the MT. Five-years of storage was found by calculating the decline in groundwater levels form 2013-2018 (a drought period). If measurements were insufficient for this time period, a linear trendline was used to extrapolate the value.

OPTI Wells 74, 103, 114, 568, 609, and 615 used a modified MO calculation where the MO utilized the linear trendline of the full range of measurements to extrapolate a 1/1/2015 value.

Placeholder for IM calculation

Levels will be measured using the frequency of measurement and monitoring protocols documented in Section 4 and Appendix XX.

Western Threshold Region

Monitoring in this threshold region indicates levels are stable, and varied significantly depending on which portion of the region the monitoring well was located in. The most common use of groundwater in this region is for domestic uses. Due to these hydrologic conditions, the MT was set to protect the water levels from declining significantly, while allowing beneficial land surface uses of the groundwater and protecting current well infrastructure. The MT was calculated by taking the difference between the total well depth and the value closest to mid-February, 2018, and calculating 15% of that depth. That value is then subtracted from the mid-February, 2018measurement to calculate the MT. This would allow users in this Threshold Region to utilize their groundwater supply without increasing the risk of running a dry well beyond acceptable limits, and this methodology is responsive to the variety of conditions and well depths in this region.

The MO was then calculated by finding the measurement closest to mid-February, 2018, which monitoring indicates is likely a "full" condition.

OPTI Well 474 utilizes a modified MO calculation where the historical high elevation measurement was used as the MO.

Placeholder for IM calculation

Levels will be measured using the frequency of measurement and monitoring protocols documented in Section 4 and Appendix XX.

Northwestern Threshold Region

Monitoring in this threshold region indicates levels are stable, with some declines in the area of new agriculture. Due to these hydrologic conditions, the MT was set to protect the water levels from declining significantly, while allowing beneficial land surface uses and utilizing the storage capacity of this region of the Basin. The MT for the Northwestern Threshold Region was found by determining the total average saturated thickness for the primary storage area of the Threshold Region and calculating 15% of that depth. This value was then set as the MT.

The MO was calculated using 5-years of storage. Because historical data reflecting new operations in this Threshold Region is extremely limited, 50 feet was used as 5 years of storage based on local landowner input.

There are several wells in this Threshold Region that were reclassified as “Far-west Northwestern Wells”, and include OPTI Wells 830, 831, 832, 833, 834, 835, and 836. These wells have total depths that are shallower and utilize the same strategies as the Western Threshold Region for their MOs and MTs.

Placeholder for IM calculation

Levels will be measured using the frequency of measurement and monitoring protocols documented in Section 4 and Appendix XX.

Badlands Threshold Region

The Badlands Threshold Region has no groundwater use or active wells within this area, thus, no MO, MT, or Interim Milestones were calculated.

5.2.3 Selected minimum thresholds, measurable objectives, and interim milestone graphs, figures, and tables

Figure 5-2 shows an example hydrograph with indicators for the MT, MO, IM (to be calculated) over the hydrograph. The left axis shows elevation above mean sea level, the right axis shows depth to water below ground surface. The brown line shows the ground surface elevation, and time in years is shown on the bottom axis. Each measurement taken at the monitoring well is shown as a blue dot, with blue lines connecting between the blue dots indicating the interpolated groundwater level between measurements. The MT is shown as a red line, and the MO is shown as a green line. IM symbology to be added Appendix XXX includes hydrographs with MT, MO and IM (to be added) for each representative monitoring well.

Table 5-1 shows the representative monitoring network and the numerical values for the MT, MO, and IM (to be added).

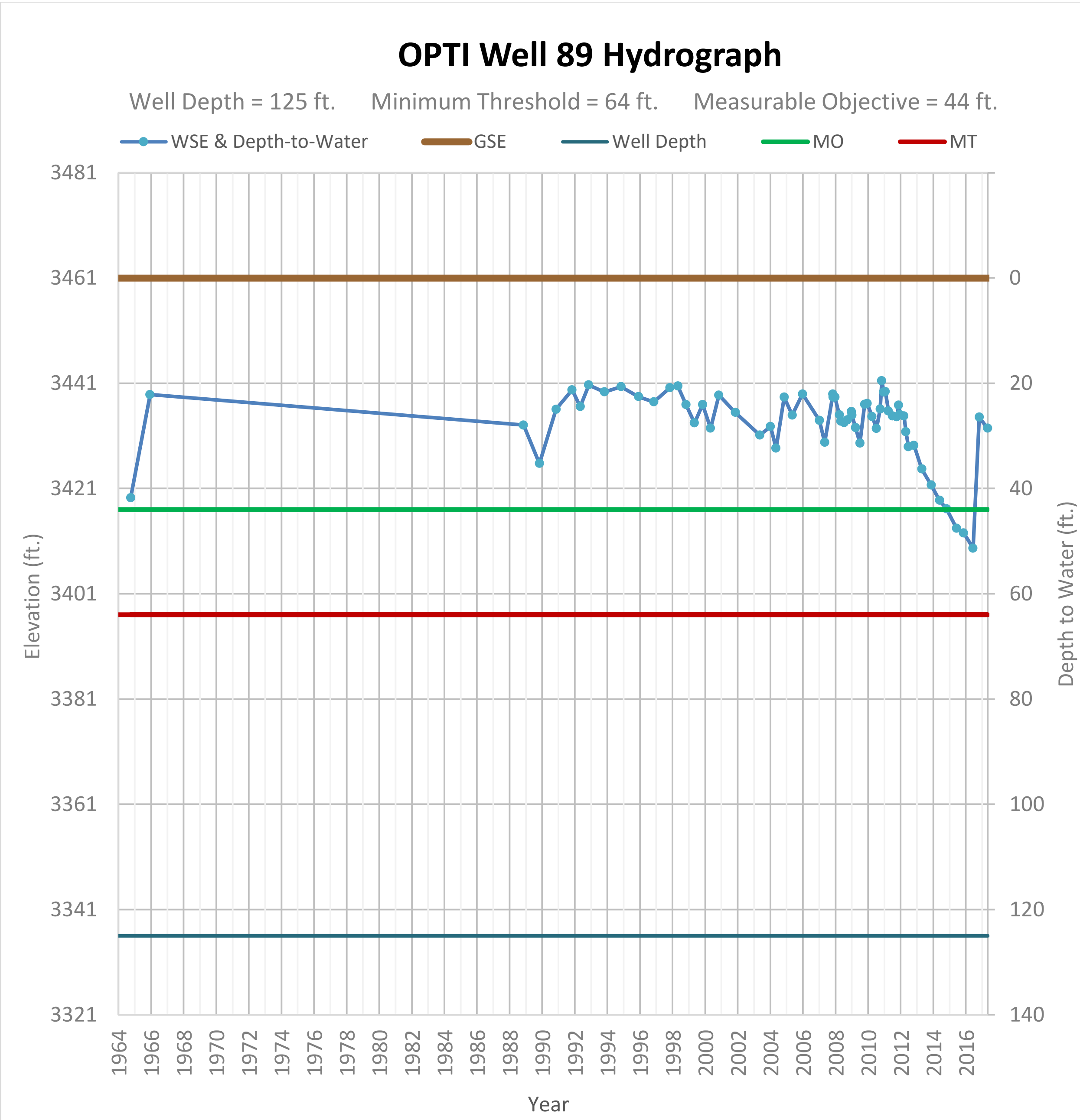

Figure 5-2 Example Hydrograph

Table 5-1 – Representative Monitoring Network and Sustainability Criteria

OPTI Well	Region	Final MT	Final MO	2025 IM	2030 IM	2035 IM	Well Depth	Screen Top	Screen Bottom	GSE
72	Central	169	124				790	340	770	2171
74	Central	256	243							2193
77	Central	450	400				980	960	980	2286
91	Central	625	576				980	960	980	2474
95	Central	573	538				805			2449
96	Central	333	325				500			2606
98	Central	450	439				750			2688
99	Central	311	300				750	730	750	2513
102	Central	235	197							2046
103	Central	290	235				1030			2289
112	Central	87	85				441			2139
114	Central	47	45				58			1925
316	Central	623	574				830			2474
317	Central	623	573				700			2474
322	Central	307	298				850			2513
324	Central	311	299				560			2513
325	Central	300	292				380			2513
420	Central	450	400				780			2286
421	Central	446	398				620			2286
422	Central	444	397				460			2286
474	Central	188	169				213			2369
568	Central	37	36				188			1905
604	Central	526	487				924	454	924	2125
608	Central	436	407				745	440	745	2224
609	Central	458	421				970	476	970	2167
610	Central	621	591				780	428	780	2442
612	Central	463	440				1070	657	1070	2266
613	Central	503	475				830	330	830	2330
615	Central	500	468				865	480	865	2327
620	Central	606	566				1035	550	1035	2432

629	Central	559	527	1000	500	1000	2379
633	Central	547	493	1000	500	1000	2364
62	Eastern	151	126	212			2921
85	Eastern	171	147	233			3047
93	Eastern	105	91	151			2928
100	Eastern	134	105	284			3004
101	Eastern	104	81	200			2741
840	Northwestern	203	153	900	200	880	1713
841	Northwestern	203	153	600	170	580	1761
843	Northwestern	203	153	620	60	600	1761
845	Northwestern	203	153	380	100	360	1712
849	Northwestern	203	153	570	150	550	1713
2	Southeastern	72	55	73			3720
89	Southeastern	64	44	125			3461
106	Western	154	141.4	227.5			2327
107	Western	91	72.23	200			2482
108	Western	165	135.62	328.75			2629
117	Western	160	150.82	212			2098
118	Western	124	57.22	500			2270
123	Western	31	12.59	138			2165
124	Western	73	57.12	160.55			2287
127	Western	42	31.74	100.25			2364
571	Western	144	120.5	280			2307
573	Western	118	67.5	404			2084
830	Far-West Northwestern	59	56	77.2			1571
831	Far-West Northwestern	77	52	213.75			1557
832	Far-West Northwestern	45	30	131.8			1630
833	Far-West Northwestern	96	24	503.55			1457
834	Far-West Northwestern	84	42	320			1508
835	Far-West Northwestern	55	36	162.2			1555
836	Far-West Northwestern	79	36	325			1486

5.3 Reduction of Groundwater Storage

The Undesirable Result for the reduction in groundwater storage is a result that causes significant and unreasonable reduction in the viability of domestic, agricultural, municipal, or environmental uses over the planning and implementation horizon of this GSP.

Reduction of groundwater storage is not a concern for the Basin for two reasons. First, monitoring in several areas of the Basin (western, eastern, and portions of the north facing slope of the Cuyama Valley near the center of the Basin) indicate that those regions are likely near, or at full conditions.

Second, because the primary aquifer in the Basin is not confined, storage closely matches groundwater levels

SGMA regulations define the MT for reduction of groundwater storage as the, "… total volume of groundwater that can be withdrawn from the basin without causing conditions that may lead to undesirable results."

Undesirable results for groundwater storage volumes in this GSP will use groundwater levels as a proxy, as the groundwater level sustainability criteria are protective of groundwater in storage.

5.3.1 Threshold Regions

Groundwater storage is measured by proxy using groundwater level thresholds, and thus uses the same methodology and threshold regions as groundwater levels.

5.3.2 Proxy Monitoring

Reduction of groundwater storage within the Basin uses groundwater levels as a proxy for determining sustainability, as permitted by §354.26 (d) of CA Regulation Title 23, Chapter 1.5.2.5. Additionally, there are currently no state, federal, or local standards that regulate groundwater storage. As described above, any benefits to groundwater storage are expected to coincide with groundwater level management.

5.4 Seawater Intrusion

Due to the geographic location of the Cuyama Basin, seawater intrusion is not a concern, and thus is not required to establish criteria for undesirable results for seawater intrusion, as supported by §354.26 (e) of CA Regulation Title 23, Chapter 1.5.2.5.

5.5 Degraded Water Quality

The Undesirable Result for degraded water quality is a result stemming from a causal nexus between SGMA-related groundwater quantity management activities and groundwater quality that causes significant and unreasonable reduction in the long-term viability of domestic, agricultural, municipal, or environmental uses over the planning and implementation horizon of this GSP.

The SGMA regulations specify that, "minimum thresholds for degraded water quality shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results."

Because the undesirable result for degraded water quality stems from the causal nexus between SGMA related quantity management and groundwater quality, TDS will be monitored by the GSA as part of this GSP, and other constituents will not. As discussed in Section 2.2 Groundwater Conditions, there are few contamination sites in the Basin. Additionally, these sites are under jurisdiction of the RWQCB. Nitrates are under the jurisdiction of the Irrigated Lands Regulatory Program (ILRP), and the GSA does not possess land use authority to influence fertilizer use. Arsenic occurs at specific depths in the basin, but the location of sources of arsenic is not well understood and is not manageable by the GSA at a regional scale.

5.5.1 Threshold Regions

Groundwater quality monitoring does not utilize Threshold Regions. Figure 5-3 shows the location of the groundwater quality representative wells in the Basin.

5.5.2 Proxy Monitoring

Proxy monitoring is not used for groundwater quality monitoring within the Cuyama Basin.

5.5.3 Minimum Thresholds, Measurable Objectives, and Interim Milestones

The GSA has decided to address total dissolved solids (TDS) within the Basin by setting MTs, MOs, and IMs. TDS does not have a primary maximum contaminant level (MCL), but does have both a California Division of Drinking Water and U.S. Environmental Protection Agency (USEPA) Secondary standard of 500 mg/L, and a short-term standard of 1,500 mg/L. Current levels in the Basin range from 84 mg/L to 4,400 mg/L. This is due to saline conditions in the portions of the watershed where rainfall percolates through marine sediments which contain large amounts of salt.

Due to this natural condition, additional data will be collected during GSP implementation to increase the GSAs understanding of salt/TDS sources within the Basin,. It should be noted however, that TDS levels in the groundwater do not detrimentally impact the agricultural economy of the Basin. Much of the crops grown in the Basin, including carrots, are not significantly affected by the kinds of salts in the Basin.

Due to these factors the MT for representative well sites are set to be the 20% of the total range of each representative monitoring site above the 90th percentile of measurements for each site.

To provide for an acceptable margin of operational flexibility, the MO for the TDS levels within the Basin have been set to the temporary MCL of 1,500 mg/L for each representative well where the latest measurements as of 2018 are greater than 1,500 mg/L. For wells with recent measurements less than 1,500 mg/L, the MO is set to the most recent measurement as of 2018.

This GSP has calculated two different interim milestones to achieve sustainability by 2040. GSP regulations require GSAs to avoid undesirable results by 2040, which is to say meet or exceed the MT. The GSA also recognizes that reaching the MO is a priority, and thus a range of interim milestones has been set. Interim milestones for TDS have been set as a linear trendline from the latest measurement value in 2018 to the 2040 MO and MT as shown in Table 5-2.

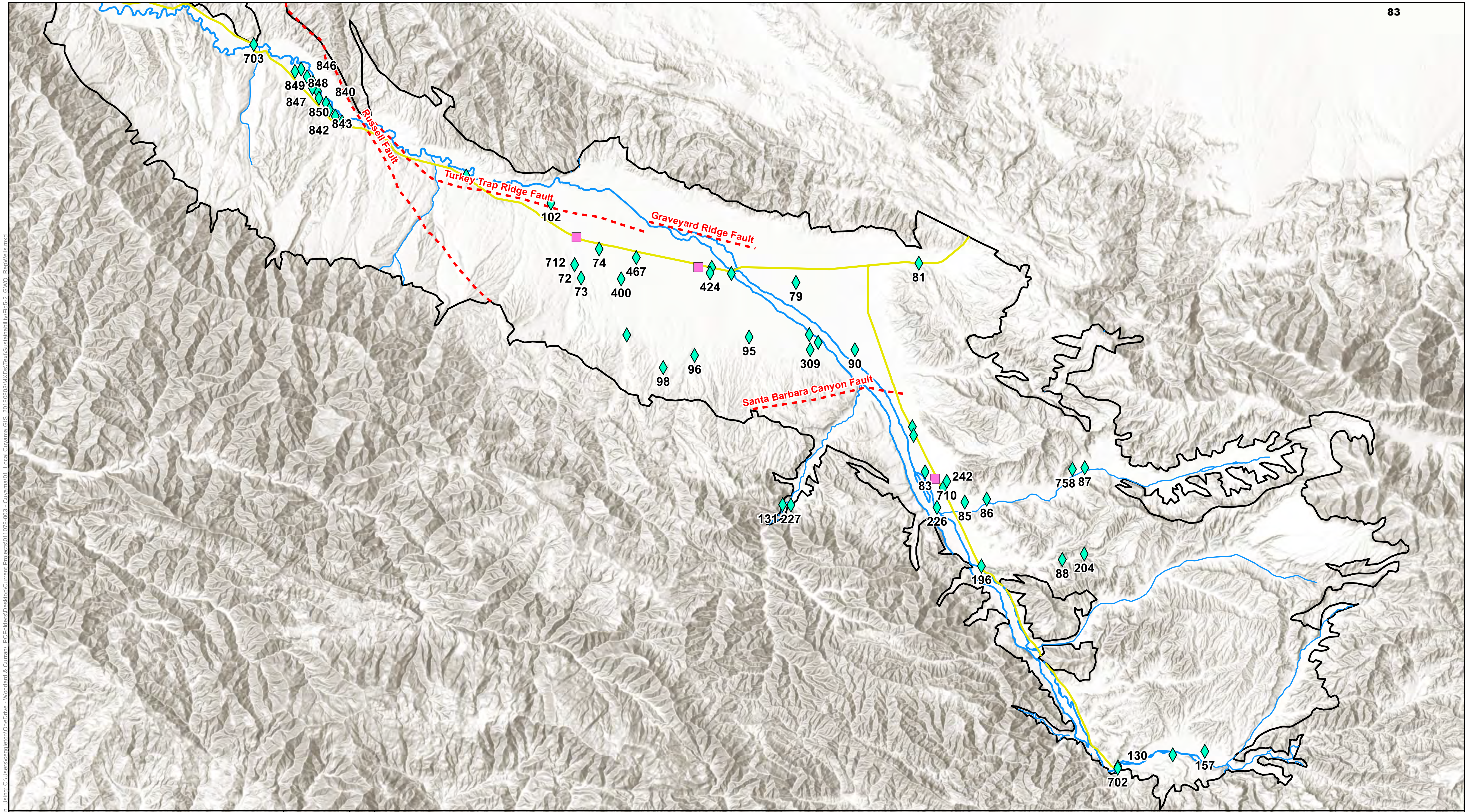

Figure 5-3: Cuyama GW Basin Groundwater Quality Representative Wells

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

January 2019

WOODARD & CURRAN

Legend

- Cuyama Basin
- Towns
- Faults
- Highways
- Cuyama River
- Streams
- Representative Groundwater Quality Wells

Table 5-2: MOs, MTs, and Interim Milestones for Groundwater Quality Representative Sites

OPTI ID	Well Depth	Screen Interval	Well Elevation	MO	MT	2025 IM	2030 IM	2035 IM
61	357.	Unknown	3681	585	615.2	585 - 593 mg/L	585 - 600 mg/L	585 - 608 mg/L
72	790	340 to 350 ft.	2171	996	1023	996 - 1003 mg/L	996 - 1010 mg/L	996 - 1016 mg/L
73	880.	Unknown	2252	805	855.9	805 - 818 mg/L	805 - 830 mg/L	805 - 843 mg/L
74		Unknown	2193	1500	1833	1538 - 1621 mg/L	1525 - 1692 mg/L	1513 - 1762 mg/L
76	720	Unknown	2277	1500	2306.9	1650 - 1852 mg/L	1600 - 2003 mg/L	1550 - 2155 mg/L
77	980	960 to 980 ft.	2286	1500	1592	1515 - 1538 mg/L	1510 - 1556 mg/L	1505 - 1574 mg/L
79	600	Unknown	2374	1500	2320	1980 - 2185 mg/L	1820 - 2230 mg/L	1660 - 2275 mg/L
81	155.	Unknown	2698	1500	2788	2340 - 2662 mg/L	2060 - 2704 mg/L	1780 - 2746 mg/L
83	198.	Unknown	2858	1500	1726	1620 - 1677 mg/L	1580 - 1693 mg/L	1540 - 1710 mg/L
85	233	Unknown	3047	618	1391.2	618 - 811 mg/L	618 - 1005 mg/L	618 - 1198 mg/L
86	230.	Unknown	3141	969	974.7	969 - 970 mg/L	969 - 972 mg/L	969 - 973 mg/L
87	232.	Unknown	3546	1090	1164.8	1090 - 1109 mg/L	1090 - 1127 mg/L	1090 - 1146 mg/L
88	400	Unknown	3549	302	302	302 - 302 mg/L	302 - 302 mg/L	302 - 302 mg/L
90	800	Unknown	2552	1500	1593	1523 - 1546 mg/L	1515 - 1562 mg/L	1508 - 1577 mg/L
91	980	960 to 980 ft.	2474	1410	1487	1410 - 1429 mg/L	1410 - 1449 mg/L	1410 - 1468 mg/L
94	550	Unknown	2456	1050	1245	1050 - 1099 mg/L	1050 - 1148 mg/L	1050 - 1196 mg/L
95	805.	Unknown	2449	1500	1866	1658 - 1749 mg/L	1605 - 1788 mg/L	1553 - 1827 mg/L
96	500	Unknown	2606	1500	1632	1500 - 1533 mg/L	1500 - 1566 mg/L	1500 - 1599 mg/L
98	750.	Unknown	2688	1500	2400	2040 - 2265 mg/L	1860 - 2310 mg/L	1680 - 2355 mg/L
99	750	730 to 750 ft.	2513	1490	1562	1490 - 1508 mg/L	1490 - 1526 mg/L	1490 - 1544 mg/L
101	200	Unknown	2741	1500	1693	1538 - 1586 mg/L	1525 - 1622 mg/L	1513 - 1657 mg/L
102		Unknown	2046	1500	2351	1853 - 2065 mg/L	1735 - 2161 mg/L	1618 - 2256 mg/L
130		Unknown	3536	1500	1855	1725 - 1814 mg/L	1650 - 1828 mg/L	1575 - 1841 mg/L
131		Unknown	2990	1500	1982	1763 - 1883 mg/L	1675 - 1916 mg/L	1588 - 1949 mg/L
157	71.0	Unknown	3755	1500	2360	1823 - 2038 mg/L	1715 - 2145 mg/L	1608 - 2253 mg/L
196	741	Unknown	3117	851	903.7	851 - 864 mg/L	851 - 877 mg/L	851 - 891 mg/L
204		Unknown	3693	253	268.6	253 - 257 mg/L	253 - 261 mg/L	253 - 265 mg/L
226		Unknown	2945	1500	1844	1695 - 1781 mg/L	1630 - 1802 mg/L	1565 - 1823 mg/L
227		Unknown	3002	1500	2230	1710 - 1893 mg/L	1640 - 2005 mg/L	1570 - 2118 mg/L
242	155	Unknown	2933	1470	1518	1470 - 1482 mg/L	1470 - 1494 mg/L	1470 - 1506 mg/L
269		Unknown	2756	1500	1702	1553 - 1603 mg/L	1535 - 1636 mg/L	1518 - 1669 mg/L

OPTI ID	Well Depth	Screen Interval	Well Elevation	MO	MT	2025 IM	2030 IM	2035 IM
309	1100	Unknown	2513	1410	1509	1410 - 1435 mg/L	1410 - 1460 mg/L	1410 - 1484 mg/L
316	830	Unknown	2474	1380	1468	1380 - 1402 mg/L	1380 - 1424 mg/L	1380 - 1446 mg/L
317	700	Unknown	2474	1260	1337	1260 - 1279 mg/L	1260 - 1299 mg/L	1260 - 1318 mg/L
318	610	Unknown	2474	1080	1152	1080 - 1098 mg/L	1080 - 1116 mg/L	1080 - 1134 mg/L
322	850	Unknown	2513	1350	1386	1350 - 1359 mg/L	1350 - 1368 mg/L	1350 - 1377 mg/L
324	560	Unknown	2513	746	777.2	746 - 754 mg/L	746 - 762 mg/L	746 - 769 mg/L
325	380	Unknown	2513	1470	1569	1470 - 1495 mg/L	1470 - 1520 mg/L	1470 - 1544 mg/L
400	2120.	Unknown	2298	918	975.6	918 - 932 mg/L	918 - 947 mg/L	918 - 961 mg/L
420	780	Unknown	2286	1430	1490	1430 - 1445 mg/L	1430 - 1460 mg/L	1430 - 1475 mg/L
421	620	Unknown	2286	1500	1616	1515 - 1544 mg/L	1510 - 1568 mg/L	1505 - 1592 mg/L
422	460	Unknown	2286	1500	1942	1733 - 1843 mg/L	1655 - 1876 mg/L	1578 - 1909 mg/L
424	1000.	Unknown	2291	1500	1588	1530 - 1552 mg/L	1520 - 1564 mg/L	1510 - 1576 mg/L
467	1140.	Unknown	2224	1500	1764	1598 - 1664 mg/L	1565 - 1697 mg/L	1533 - 1731 mg/L
568	188	Unknown	1905	871	1191.4	871 - 951 mg/L	871 - 1031 mg/L	871 - 1111 mg/L
702		Unknown	3539	110	2074.4	110 - 601 mg/L	110 - 1092 mg/L	110 - 1583 mg/L
703		Unknown	1613	400	4096.8	400 - 1324 mg/L	400 - 2248 mg/L	400 - 3173 mg/L
710		Unknown	2942	1040	1040	1040 - 1040 mg/L	1040 - 1040 mg/L	1040 - 1040 mg/L
711		Unknown	1905	928	928	928 - 928 mg/L	928 - 928 mg/L	928 - 928 mg/L
712		Unknown	2171	977	977.5	977 - 977 mg/L	977 - 977 mg/L	977 - 977 mg/L
713		Unknown	2456	1200	1200	1200 - 1200 mg/L	1200 - 1200 mg/L	1200 - 1200 mg/L
721		Unknown	2374	1500	2170	2003 - 2170 mg/L	1835 - 2170 mg/L	1668 - 2170 mg/L
758		Unknown	3537	900	954.3	900 - 914 mg/L	900 - 927 mg/L	900 - 941 mg/L
840	900	200 to 880 ft.	1713	559	559	559 - 559 mg/L	559 - 559 mg/L	559 - 559 mg/L
841	600	170 to 580 ft.	1761	561	561	561 - 561 mg/L	561 - 561 mg/L	561 - 561 mg/L
842	450	60 to 430 ft.	1759	547	547	547 - 547 mg/L	547 - 547 mg/L	547 - 547 mg/L
843	620	60 to 600 ft.	1761	569	569	569 - 569 mg/L	569 - 569 mg/L	569 - 569 mg/L
844	730	100 to 720 ft.	1713	481	481	481 - 481 mg/L	481 - 481 mg/L	481 - 481 mg/L
845	380	100 to 360 ft.	1712	1250	1250	1250 - 1250 mg/L	1250 - 1250 mg/L	1250 - 1250 mg/L
846	610	130 to 590 ft.	1715	918	918	918 - 918 mg/L	918 - 918 mg/L	918 - 918 mg/L
847	600	180 to 580 ft.	1733	480	480	480 - 480 mg/L	480 - 480 mg/L	480 - 480 mg/L
848	390	110 to 370 ft.	1694	674	674	674 - 674 mg/L	674 - 674 mg/L	674 - 674 mg/L
849	570	150 to 550 ft.	1713	1500	1780	1710 - 1780 mg/L	1640 - 1780 mg/L	1570 - 1780 mg/L

OPTI ID	Well Depth	Screen Interval	Well Elevation	MO	MT	2025 IM	2030 IM	2035 IM
850	790	180 to 780 ft.	1759	472	472	472 - 472 mg/L	472 - 472 mg/L	472 - 472 mg/L

5.6 Subsidence

The Undesirable Result for land subsidence is a result that causes significant and unreasonable reduction in the viability of the use of infrastructure over the planning and implementation horizon of this GSP.

5.6.1 Threshold Regions

Subsidence monitoring does not use threshold regions. Figure 5-4 shows the location of the subsidence representative locations in the Basin.

5.6.2 Representative Monitoring

As discussed in Section 4.9, all Monitoring Network subsidence monitoring stations within the Basin, and three additional sites outside of the Basin, are designated as the representative monitoring sites. Determinantal impacts of subsidence include groundwater storage reductions and potential damage to infrastructure such as large pipelines and canals. However, the Basin does not currently have infrastructure of this type, and storage losses are so small they may be considered superficial.

Subsidence within the central portion of the Basin is approximately 0.5 inches per year, as shown in Section 2.2, Groundwater Conditions. Currently, there are no state, federal, or local standards that regulate subsidence rates.

5.6.3 Minimum Thresholds, Measurable Objectives, and Interim Milestones

Although several factors may affect subsidence rates, including natural geologic processes, oil pumping, and groundwater pumping, it is believed that the primary influence within the Basin is due to groundwater pumping. Because current subsidence rates are not believed to be significant and unreasonable, the MT rate for subsidence was set at 2 inches per year to allow for flexibility as the Basin works towards sustainability in 2040. This rate is applied primarily to the two stations in the Basin (CUHS and P521), as the other stations in the Monitoring Network represent ambient changes in vertical displacement, primarily due to geological influences. This level of subsidence is considered unlikely to cause a significant and unreasonable reduction in the viability of the use of infrastructure over the planning and implementation horizon of this GSP.

Subsidence is expected to be influenced through the management of groundwater pumping through the groundwater level MOs, MTs, and interim milestones. Thus, the MO for subsidence is set for zero lowering of ground surface elevations.

Interim milestones are not needed for the subsidence sustainability indicator because the current rate of subsidence is above the MT.

Subsidence rates will be measured in the frequency of measurement and monitoring protocols documented in Section 4.

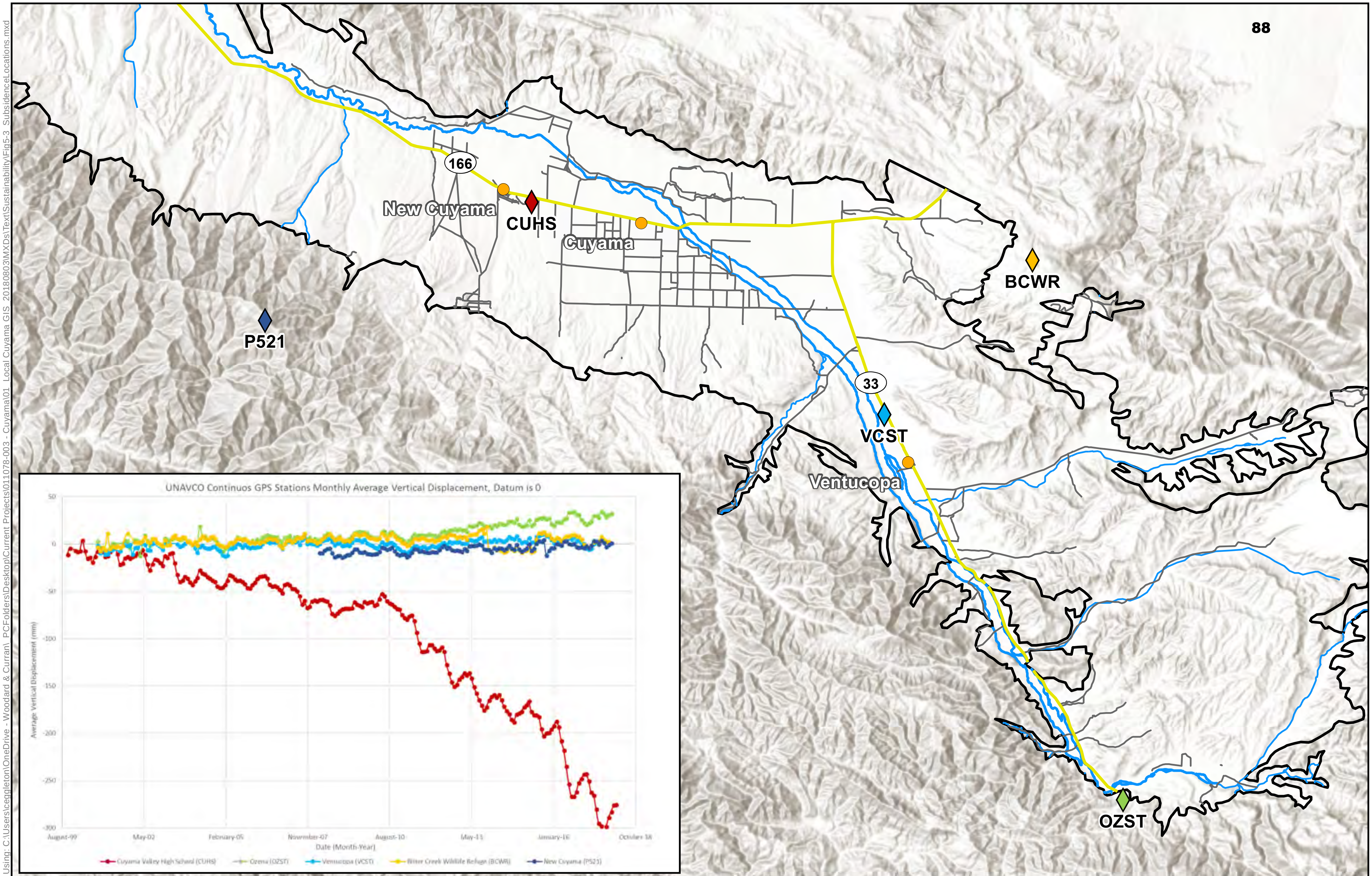

Figure 5-4: Cuyama GW Basin Subsidence Monitoring Locations

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

January 2019

WOODARD & CURRAN

Legend

- Cuyama Basin
- Towns
- Highways
- Local Roads
- Cuyama River
- Streams

0 2 4 8 Miles

N

Figure Exported: 2/1/2019 By: ceggleton Using: C:\Users\ceggleton\OneDrive - Woodard & Curran\ PCFolders\Desktop\Current Projects\011078-003 - Cuyama\01 Local Cuyama GIS 20180803\MXDs\Text\Sustainability\Fig5-3 SubsidenceLocations.mxd

5.7 Depletions of Interconnected Surface Water

The Undesirable Result for depletions of interconnected surface water is a result that causes significant and unreasonable reductions in the viability of agriculture or riparian habitat within the basin over the planning and implementation horizon of this GSP.

SGMA regulations define the MT for interconnected surface water as, "… the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on the beneficial uses of the surface water and may lead to undesirable results." In January 1, 2015 surface flows infiltrated into the groundwater system and are used by phreatophytes, except in the most extreme flash flood events, when surface water flows out of the basin. These flash flood events flow for less than one week of the year. Conditions have not changed since January 1, 2015, and surface flows infiltrate into the groundwater system and are used by local phreatophytes.

Due to conditions in the Basin not being different from January 1, 2015, groundwater level thresholds established in Section 5.2 are considered protective of depletions of interconnected surface water to January 1, 2015 conditions, and the groundwater level thresholds are used by proxy to protect the basin from undesirable results related to depletion of interconnected surface water.

References

California Department of Water Resources (DWR), Irrigated Land Regulatory Program (IRLP), Accessed 1/11/2019. https://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/

TO: Standing Advisory Committee
Agenda Item No. 5e

FROM: Brian Van Lienden, Woodard & Curran (W&C)

DATE: February 28, 2019

SUBJECT: Direction on Management Areas

Issue
Direction on Management Areas.

Recommended Motion
None – information only.

Discussion
An update on Management Areas is provided as Attachment 1.

Attachment 1

Cuyama Basin Groundwater Sustainability Agency

Direction on Management Areas

February 28, 2019

DWR Definition of a "Management Area"

- *"… 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."*
- *"Other portions of the GSP (e.g., hydrogeologic conceptual model, water budget, notice and communication) must be consistent of the entire GSP area."*

WOODARD & CURRAN

Potential Management Area Uses

- Provided by Regulation
    - Differentiate rationale for Minimum Thresholds and Measurable Objectives
    - Establish different concentration or types of monitoring

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- At GSA Board's Discretion
    - At GSA's discretion, Management Areas *could* be used to:
        - Delegate authorities to other jurisdictions
        - Perform projects and management actions discretely by Management Area
            - Allocations
            - Costs

WOODARD & CURRAN

Board Direction on Management Areas

- Should the GSA utilize management areas?
- If the GSA utilizes management areas, which areas of the Basin should be identified as a management area?
- Areas currently with potential groundwater imbalances:
  - Developed Central region
  - Ventucopa region

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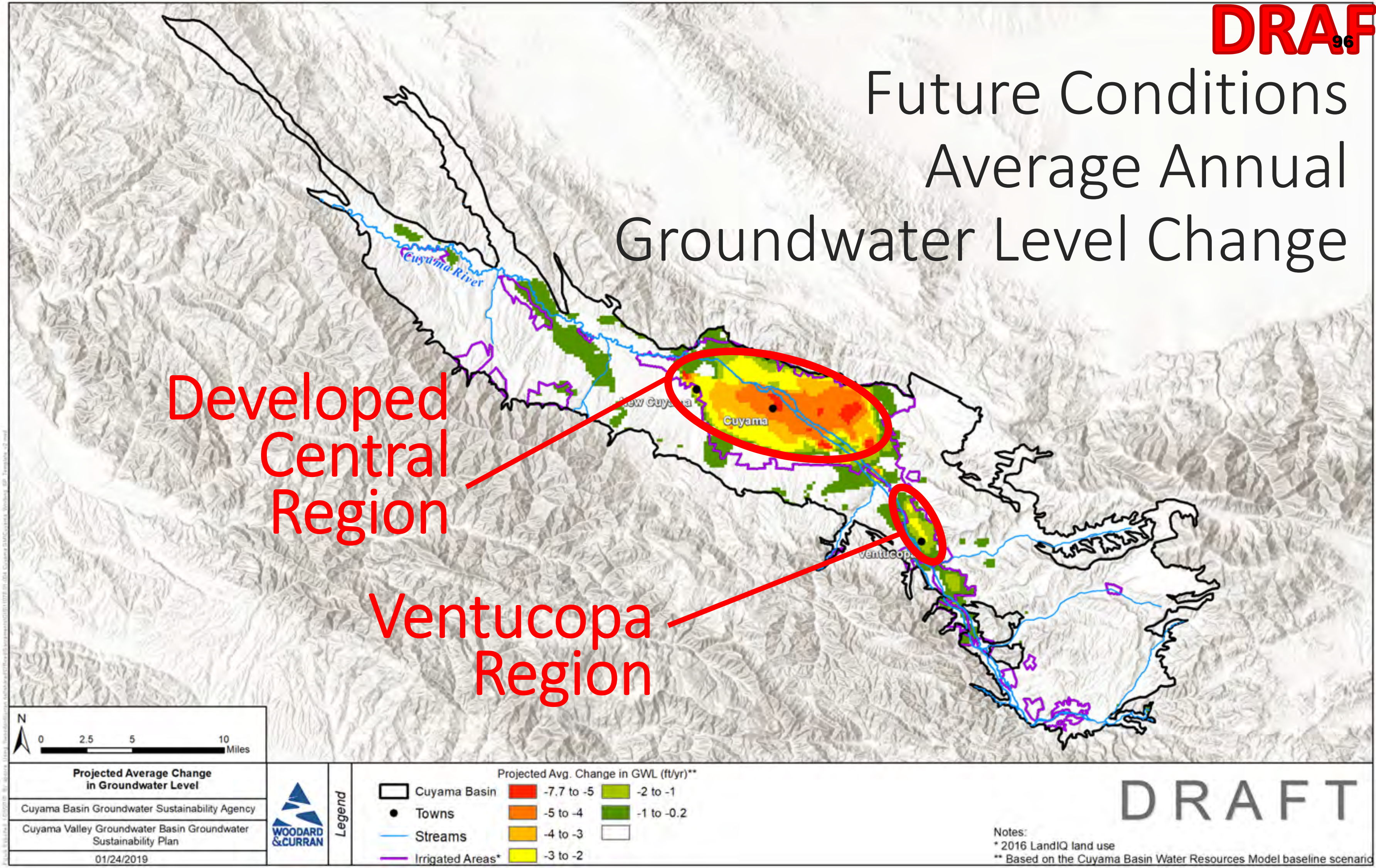
Future Conditions Average Annual Groundwater Level Change



Staff Recommendation

- Management actions and/or pumping reductions need to occur in the areas that most affect the Basin imbalance
- **We recommend that two management areas be included in the current GSP:**
  - **Central Basin area with modeled overdraft conditions (>2 ft/yr)**
  - **Ventucopa area with modeled overdraft conditions (>2 ft/yr)**
- Information will be developed over the next five years to refine proposed management areas

WOODARD & CURRAN

TO:	Standing Advisory Committee Agenda Item No. 5f
FROM:	Brian Van Lienden, Woodard & Curran (W&C)
DATE:	February 28, 2019
SUBJECT:	Projects and Management Actions

Issue
Update on the Projects and Management Actions.

Recommended Motion
None – information only.

Discussion
Cuyama Basin Groundwater Sustainability Agency Groundwater Sustainability Plan consultant Woodard & Curran's Projects and Management Actions are provided as the following attachments:

Attachment 1 – Project and Management Actions
Attachment 2 – Direction on Projects
Attachment 3 – Direction on Pumping Allocation Approach

Attachment 1

Cuyama Basin Groundwater Sustainability Agency

Projects and Management Actions

February 28, 2019

WOODARD &CURRAN

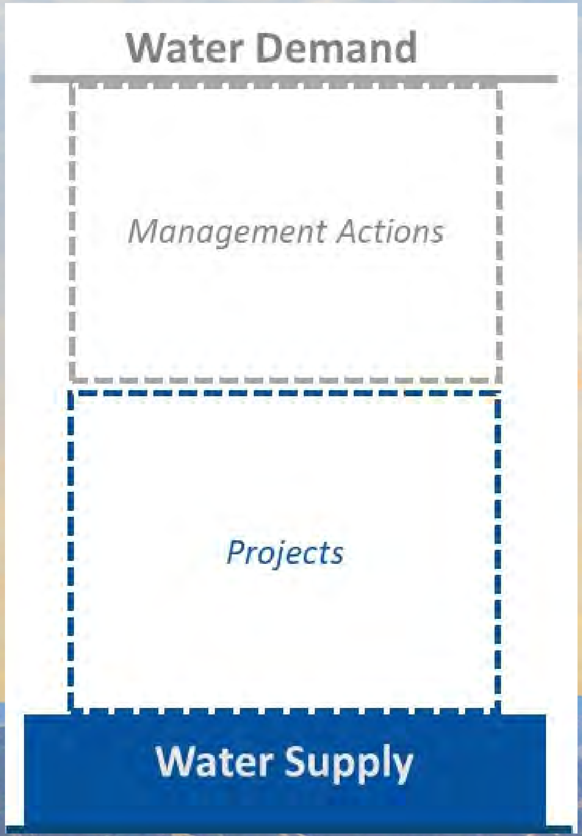
Process for Identifying and Analyzing Management Actions and Projects

- Solicit public input on potential actions and projects (Sep)
- Evaluation and characterization of actions and projects (Sep-Jan)
- Discuss potential actions with SAC and Board (Jan-Feb)
- Numerical modeling of management action alternatives (Feb)
- **Present numerical modeling results to SAC and Board (Feb-Mar)**

WOODARD & CURRAN

Projects and Management Actions to Close the Gap Between Water Supplies and Demands

- Water supply projects to increase available supplies
- Management actions to reduce groundwater pumping
- Adaptive management to respond to changes in supplies and demands over time



WOODARD & CURRAN

Projects Under Consideration

- The list has been updated following direction at last Board meeting
- New pumping wells for local communities
  - Cuyama CSD & Ventucopa & town of Cuyama (added)
- Projects to increase net Basin water supply
  - Flood/Stormwater Capture
  - Municipal Area Rainwater Capture (removed)
  - Forest/Rangeland Management
  - Water Supply Imports via Pipeline (removed)
  - Water Supply Imports via Transfer/Exchange
  - Precipitation Enhancement

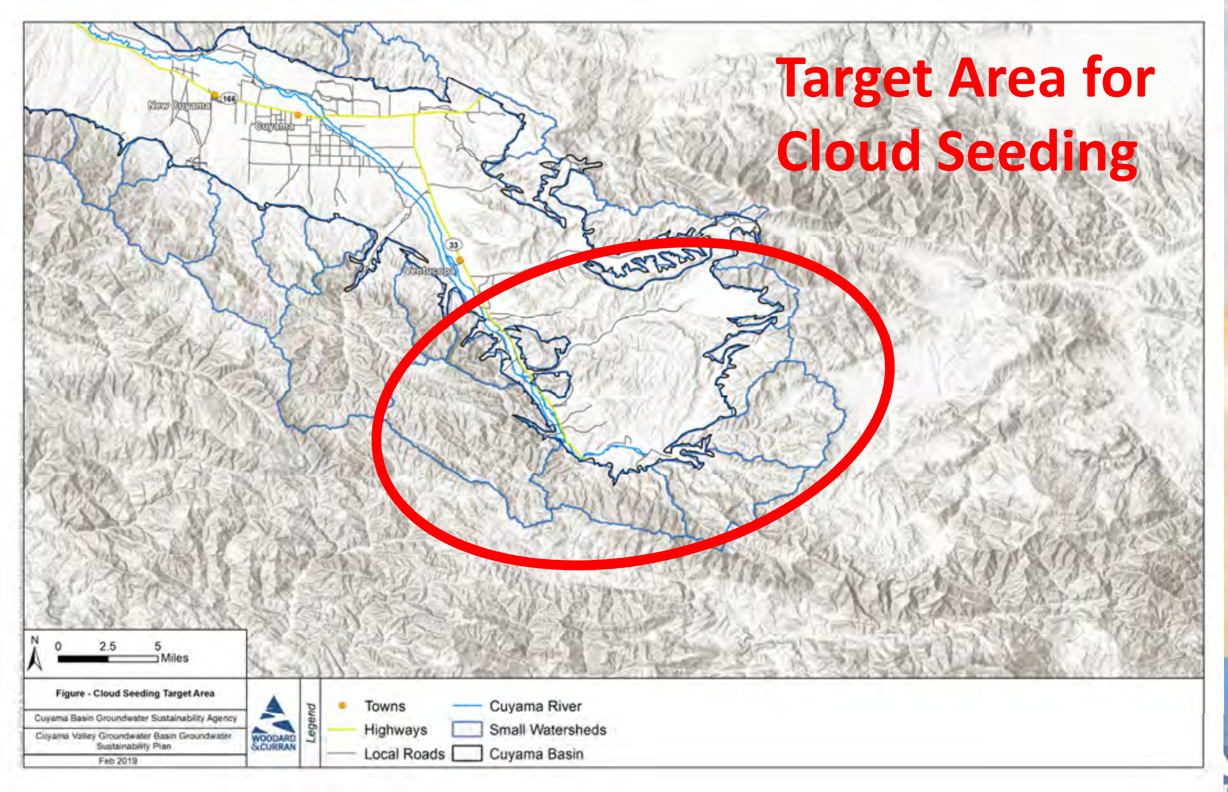
WOODARD & CURRAN

Precipitation Enhancement Modeling Analysis

Assumptions:

- 10% precipitation increase on the East for the months November through March.

Cost: $20-30/AF



Precipitation Enhancement Modeling Analysis Basin-Wide Cumulative Storage Change

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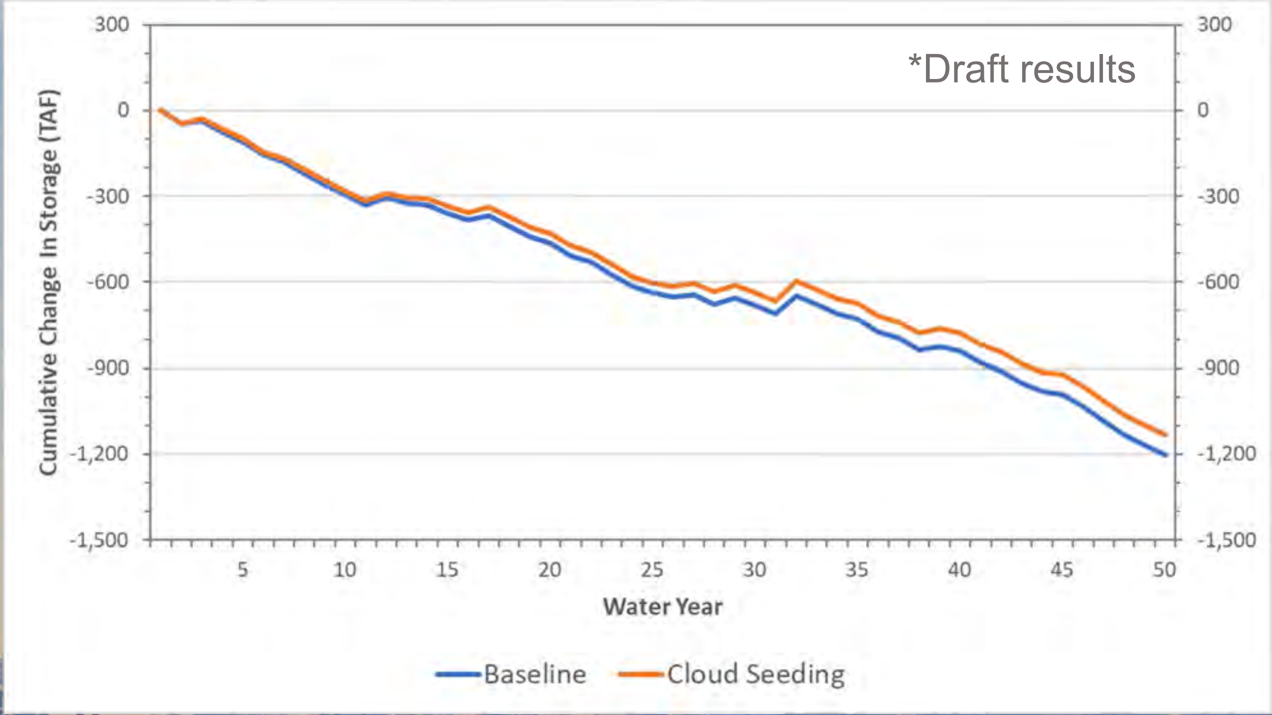

Average Annual (50 years)

Inflows:

- Deep Percolation +400 AF
- Stream Seepage +400 AF
- Boundary Flow +700 AF
- **Change in Sto. +1,500 AF**

Change in Cuyama River Outflow +2,700 AF

Total Potential Benefit: 4,200 AF

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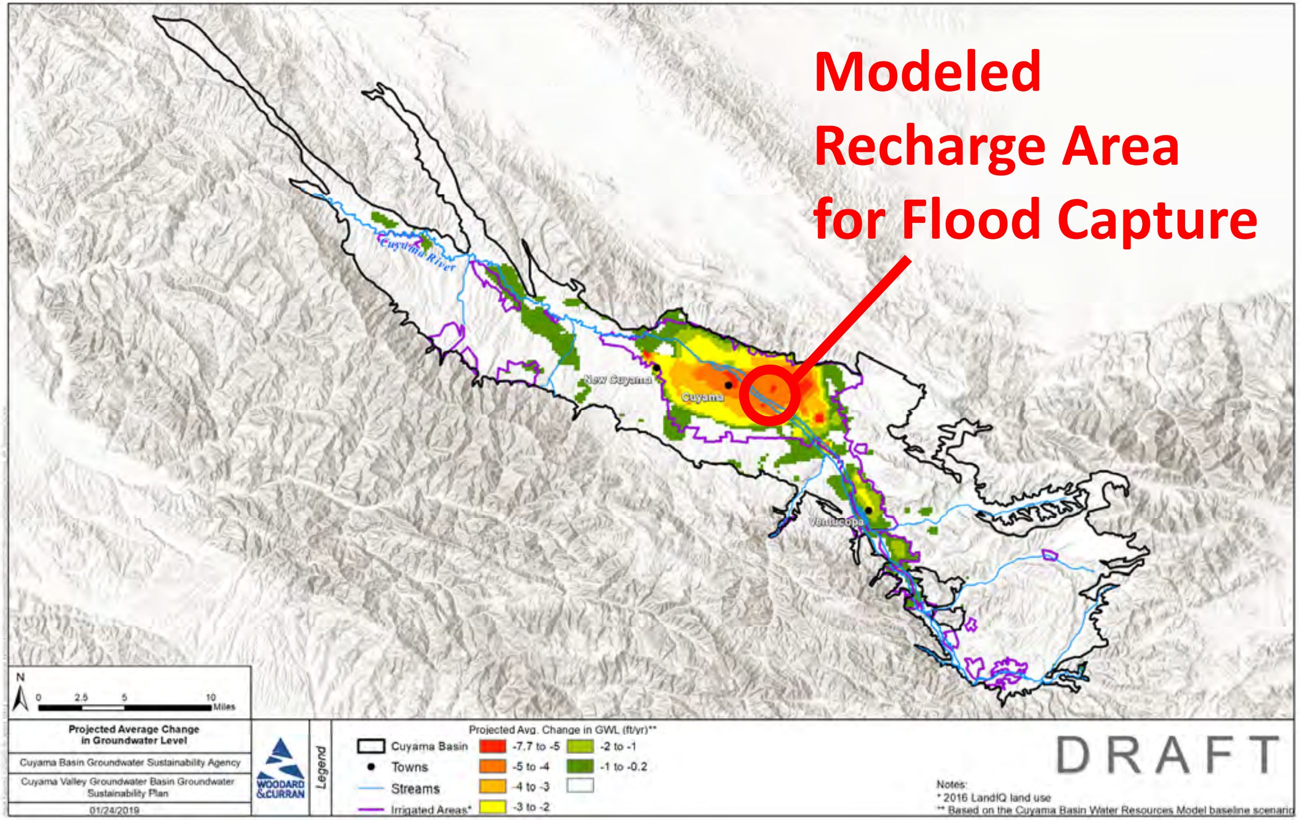
Stormwater Capture Modeling Analysis

Assumptions:

- Capture from 100 - 200 CFS flows in Cuyama River and recharge groundwater over ~200 acres.
- During any period with appropriate flows for diversion.

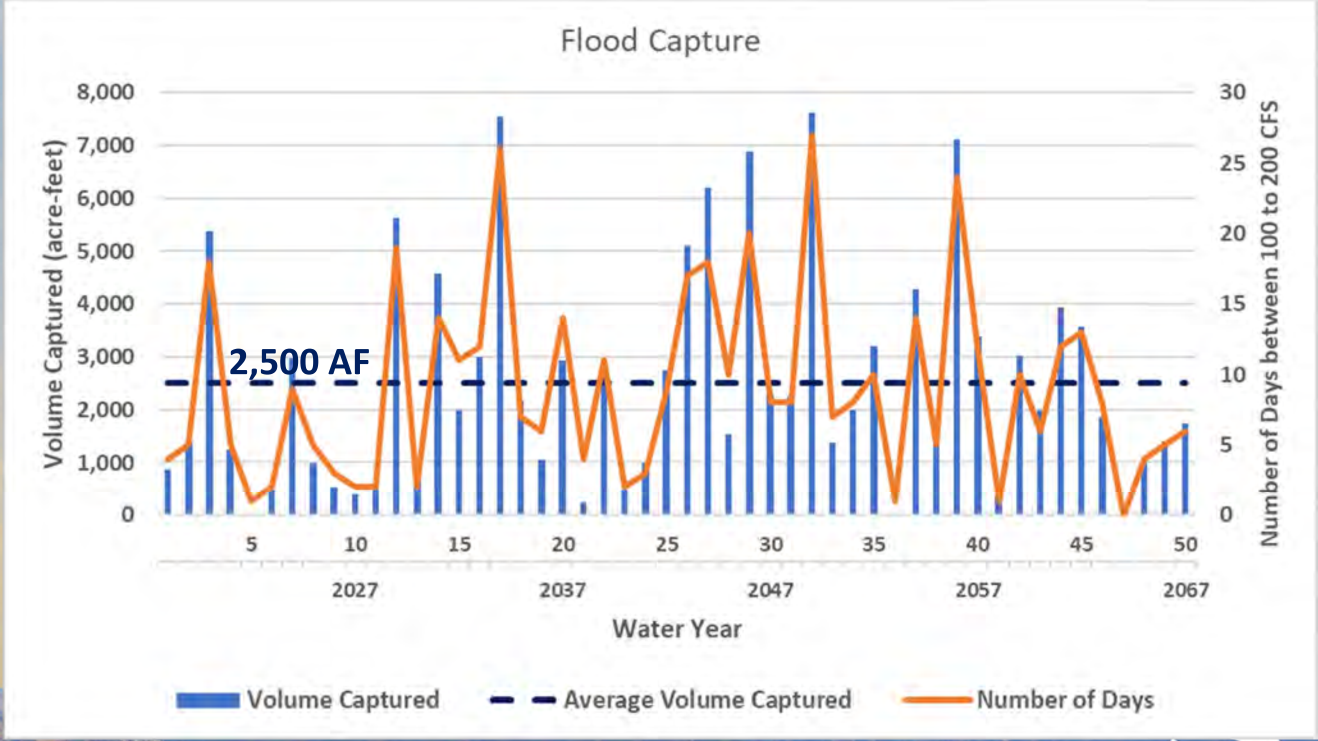
Cost: $600-800/AF



Stormwater Capture Modeling Analysis

Average Number of Days in WY: 9 days/yr.

Average Volume Captured: 2,500 AF/yr



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Stormwater Capture Modeling Analysis Basin-Wide Cumulative Storage Change

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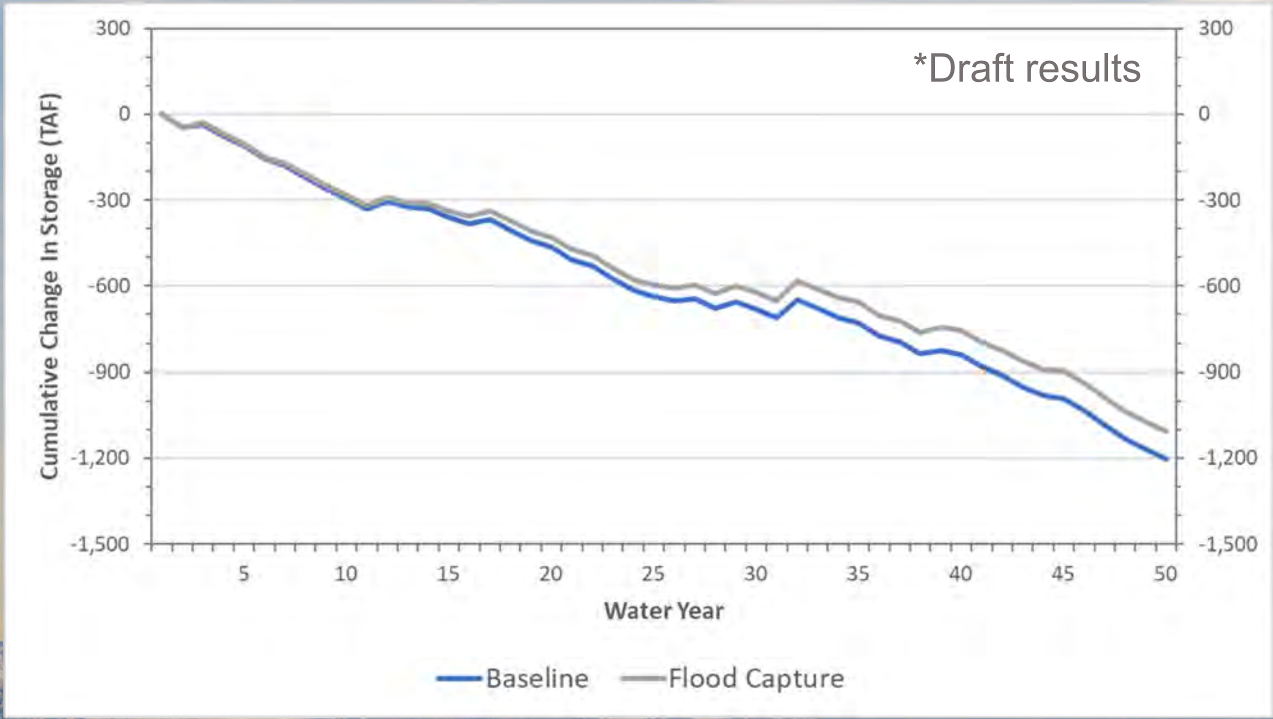


Average Annual (50 years)

Inflows:

- Flood Capture +2,500 AF
- Stream Seepage -600 AF
- **Change in Sto. +1,900 AF**

Change in Cuyama River Outflow

-1,500 AF

(will need to consider effects on downstream users)

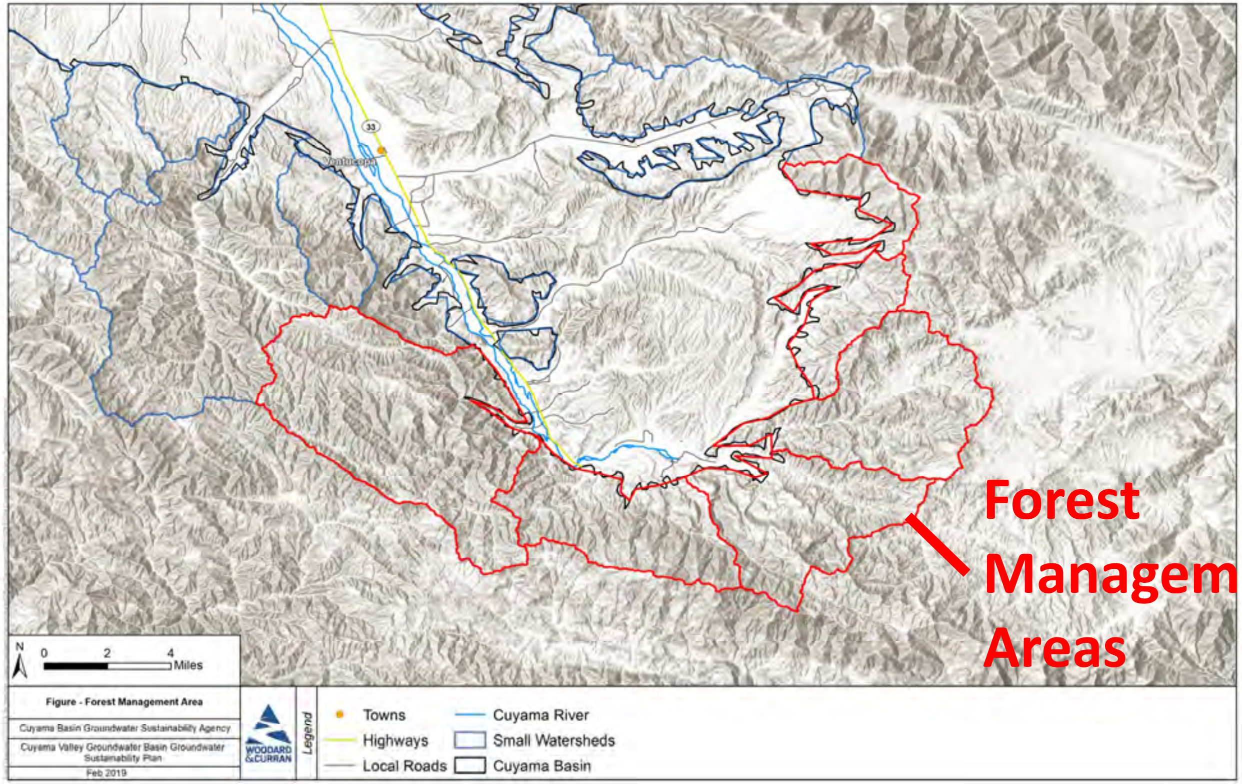
WOODARD & CURRAN

Forest/Rangeland Management Modeling Analysis

Assumptions:

- 4% decrease in native vegetation ET at the eastern small watersheds.

Cost: $500-600/AF



Forest Management Areas

Sources:

- USBR, *Truckee Basin Study*, Dec 2015
- Bales et al., *Forests and Water in the Sierra Nevada*, Nov 2011

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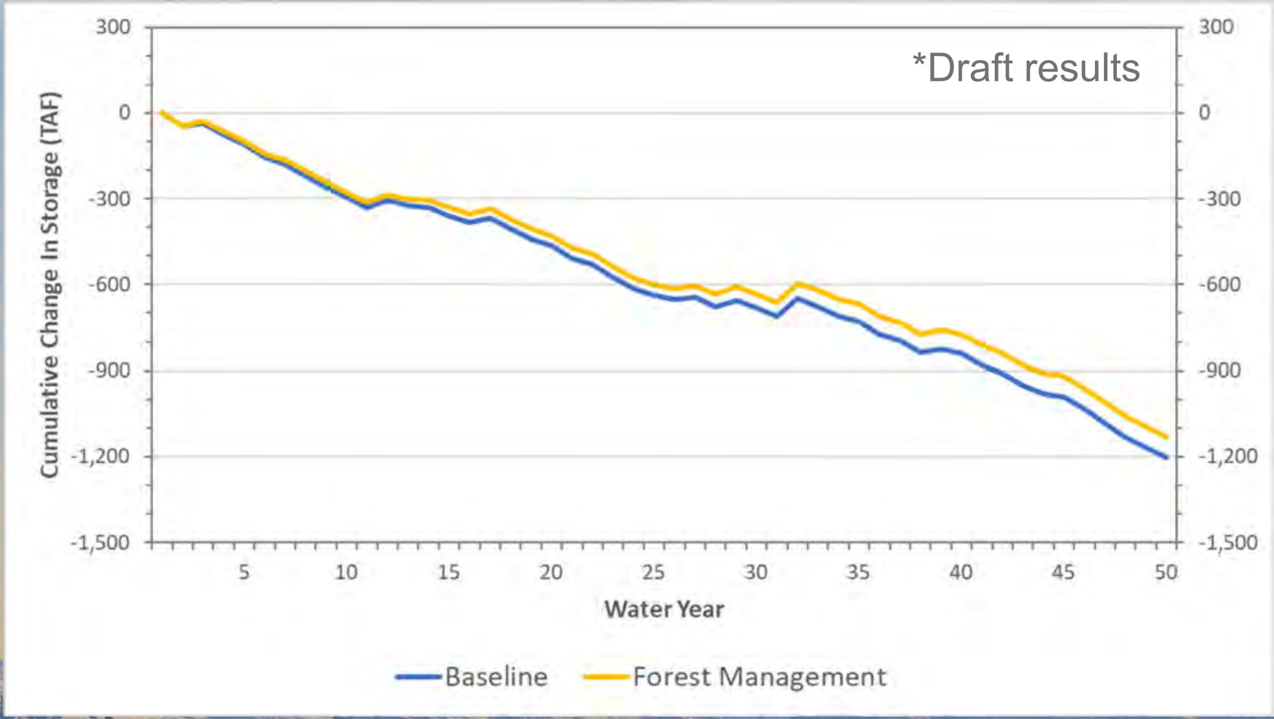
Future Conditions – Forest/Rangeland Management Basin-Wide Cumulative Storage Change



Average Annual (50 years)

Inflows:

- Boundary Flow +2,300 AF
- Stream Seepage -800 AF
- **Change in Sto. +1,500 AF**

Change in Cuyama River Outflow +1,400 AF

Total Potential Benefit: 2,900 AF

WOODARD & CURRAN

Board Direction on Projects

- Should the GSP support development of new pumping wells for local communities?:
  - Cuyama CSD, Ventucopa & town of Cuyama
- Which of the following projects should be included in the GSP projected sustainable water budget?
  - Flood/Stormwater Capture
  - Forest/Rangeland Management
  - Precipitation Enhancement
- Should additional analysis of these projects be included in the GSP implementation plan?
- Staff recommendation: include all of the above projects in both the GSP water budget and implementation plan

Demand Management/Allocation Approach

- Under SGMA, GSAs have authority to establish groundwater extraction allocations
- SGMA and GSPs adopted under SGMA cannot alter water rights
- Potential components of a demand management approach:
  - Pumping restrictions/allocations
    - Water accounting
    - Water metering
  - Water market
  - Fees
    - By pumping amount or acreage
  - Glide path

Examples of Allocation Methods

Method	Description	Advantages	Disadvantages
Pro Rata Allocation per Overlying Acre	Divides available groundwater proportional to property size	● Recognizes correlative nature of groundwater rights ● Simple approach in calculation	● Creates inequities for those who have invested in use of groundwater ● Ignores legal limitations on use
Pro Rata Allocation per Irrigated Overlying Acre	Allocates each irrigated acre a specific quantity of groundwater	● Acknowledges existing pumping ● Simple approach in calculation	● Does not consider unexercised groundwater rights ● Does not recognize historic use ● Ignores legal limitations on use
Allocation Based on Fraction of Historic Pumping	Allocates water based on historic groundwater use	● Potential to reduce conflict among existing pumpers	● Requires data re historic use ● Ignores correlative nature of groundwater rights
Hybrid	Applies above methods differently in different parts of the Basin	● Provides greatest flexibility	● Additional complexity due to lack of consistency across Basin

Board Direction on Demand Management/Allocation Approach

- Which allocation approach should be used?
- Staff recommendation:
  - Hybrid approach:
    - Allocation per irrigated acre within the area influencing overdraft in the Central region
    - Historical use allocation for the CCSD
    - Include a mechanism for adding in un-irrigated acres within the area influencing Central region overdraft that may want to use their groundwater rights
    - No restrictions for users outside the management areas

WOODARD & CURRAN

TO:	Standing Advisory Committee Agenda Item No. 5g
FROM:	Brian Van Lienden, Woodard & Curran (W&C)
DATE:	February 28, 2019
SUBJECT:	Direction on Implementation Plan

<u>Issue</u>
Direction on Implementation Plan.

<u>Recommended Motion</u>
None – information only.

<u>Discussion</u>
An update on Implementation Plan is provided as Attachment 1.

Attachment 1

Cuyama Basin Groundwater Sustainability Agency

Board Direction on Implementation Plan

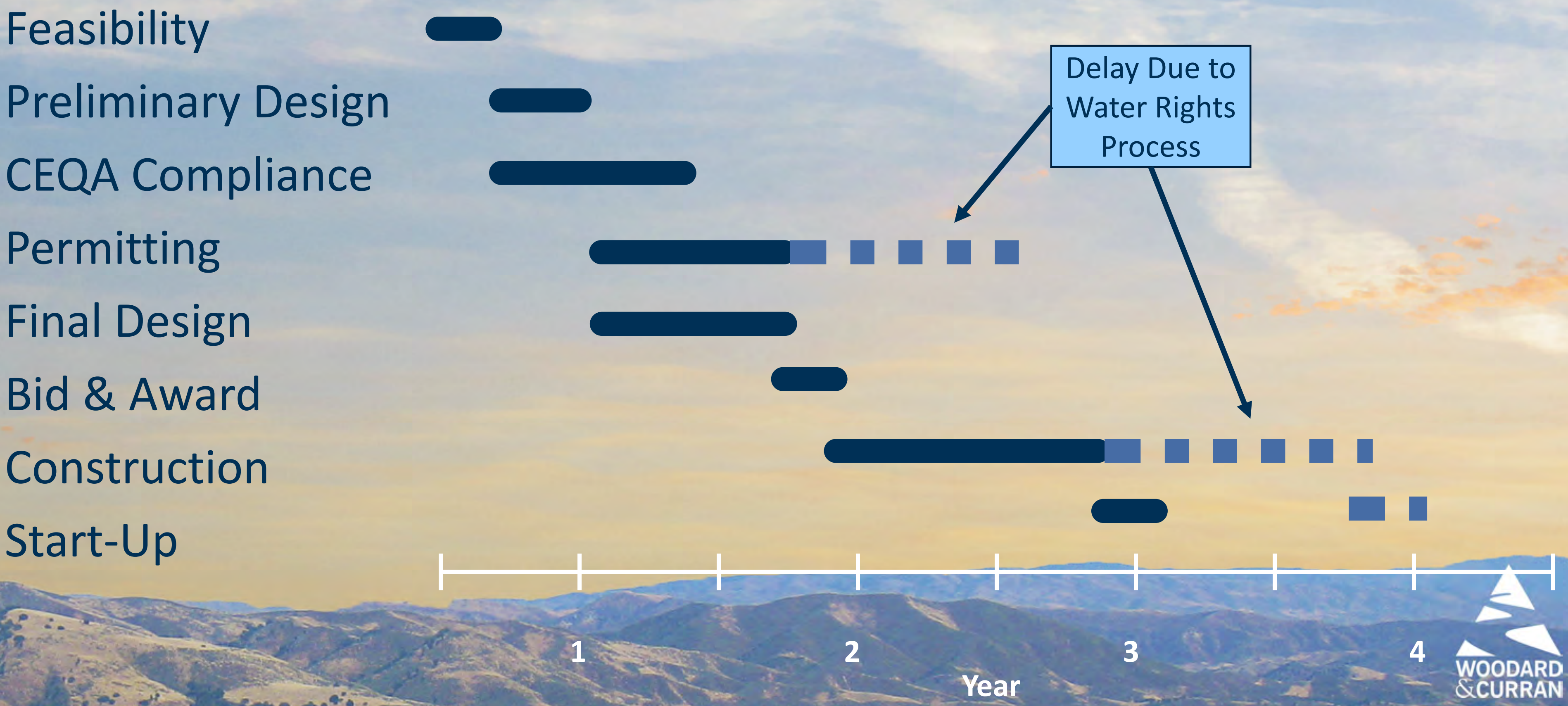
February 28, 2019

Key Implementation Plan Components

- Detailed analysis of potential projects/actions
- Implementation schedule for management actions and projects
- Establishment of Monitoring Program
  - Coordination with monitoring entities
  - Agreements with local landowners
- Data Collection and Analysis
  - Water levels, water quality, subsidence
- Annual reporting
- GSP Five-year Update
  - Re-evaluation of thresholds
  - Review/update of numerical model
- Ongoing GSA Administration
  - Maintenance of DMS, website
  - Board/SAC meetings and other stakeholder outreach
- Financing Plan

WOODARD &CURRAN

Conceptual Project Implementation Timeline



Conceptual GSP Implementation Timeline

Implementation will be phased over 20 years, with 5-yr updates.

2020 | 2025 | 2030 | 2035 | 2040

Monitoring and Reporting	Preparation for Allocations and Low Capital Outlay Projects	Prepare for Sustainability	Implement Sustainable Operations
• Establish Monitoring Network • Install New Wells • Develop Metering Program • Extensive public outreach • Project Analysis and feasibility	• GSAs conduct 5-year evaluation/update • Evaluate/refine thresholds and monitoring network • Refine water budget • Planning/ Design/ Construction for small to medium sized projects • Monitoring and reporting continues • Metering program continues • Outreach continues	• GSAs conduct 5-year evaluation/update • Evaluate/refine thresholds and monitoring network • Refine water budget • Planning/ Design/ Construction for larger projects begins • Monitoring and reporting continues • Outreach continues • Allocation program begins phase-in	• GSAs conduct 5-year evaluation/update • Evaluate/refine thresholds and monitoring network • Refine water budget • Project implementation completed • Allocations fully implemented/enforced

Financing Plan Elements

Basin - Wide

- GSA Admin
- Monitoring
- Reporting
- GSP Updates

By Management Area

- Management Actions
- Water Supply Projects

By Beneficiary

- New Wells

Funding Mechanisms

- Pumping Fees
- Assessments
- Grants & Loans

WOODARD &CURRAN

TO:	Standing Advisory Committee Agenda Item No. 5h
FROM:	Mary Currie, Catalyst Group
DATE:	February 28, 2019
SUBJECT:	Stakeholder Engagement Update

Issue
Update on the Cuyama Basin Groundwater Sustainability Agency Groundwater Sustainability Plan stakeholder engagement.

Recommended Motion
None – information only.

Discussion
Cuyama Basin Groundwater Sustainability Agency (CBGSA) Groundwater Sustainability Plan (GSP) outreach consultant the Catalyst Group's stakeholder engagement update is provided as Attachment 1.

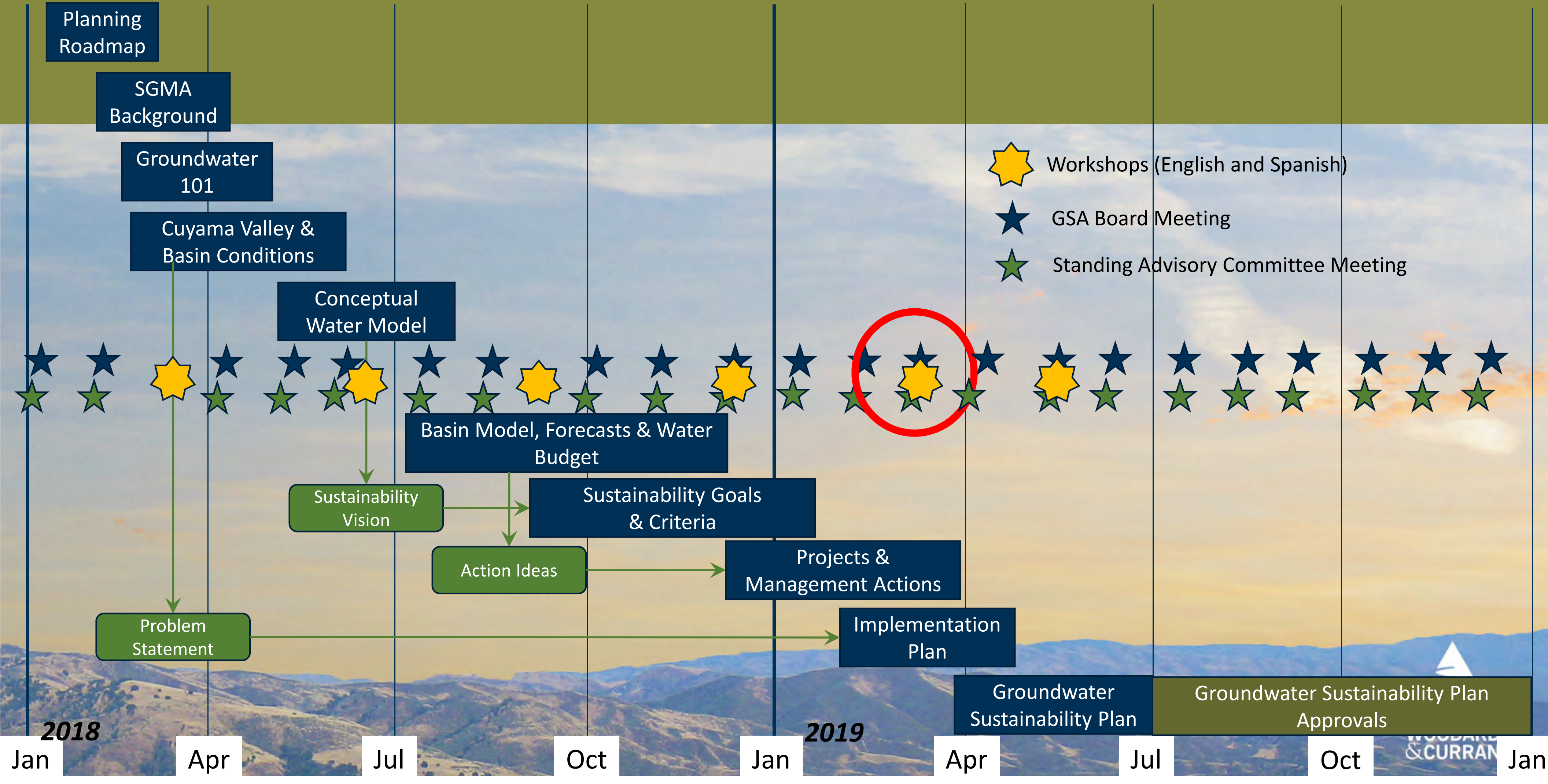
Attachment 1

Cuyama Basin Groundwater Sustainability Agency

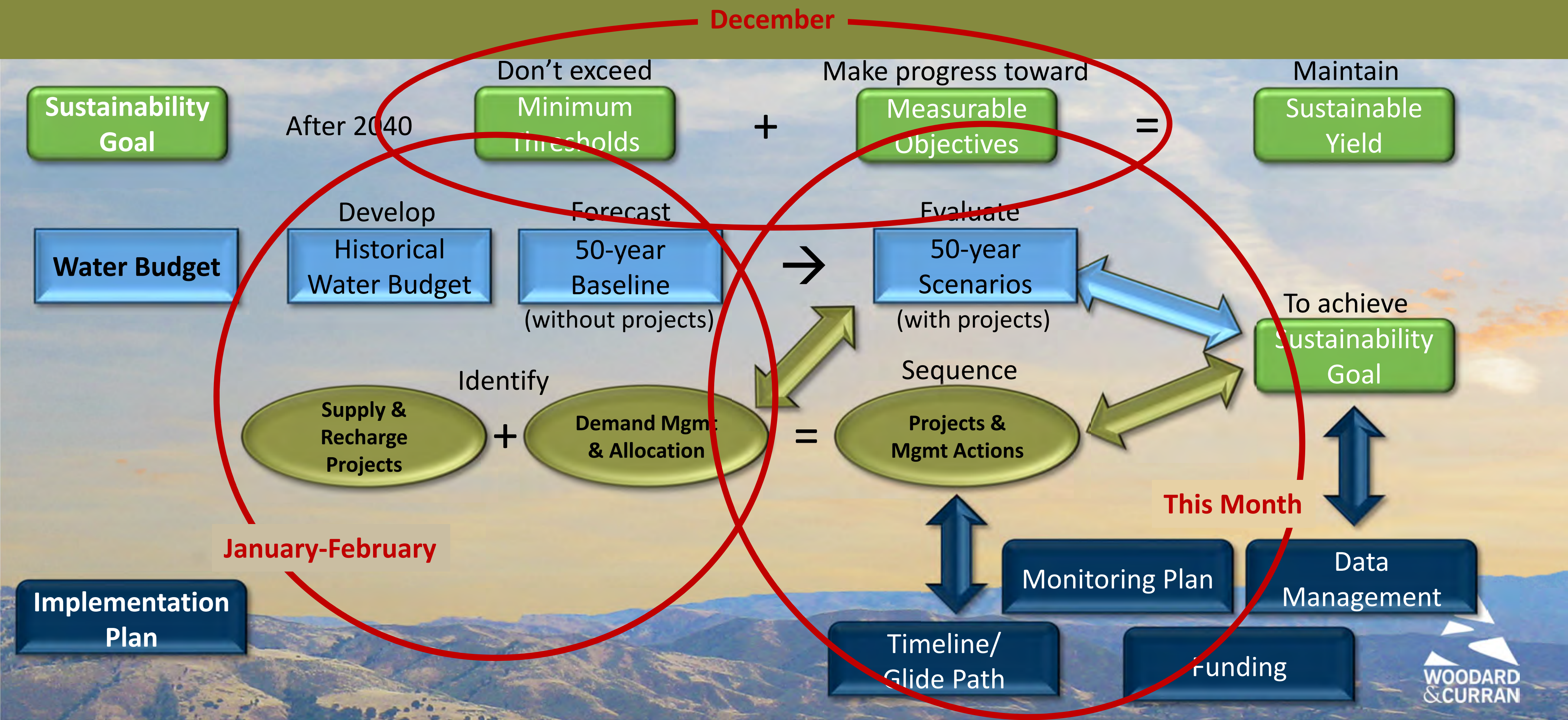
Groundwater Sustainability Plan Stakeholder Engagement Update

February 28, 2019

Cuyama Basin Groundwater Sustainability Plan – Planning Roadmap



GSP Discussion Approach & Terminology



Update on Outreach Activities

- Community Workshops Wednesday, March 6, 2019
  - Update on Water Budget and Numerical Model
  - Projects and Management Actions
  - Implementation Plan
  - Discussion and input: Understanding and concurrence on projects, management actions, and implementation schedule

- Notification
  - GSA Newsletter – email Jan 22 and Rec Center Newsletter Feb 1
  - CBGSA email notice – Feb 5
  - Postcard – Feb 8
  - Volunteer hand distribution – Feb 6 through Mar 5
  - SLO County email – Feb
  - CBGSA reminder email – Feb 27

TO: Standing Advisory Committee
Agenda Item No. 6b

FROM: Jim Beck, Executive Director

DATE: February 28, 2019

SUBJECT: Board of Directors Agenda Review

Issue

Review of the March 6, 2019 Joint Meeting of Cuyama Basin Groundwater Sustainability Agency Board of Directors and Standing Advisory Committee agenda.

Recommended Motion

None – information only.

Discussion

The March 6, 2019 Joint Meeting of Cuyama Basin Groundwater Sustainability Agency Board of Directors and Standing Advisory Committee agenda is provided as Attachment 1 for review.

Attachment 1

JOINT MEETING OF CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY SPECIAL BOARD OF DIRECTORS AND STANDING ADVISORY COMMITTEE

Board of Directors

Derek Yurosek Chairperson, Cuyama Basin Water District
Lynn Compton Vice Chairperson, County of San Luis Obispo
Das Williams Santa Barbara County Water Agency
Cory Bantilan Santa Barbara County Water Agency
Glenn Shephard County of Ventura
Zack Scrivner County of Kern
Paul Chounet Cuyama Community Services District
George Cappello Cuyama Basin Water District
Byron Albano Cuyama Basin Water District
Jane Wooster Cuyama Basin Water District
Tom Bracken Cuyama Basin Water District

Standing Advisory Committee

Roberta Jaffe Chairperson
Brenton Kelly Vice Chairperson
Claudia Alvarado
Brad DeBranch
Louise Draucker
Jake Furstenfeld
Joe Haslett
Mike Post
Hilda Leticia Valenzuela

AGENDA

March 6, 2019

Agenda for a meeting of the Cuyama Basin Groundwater Sustainability Agency Board of Directors to be held on Wednesday, March 6, 2018 at 2:00 PM, at the Cuyama Valley Family Resource Center, 4689 CA-166, New Cuyama, CA 93254. To hear the session live call (888) 222-0475, code: 6375195#.

Teleconference Locations:

Cuyama Valley Family Resource Center
4689 CA-166
New Cuyama, CA 93254

County Government Center
1055 Monterey Street, Room D361
San Luis Obispo, CA 93408

The order in which agenda items are discussed may be changed to accommodate scheduling or other needs of the Board or Committee, the public, or meeting participants. Members of the public are encouraged to arrive at the commencement of the meeting to ensure that they are present for discussion of all items in which they are interested.

In compliance with the Americans with Disabilities Act, if you need disability-related modifications or accommodations, including auxiliary aids or services, to participate in this meeting, please contact Taylor Blakslee at (661) 477-3385 by 4:00 p.m. on the Friday prior to this meeting. Agenda backup information and any public records provided to the Board after the posting of the agenda for this meeting will be available for public review at 4689 CA-166, New Cuyama, CA 93254. The Cuyama Basin Groundwater Sustainability Agency reserves the right to limit each speaker to three (3) minutes per subject or topic.

1. Call to Order (Yurosek) (1 min)
2. Roll Call (Blakslee) (1 min)
3. Pledge of Allegiance (Yurosek) (1 min)
4. Approval of Minutes (Yurosek) (3 min)

Motion		a. February 6, 2019
Memo	5.	Report of the Standing Advisory Committee (Jaffe) (3 min)
Memo	6.	Technical Forum Update (Melton) (3 min)
	7.	Groundwater Sustainability Plan
Memo		a. Groundwater Sustainability Plan Update (Melton) (5 min)
Memo		b. Discussion on Water Budgets (Melton) (15 min)
Memo		c. Discussion on Sustainability Thresholds (Melton) (10 min)
Memo		d. Direction on Management Areas (Melton) (35 min)
		e. Projects and Management Actions
Memo		i. Direction on Projects (Melton) (15 min)
Memo		ii. Direction on Pumping Allocation Approach (Melton) (35 min)
Memo		f. Direction on Implementation Plan (Melton) (15 min)
Memo		g. Stakeholder Engagement Update (Gardiner) (5 min)
	8.	Groundwater Sustainability Agency
Verbal		a. Report of the Executive Director (Beck) (3 min)
Memo		b. Progress & Next Steps (Beck) (3 min)
Verbal		c. Report of the General Counsel (Hughes) (2 min)
	9.	Financial Report
Memo		a. Financial Management Overview (Blakslee) (3 min)
M/M		b. Direction on Annual Audit (Blakslee) (3 min)
Memo		c. Financial Report (Blakslee) (3 min)
M/M		d. Payment of Bills (Blakslee) (3 min)
	10.	Reports of the Ad Hoc Committees (3 min)
	11.	Directors' Forum (3 min)
	12.	Public comment for items not on the Agenda (5 min)

At this time, the public may address the Board on any item not appearing on the agenda that is within the subject matter jurisdiction of the Board. Persons wishing to address the Board should fill out a comment card and submit it to the Board Chair prior to the meeting.

13. Public Workshops (6:30 pm) – New Cuyama High School Cafeteria, 4500 CA-166, New Cuyama, CA 93254

14. Adjourn (8:30 pm)