



# CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY STANDING ADVISORY COMMITTEE

## Committee Members

Roberta Jaffe (Chair)  
Brenton Kelly (Vice Chair)  
Claudia Alvarado

Brad DeBranch  
Louise Draucker  
Jake Furstenfeld

Joe Haslett  
Mike Post  
Hilda Leticia Valenzuela

## AGENDA

July 26, 2018

**Agenda for a meeting of the Cuyama Basin Groundwater Sustainability Agency Standing Advisory Committee to be held on Thursday, June 28, 2018 at 4:00 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 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 4853 Primero Street, New Cuyama, California. 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. Report of the General Counsel
6. Discussion of Study Group Options
7. Groundwater Sustainability Agency
  - a. Report of the Executive Director
  - b. SGMA Educational Items:
    - i. Calculating a Water Budget
    - ii. How a Model Works – Historical Calibration

- c. Board of Directors Agenda Review
- 8. Groundwater Sustainability Plan
  - a. Groundwater Sustainability Plan Update
  - b. Technical Forum Update
  - c. Current Basin Water Conditions
  - d. Draft Undesirable Results Narrative
  - e. Stakeholder Engagement Update
    - i. Second Newsletter
    - ii. September 5<sup>th</sup> Workshop

9. Items for Upcoming Sessions

10. Committee Forum

11. 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.*

12. Adjourn

# Cuyama Basin Groundwater Sustainability Agency

## Acronyms List

BOD	Board of Directors
CA	California
CASGEM	California Sustainable Groundwater Elevation Monitoring
CB	Cuyama Basin
CBGSA	Cuyama Basin Groundwater Sustainability Agency
CBWD	Cuyama Basin Water District
CCSD	Cuyama Community Services District
CDEC	California Data Exchange Center
CVCA	Cuyama Valley Community Association
CVRD	Cuyama Valley Recreation District
DMS	Data Management System
DWR	California Department of Water Resources
EKI	EKI Environment & Water, Inc.
ET	Evapotranspiration
FRC	Cuyama Valley Family Resource Center
FY	Fiscal Year
GAMA	Groundwater Ambient Monitoring and Assessment Program
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
HG	Hallmark Group (Executive Director)
ITRC	Irrigation Training & Research Center
IWFM	Integrated Water Flow Model
JPA	Joint Exercise Powers Agreement
Kern	County of Kern
NOAA	National Oceanic and Atmospheric Administration
NWIS	National Water Information System
SAC	Standing Advisory Committee
Santa Barbara	County of Santa Barbara
SBCWA	Santa Barbara County Water Agency
SGMA	Sustainable Groundwater Management Act
SLO	San Luis Obispo County
SWCRB	State Water Resources Control Board
TO	Task Order
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
Ventura	County of Ventura
WC	Woodard & Curran (GSP Development Consultant)
WMA	Water Management Area

# Cuyama Basin Groundwater Sustainability Agency Standing Advisory Committee Meeting

June 28, 2018

## Draft Meetings Minutes

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

### PRESENT:

Jaffe, Roberta – Chair  
Kelly, Brenton – Vice Chair  
Alvarado, Claudia  
DeBranch, Brad  
Draucker, Louise  
Furstenfeld, Jake  
Haslett, Joe  
Post, Mike  
Valenzuela, Hilda Leticia  
Beck, Jim – Executive Director  
Hughes, Joe – Legal Counsel

### ABSENT:

None

#### 1. Call to order

Chair Roberta Jaffe called the Standing Advisory Committee (SAC) to order at 4 pm.

Chair Jaffe let the SAC know that they want a good discussion at the meetings, but need to follow a protocol where the Committee has a discussion first and then the audience can engage.

#### 2. Roll call

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

#### 3. Pledge of Allegiance

The pledge of allegiance was led by Chair Jaffe.

#### 4. Approval of minutes

(CBGSA) Executive Director Jim Beck presented the May 31, 2018 SAC minutes. A motion was made by Committee Member Mike Post to approve the minutes. The motion was seconded by Committee Member Brenton Kelly and passed unanimously.

#### 5. Report of the General Counsel

Nothing to report.

## 6. Groundwater Sustainability Agency

### a. Report of the Executive Director

CBGSA Executive Director Jim Beck reported that the second assessment has been distributed to CBGSA members.

Mr. Beck reported that to reduce printing costs, the hardcopy of the SAC packet did not include the Description of the Plan Area or Hydrogeologic Conceptual Model. He reported that as the volume of the packets have increased, the estimated monthly costs to print documents for the SAC and Board would exceed \$2,500 in direct printing costs. He said we will discuss with the Board on July 11, 2018 how to manage printing costs to remain within the budget. Chair Jaffe asked if one copy could be available at the Cuyama Valley Family Resource Center as a resource copy. Mr. Beck said this is a good idea and that we can do this.

Committee member Brad DeBranch asked if these costs have been billed. Mr. Beck reported that Hallmark did not anticipate printing costs to be so extensive and Hallmark bore these costs to date.

Mr. Beck reported that Mary received a request from members of the community to upload a video of the educational portion of the meeting on the website. Mr. Beck confirmed that there will not be a video of the whole Committee meeting, but just the educational component.

### b. SGMA Educational Item: What is a Management Area? What Makes a Good Monitoring Network?

Groundwater Sustainability Plan (GSP) Consultant Woodard & Curran (W&C) Project Manager Brian Van Lienden provided an update on the educational items entitled "What is a Management Area? What Makes a Good Monitoring Network? What Does SGMA Require for Groundwater Quality?". His presentation included an overview of what a management area can be used for, and the rationale for wanting to form a GSP, including regional boundaries and physical conditions.

Vice Chair Brenton Kelly asked if setting different minimum thresholds for different parts of the valley without a Water Management Area (WMA) is possible. Mr. Van Lienden confirmed that this is possible and will be discussed more during the monitoring network discussion.

Committee member DeBranch asked how it is anticipated WMAs will be set up. Mr. Beck stated that he was under the impression that the first recommendation will come from the W&C based on the modelling results. The objective report will come from the modelers from a technical approach, followed by a policy discussion with the Committee and Board regarding jurisdictional boundaries.

Vice Chair Kelly commented that a clear differentiation between what can and cannot be done with a WMA is important to better understand its value. Mr. Beck replied that in larger areas with multiple districts, recognizing management actions is essential because of hydrologic differences and cost savings from implementing monitoring as a group. WMAs are not prohibited under SGMA from setting target water levels.

Chair Jaffe asked if each WMA will have separate water budgets. Mr. Beck replied that separation of WMAs could be a possibility based on the discrete need to do so, however coordination has to occur across the basin. Chair Jaffe asked how the reconciliation between WMAs occurs. Mr. Beck replied that the reconciliation is a part of the stakeholder process and discussions within the SAC and Board.

Committee member Jake Furstenfeld asked if different commodities will affect how the boundaries are separated. Mr. Van Lienden replied that they do not have to be regulated the same.

Vice Chair Kelly asked what kind of multiplier it is to the GSP budget to add WMAs. Mr. Van Lienden replied that the effect on the budget is not substantial from a model perspective. Mr. Beck responded that he anticipates the number of WMAs to be no more than eight.

Ann Wooster stated that the SAC and Board may want to consider the Cuyama Community Service District as a WMA, but she also pointed out that the GSP is a living document and can be updated as we progress.

Byron Albano asked if it is a possibility to form a WMA based on many non-connected fingers (narrow canyons). Mr. Beck confirmed that this is possible.

UC Santa Barbara Associate Professor of Sociocultural Anthropology Casey Walsh said there might be jurisdictional and technical conflicts with adjacent WMAs; however, Mr. Beck said that he does not expect there to be overlapping WMAs.

Chair Jaffe asked if the current monitoring, such as CASGEM, will be our baseline and then we determine what is needed from there. Mr. Van Lienden confirmed this approach and informed the SAC that the DWR grant money includes funds to install some monitoring equipment.

Committee member Joe Haslett asked what the monitoring technique W&C planned to use and suggested remote sensing equipment to capture more data. Committee member Mike Post said that Santa Barbara is monitoring groundwater on a quarterly basis and Vice Chair Kelly reported that the USGS is reporting on a quarterly basis as well.

WellIntel Network Specialist Lee Knudtson introduced himself and informed the SAC and attendees that he represents the groundwater remote sensing company WellIntel. Mr. Knudtson said the CEO of WellIntel gave a presentation to the W&C offices and let the SAC know his company is ready to provide remote sensing equipment needs the CBGSA may have.

UC Santa Cruz Professor and Condors Hope Farmer Steve Gliessman said if water levels are not being met, he thinks groundwater pumping numbers are a critical component of verifying the model. Mr. Beck stated that he expects the SAC and Board to decipher a way to monitor pumping. Mr. Van Lienden said the GSA can decide pumping limits, but DWR does not require any pumping data.

Local resident Sue Blackshear said if groundwater dependent vegetation is negatively impacted by diversions we should monitor those areas as well.

Family Resource Center Executive Director Lynn Carlisle asked if the SAC can put a caveat in the GSP to add monitoring areas that are not currently monitored if changes in water use occur. Mr. Beck said this can be updated during the 5-year update cycle, or during the annual review of the monitoring data.

Ms. Carlisle said there is confusion in the community on the difference between monitoring wells and a monitoring network. Chair Jaffe suggested adding this as an educational item in the newsletter.

Mr. Van Lienden presented on what SGMA requires for groundwater quality. Committee member Louise Draucker asked what the protocol is for wells that experience regular contamination. Mr. Van Lienden replied that the well may have to be relocated, or drilled deeper.

Cuyama Orchards Farmer Bryon Albano asked what maximum limits are referenced by the Environmental Protection Agency (EPA) in relation to a threshold. Mr. Van Lienden said that it all depends on the usage of the water.

**c. Board of Directors Agenda Review**

Mr. Beck provided an overview of the July 11, 2018 CBGSA Board of Directors agenda. He reminded the SAC and attendees that the Board meeting has been moved to July 11, 2018 due to the July 4th Holiday. Mr. Beck informed the SAC that DWR's Anita Regmi will make a presentation at the July 11, 2018 Board meeting to provide an update on SGMA and grant funding.

**7. Groundwater Sustainability Plan**

**a. Groundwater Sustainability Plan Update**

Mr. Van Lienden provided an update on GSP activities, which is included in the SAC packet.

Chair Jaffe asked Mr. Van Lienden if any groundwater pumping data has been made available to W&C, and he replied that it has not. Mr. Van Lienden said that W&C is building a module in the model to determine how much pumping can occur.

Mr. Beck informed the SAC that other basins have gone to satellite imagery due to the difficulty of obtaining groundwater pumping data. He reported that mechanical monitoring pieces break and need someone to monitor them regularly.

Ms. Carlisle asked if community members are unaware of their current pumping rate, how will they know if they go over their limit. Mr. Beck said we will have to determine how landowners report on their data.

Committee member Jake Furstenfeld said that he uses meters on his property, and they are a costly expense when malfunctioning and need calibration regularly. He said he spent \$8,000 on monitoring costs just this past year.

Mr. Van Lienden reported that W&C plan on using the Grimmway / Bolthouse data where it is applicable since they believe it to be more reliable than the DWR/LandIQ data. W&C will use the satellite imagery to fill-in the data.

Mr. Van Lienden said the satellite data matched the land use data provided by Bolthouse and Grimmway by approximately 90%; therefore, W&C is confident in using the satellite data for periods outside the data received by Bolthouse and Grimmway.

Grapevine Capital Partners' Ray Shady commented that frost night protection is a key element to consider for water use computations.

Committee member Haslett said the rooting area for different crops can vary largely, and crops with a shallow rooting area will not experience extensive water percolation. Committee member

Haslett asked how W&C will reconcile this. Mr. Van Lienden said the model will take into account the type of crop and adjust the percolation amounts based on specific crop type characteristics.

W&C' Lyndel Melton said that there needs to be an understanding of the different types of irrigation practices in terms of efficiency and process.

Committee member Haslett asked how wind is factored into evapotranspiration rates. Mr. Van Lienden said he believes it is included, but will confirm and update the SAC.

**b. Technical Forum Update**

Mr. Van Lienden provided an overview of the June 8, 2018 technical forum call. A summary of the issues discussed is provided in the packet.

**c. Description of the Plan Area**

Chair Jaffe appreciates the effort provided to update the Description of the Plan Area with comments. She noted that figure 1-13 and 1-14 represent 2016, but do not show land use in terms of vineyards. Mr. Van Lienden stated that the vineyards are shown as idle. Chair Jaffe noted that on page 33, the new olive plantings are shown. Mr. Van Lienden said that the Description of the Plan Area is reflective of the data set that is available. Mr. Beck replied that W&C is presenting third party data that presents the land as idle and this is not data that can be altered. Mr. Beck stated that this data is not necessarily correct now, but it is the data used for these modules.

Chair Jaffe said the Description of the Plan Area needs to be as accurate as possible and there should be a change in the narrative to show that it reflects the available data. Mr. Van Lienden said that they will do this.

Local landowner Jane Wooster said that there should be a mention of what is reflected in the data sets and that there is new data not reflected on the Description of the Plan Area.

Chair Jaffe requested a modification in the narrative to represent that these are published reports used with original data. Mr. Beck said that there should be a general statement that calibration will show more granule alterations. He said this statement should be at the beginning of the Description of the Plan Area to let the audience know the report was made with available data.

Chair Jaffe asked if rangeland can be identified in the Description of the Plan Area, and Mr. Van Lienden said he could address this in the narrative and the development of the model.

Vice Chair Kelly asked if secondary water sources would be mapped in the Description of the Plan Area. Committee member Haslett mentioned that Cottonwood Creek should be included, and Jane Wooster said Aliso Canyon Creek should be named. Committee member Furstenfeld suggested Mustang Creek and Miranda Creek. Vice Chair Kelly mentioned Apache Canyon as being a fairly large creek in his area. Chair Jaffe recommended the acceptance of the Description of the Plan Area as amended through the discussion of the advisory committee. The motion was seconded by [REDACTED], and passed unanimously.

**d. Hydrogeologic Conceptual Model**

Mr. Van Lienden provided an overview of the Hydrogeologic Conceptual Model (HCM) and informed the SAC that W&C is accepting comments through July 20, 2018.

**e. Stakeholder Engagement Update**

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

Committee member Haslett commented that the Bolthouse/Grimmway land used data should be highlighted to those concerned about "mega-farming" expansion.

Mr. Van Lienden reported that W&C is developing an "undesirable results" narrative at a high level, and in a couple of months, they will start inputting some quantitative details.

Committee member Drauker said the latest USGS report claimed the subsurface soil structure has been damaged beyond repair in many areas.

Ms. Carlisle asked how the definition of sustainability will be decided, and Mr. Beck replied that the CBGSA Board will develop the definition with stakeholder input.

**8. Items for Upcoming Sessions**

Nothing to report.

**9. Committee Forum**

Nothing to report.

**10. Public comment for items not on the Agenda**

Dr. Casey Walsh reported that UC Santa Barbara is performing a 3-page water needs assessment survey for the Cuyama Valley. Dr. Walsh asked for a way to distribute surveys via email, or possible using a service like Survey Monkey or information in the CBGSA newsletter. He noted that this survey is voluntary and reports basic demographic information.

**11. Adjourn**

Chair Jaffe adjourned the meeting at 6:46 pm.

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 Thursday, June 28, 2018, by the Cuyama Basing Groundwater Sustainability Agency Standing Advisory Committee.

**Jim Beck**

Dated: June 28, 2018



TO: Standing Advisory Committee  
Agenda Item No. 7b

FROM: Jim Beck, Executive Director

DATE: July 26, 2018

SUBJECT: SGMA Educational Items: Calculating a Water Budget and How a Model Works –  
Historical Calibration

**Issue**

Educational presentation on calculating a water budget and how a model works – historical calibration.

**Recommended Motion**

None – information only.

**Discussion**

An educational presentation on calculating a water budget is provided as Attachment 1 and how a model works – historical calibration is provided as Attachment 2.

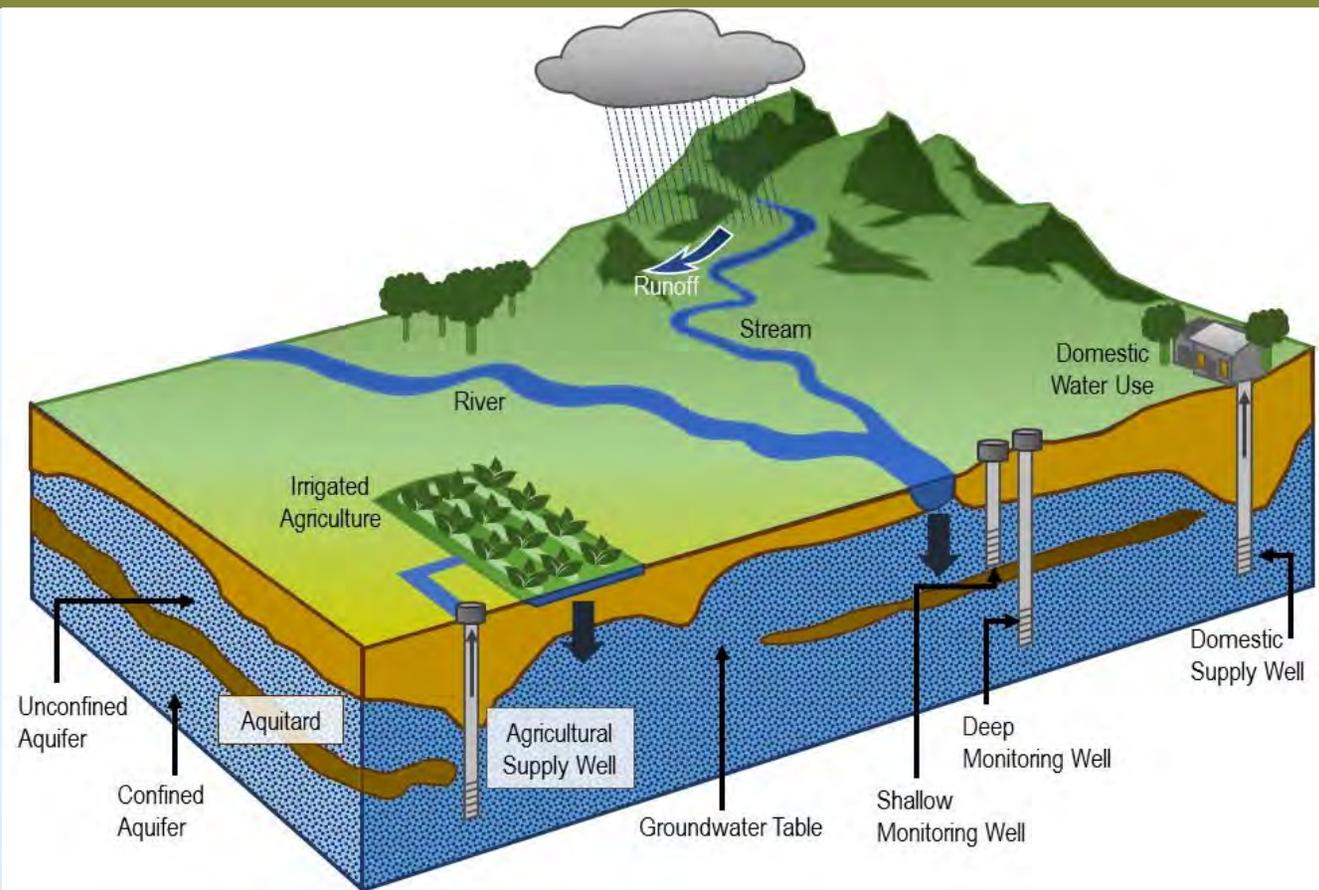
**Attachment 1****Cuyama Basin Groundwater Sustainability Agency**

# SGMA Educational Item: Calculating a Water Budget

July 26, 2018

# What is a Water Budget?

- A Water Budget provides an accounting for:
  - Inflows
  - Outflows
  - Change in Storage
- $\text{Inflow} - \text{Outflow} = \text{Change in Storage}$



# Water Budget Components

- Groundwater
  - Recharge from Irrigation and Precipitation
  - Subsurface Inflow and Outflow
  - Stream-Groundwater Interaction
  - Change in Groundwater Storage
- Surface Water
  - River Inflow and Outflow
  - Evaporation
  - Change in Reservoir Storage
- Land Surface
  - Water Demands
    - Agricultural Use
    - Municipal/Domestic Use
    - Wetlands / Habitat Use
  - Water Supplies
    - Precipitation
    - Groundwater Pumping
    - Surface Water Diversions

# Water Budget Scenarios

- Historical Years
  - SGMA requires water budgets for 10 recent years
  - E.g. 2007 to 2016
- Current Conditions
  - Recent historical year (e.g. 2016)
  - Long-term historical hydrology (e.g. 1960-2017)
- Projected Conditions
  - Future Year (e.g. 2040)
  - Long-term historical hydrology (e.g. 1960-2017)
  - May adjust for climate change effects

**Attachment 2****Cuyama Basin Groundwater Sustainability Agency**

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# SGMA Educational Item: How a Model Works – Model Calibration

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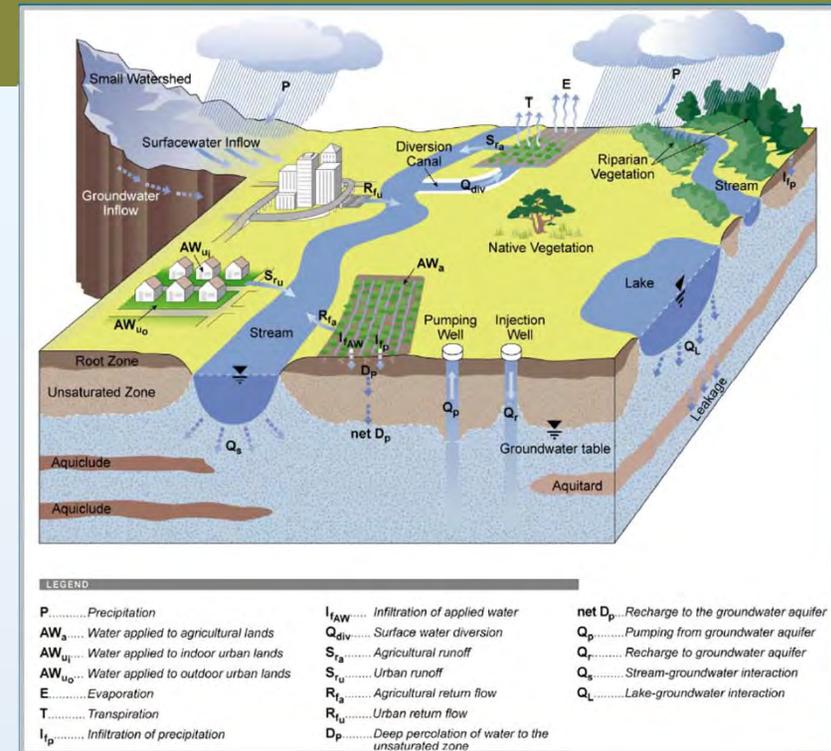
July 26, 2018

# Introduction to Integrated Water Resources Models

*Integrated Water Resources Models are computer models that simulate physical movement and use of water on the land surface, stream, and the groundwater system and the interaction among these systems. These models are used to represent the historical conditions of a basin, as well as to evaluate the physical conditions under projected land and water use and groundwater conditions for planning and management purposes.*

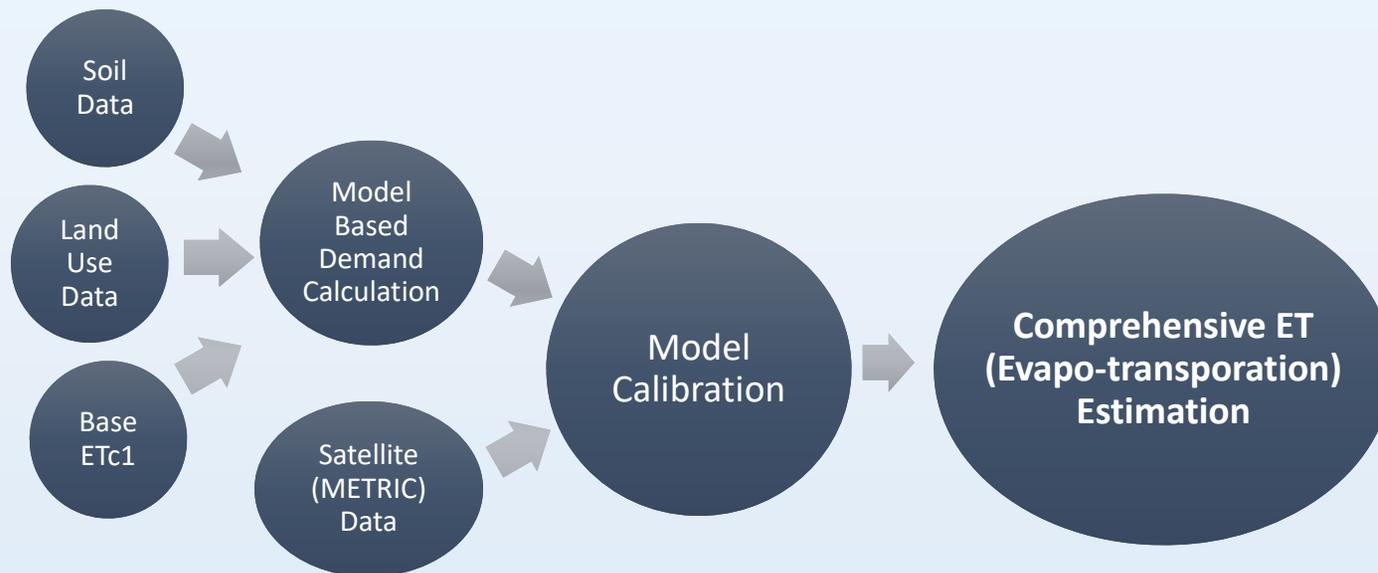
## Integrated Water Flow Model (IWFM)

- An open-source regional-scale integrated water resources model that simulates groundwater flow, surface flows, and surface-groundwater interactions, developed by the California Department of Water Resources.
- A planning and analysis tool that computes agricultural and urban water demands based on varied climatic, soil, land-use and agronomic conditions.
- Allows the user to represent agricultural and urban water management practices, and their effects on the complete water cycle.

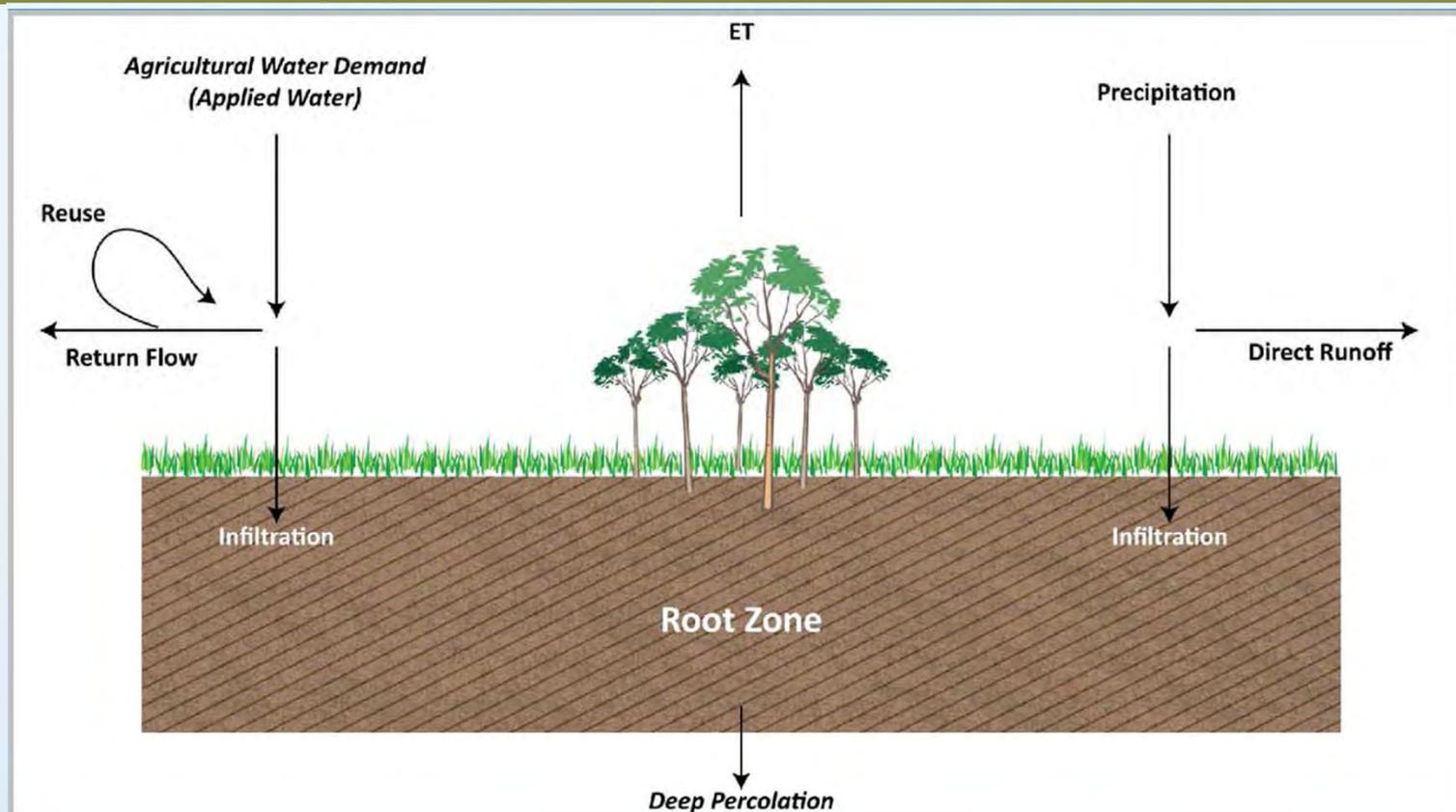


# Agricultural Demand and GW Pumping Estimation

$$\text{Agricultural Irrigation Demand} = \frac{\text{ET from Applied Water}}{\text{Irrigation Efficiency}}$$



# Estimation of Agricultural Water Demand (Applied Water)



# Agricultural Demand and GW Pumping Estimation

$$\text{Agricultural Irrigation Demand} = \frac{\text{ET from Applied Water}}{\text{Irrigation Efficiency}}$$

## Factors Influencing Irrigation Efficiency:

- Irrigation Practices
- Soil Conditions
- Conveyance & Distribution Systems
- Land Leveling

**Typical Range**  
**on the regional scale:**  
**65-75%**

# Urban Demand Estimation

- Based on historical population records  
and
- Average estimate of unit water use (GPCD)
- Existing Urban Water Use = Existing Population x GPCD
- Future Urban Water Use = Projected Population x GPCD

# GW Pumping Estimation

Groundwater Pumping = Agricultural Demand  
+ Urban Demand  
+ Frost Protection  
+ Dust Control  
+ Other

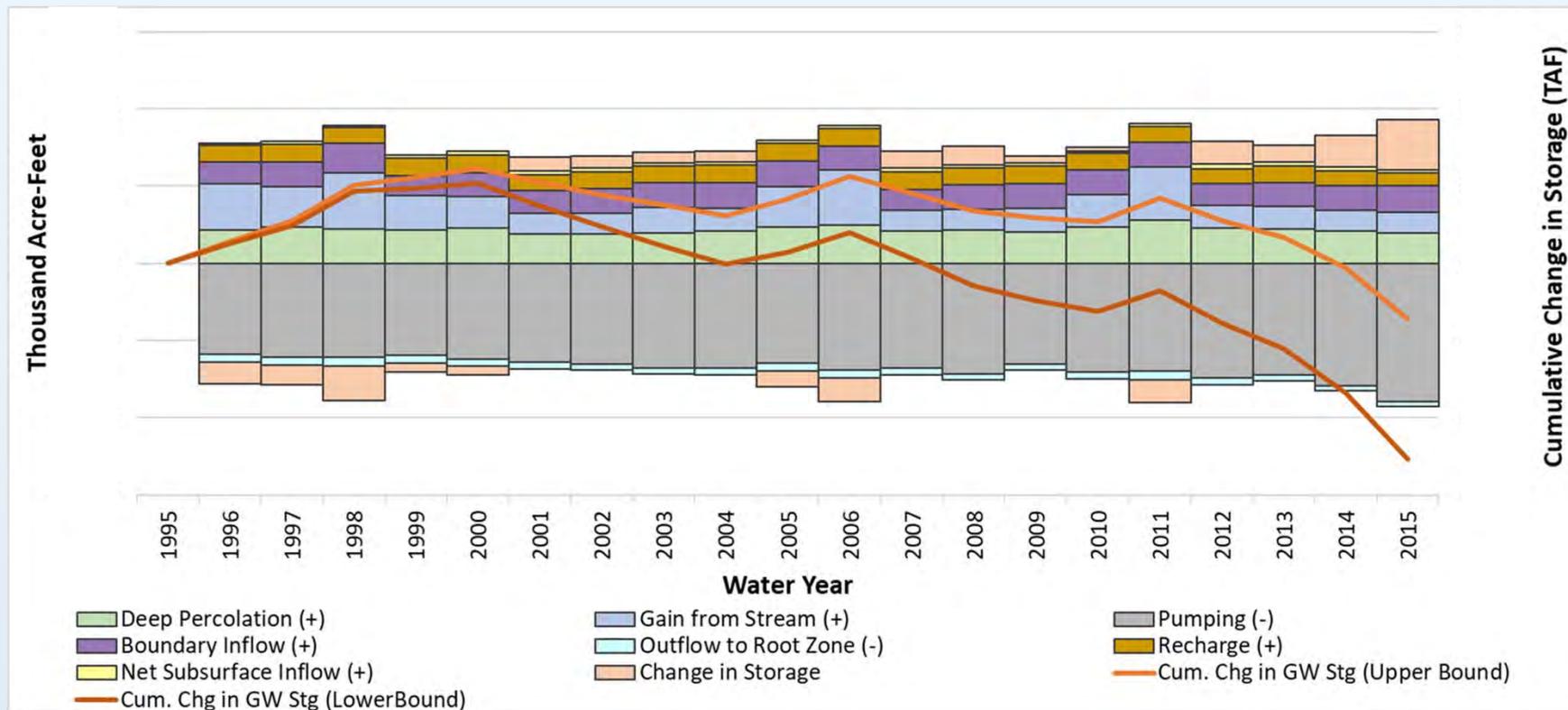
Model Calibration is the process of adjusting model parameters so that the model properly represents the observed data as closely as possible

- Typical areas for which the model is calibrated are:
  - Water Budget
    - Land surface system
    - Groundwater system
    - Stream system
  - Groundwater Levels
  - Stream Flows

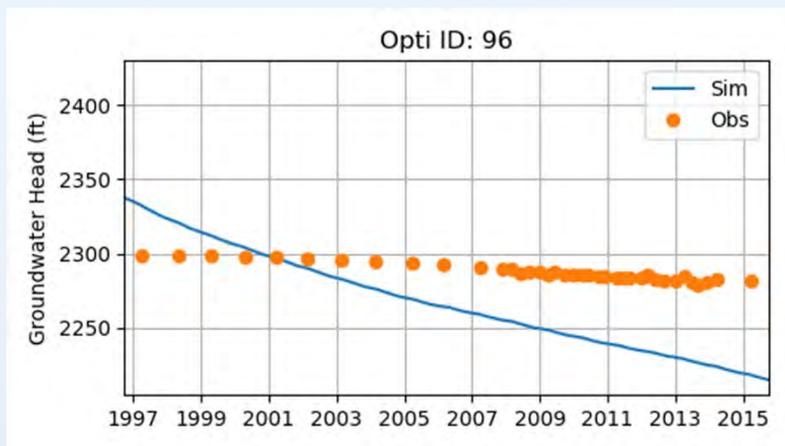
#### Typical Parameters Considered for Calibration:

- Land Surface Processes – Soil Parameters and Deep Percolation
- Boundary Flows from the Small Watersheds
- Aquifer Hydraulic Parameters –  $K$ ,  $S_y$ ,  $S_s$
- Stream-Aquifer Interaction –  $C_b$

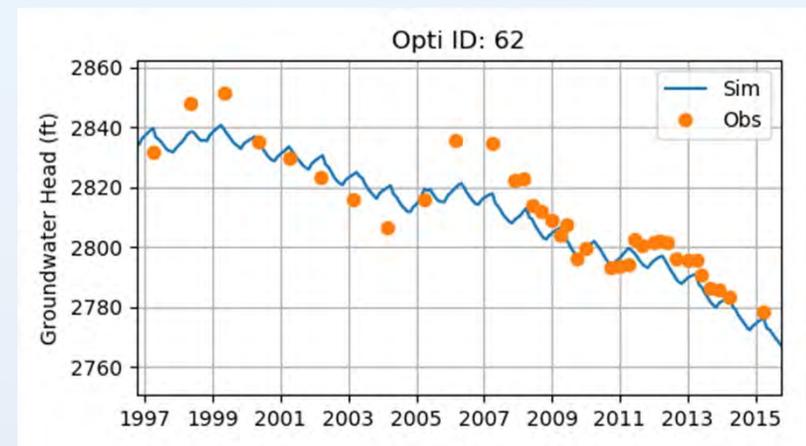
# Model Calibration – Groundwater Budget



# Model Calibration – Groundwater Levels

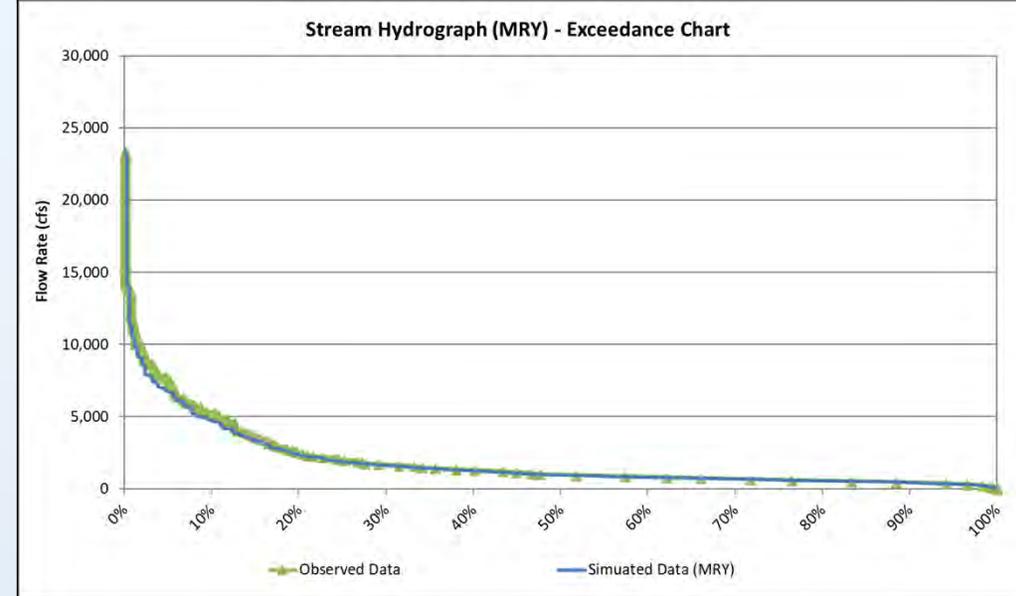
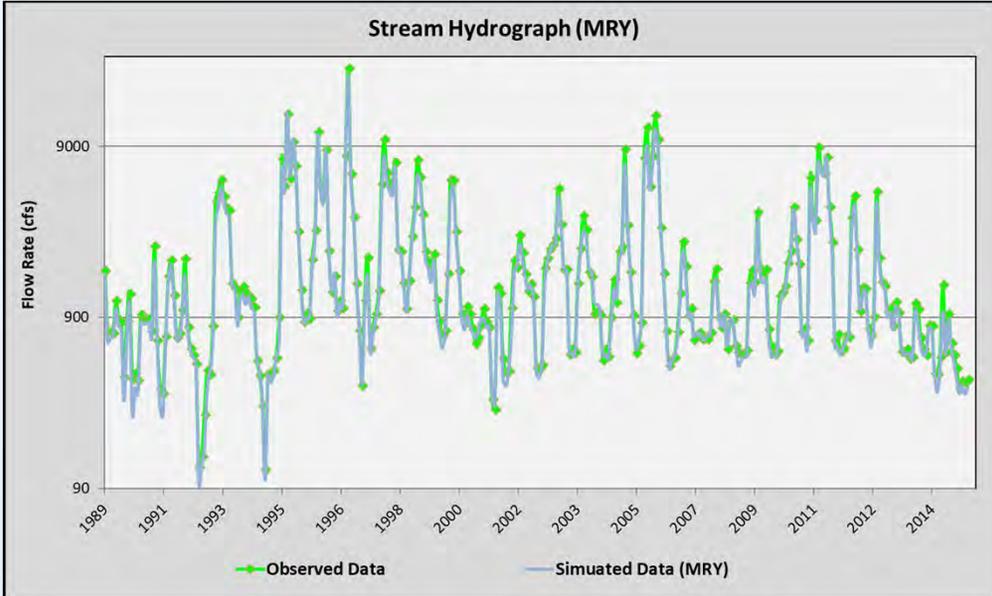


Poor Calibration



Good Calibration

# Model Calibration – Stream Flows





TO: Standing Advisory Committee  
Agenda Item No. 7c

FROM: Jim Beck, Executive Director

DATE: July 26, 2018

SUBJECT: Board of Directors Agenda Review

**Issue**

Review of the August 1, 2018 Cuyama Basin Groundwater Sustainability Agency Board of Directors agenda.

**Recommended Motion**

None – information only.

**Discussion**

The August 1, 2018 Cuyama Basin Groundwater Sustainability Agency Board of Directors agenda is provided as Attachment 1 for review.



# CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY BOARD OF DIRECTORS

## 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

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## AGENDA

August 1, 2018

Agenda for a meeting of the Cuyama Basin Groundwater Sustainability Agency Board of Directors to be held on Wednesday, July 11, 2018 at 4:00 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

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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. July 11, 2018

### Verbal

5. Report of the General Counsel (Hughes) (2 min)

### Memo

6. Report of the Standing Advisory Committee (Jaffe) (3 min)

7. Groundwater Sustainability Agency

### Verbal

- a. Report of the Executive Director (Beck) (3 min)





TO: Standing Advisory Committee  
Agenda Item No. 8a

FROM: Jim Beck, Executive Director

DATE: July 26, 2018

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

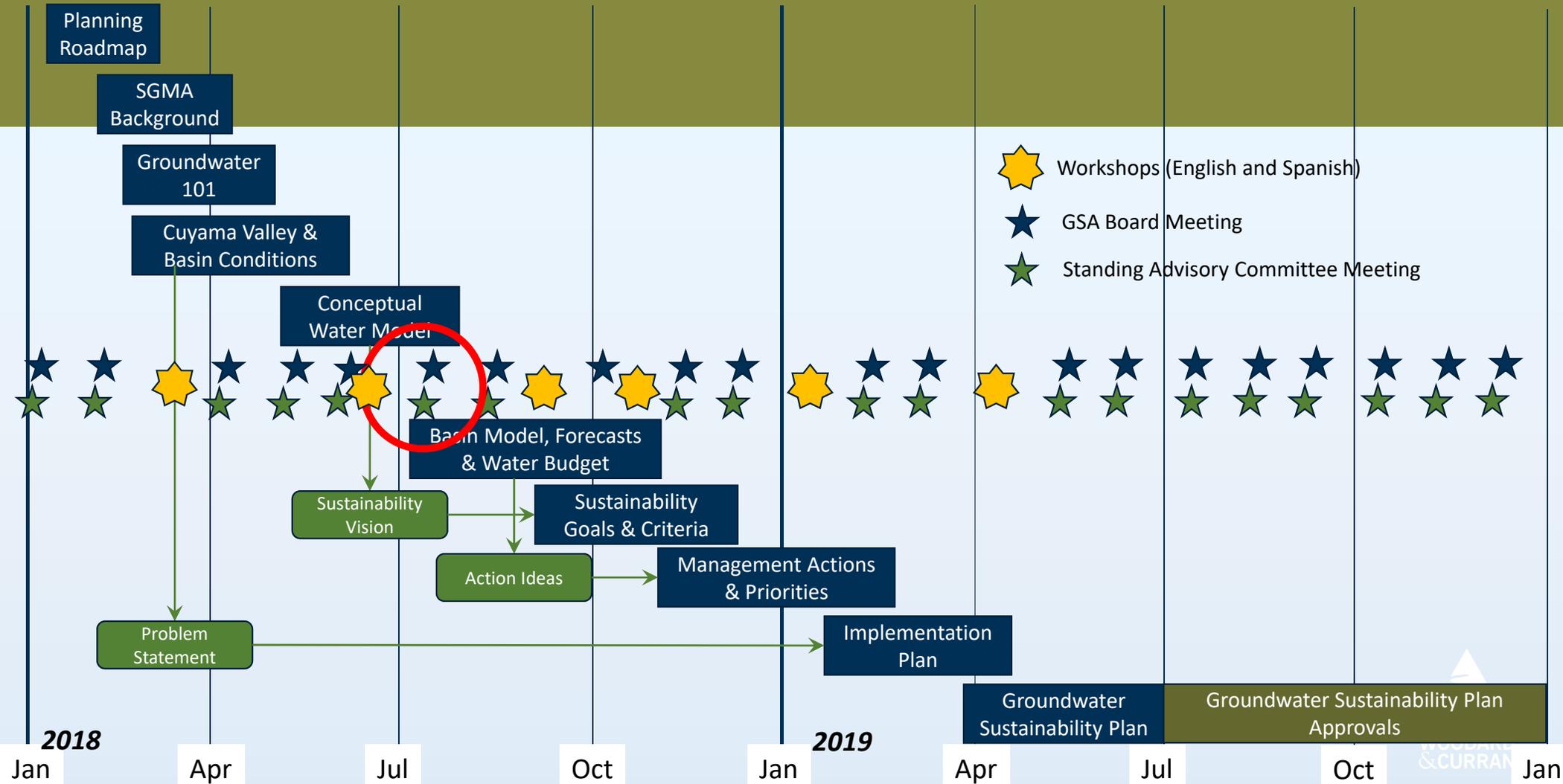
**Cuyama Basin Groundwater Sustainability Agency**

Groundwater Sustainability Plan Update

July 26, 2018



# Cuyama Basin Groundwater Sustainability Plan – Planning Roadmap



# July GSP Accomplishments

- ✓ Updated Description of Plan Area section in response to comments
- ✓ Distributed draft Undesirable Results Narrative
- ✓ Finalized data collection and processing
- ✓ Identified potential DWR Technical Support Services requests
- ✓ Continued work on data management system
- ✓ Continued work on GSP numerical model



TO: Standing Advisory Committee  
Agenda Item No. 8b

FROM: Lyndel Melton, Woodard & Curran (W&C)

DATE: July 26, 2018

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 July 13, 2018 technical forum meeting is provided as Attachment 1, and the next forum is scheduled for August 3, 2018.



## MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE:  
7/13/2018

MEETING: Technical Forum Conference Call

ATTENDEES: Matt Young (Santa Barbara County Water Agency)  
Matt Scudato (Santa Barbara County Water Agency)  
Matt Klinchuch (Cuyama Basin Water District)  
Dennis Gibbs (Santa Barbara Pistachio Company)  
Anona Dutton (EKI)  
Neil Currie (Cleath-Harris Geologists)  
John Fio (HydroFocus)  
Matt Naftaly (Dudek)  
Brian Van Lienden (Woodard & Curran)  
Ali Taghavi (Woodard & Curran)  
John Ayres (Woodard & Curran)  
Sercan Ceyhan (Woodard & Curran)

### 1. AGENDA

- Review and Comparison of Data Received
- Discussion on Undesirable Results and Minimum Thresholds
- Next steps

### 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	What is the basis for saying that there is a 90% concurrence between DWR/LandIQ land use and Boltouse/Grimmway data	John Fio	This is based on a parcel by parcel comparison of the available data
2	Can the comparison between DWR/LandIQ and Boltouse/Grimmway land use data be used to improve the data available for the GSP	Anona Dutton	The LandIQ data will be used to supplement parcels/years where data is not available from Boltouse/Grimmway. The data in the common land areas will be reviewed to confirm if any adjustments are warranted.



3	When we are doing the modeling, do we assume that pumping locations are the same going back in time (i.e. the current snapshot of well locations) or will they change over time?	Anona Dutton	The W&C team is open to ideas on this question. <b>The data that we have doesn't have a timestamp</b> , so we would need to have information on when new wells came on line historically. We can also see if changes in well depths provide an indication during calibration.
4	Will the model assume point well locations or use a distributed pumping approach	Anona Dutton	The current plan is to use the specific well locations for Bothouse and Grimmway wells (where we have a higher confidence in the available data) and to use a distributed pumping approach in other areas of the Basin.
5	Did we receive any historical pumping data?	Anona Dutton	Very little pumping data is available; therefore pumping amounts will need to be estimated by the model.

### 3. FEEDBACK ON UNDESIRABLE RESULTS AND MINIMUM THRESHOLDS

The Technical Forum members discussed potential ideas for undesirable results and minimum thresholds. These are summarized below for each sustainability indicator.

#### Lowering of Groundwater Levels

- The effects on domestic and municipal use should be a high priority
- The historical low value is considered a reasonable starting point in other basins
- We could also look at the levels in recent years (i.e. 2015 and 2017) and also compare those to the historical drought in 1992

#### Reduction in Groundwater Storage

- **The SGMA regulations call for extractions to be compared to sustainable yields, but that isn't an effective approach in the Cuyama Basin**
- It is not possible to measure groundwater storage – this can only be done with a numerical **model. It would be especially difficult in the Western portion of the Basin because of its tectonically shaped nature**

#### Degraded Water Quality

- The Western portion of the Basin has salinity levels significantly below other parts of the Basin
- We should consider looking at changes in current quality levels as compared to historical levels
- We should look at whether other constituents besides salt are above MCL levels
- We should look at whether we can discuss constituent migration



### Land Subsidence

- Oil operations will affect subsidence in the Western portion of the Basin
- Subsidence data will be provided in the Groundwater Conditions section
- The W&C team is open to ideas, especially on what is being done in other basins

### Surface Water Depletions

- We have a poor understanding of current conditions due to the lack of stream gages
- We could potentially satisfy this requirement by saying that effects on surface flows would be minimal due to an absence of groundwater-surface water connection
- We may want to consider the effect on springs – the USGS model utilized boundary conditions to represent springs. But a lot of in-basin springs are related to fault conditions

**Attachment 2**

## **Cuyama Basin Groundwater Sustainability Agency**

# Technical Forum Update

July 26, 2018



## July 13<sup>th</sup> Technical Forum Discussion

- Review and Comparison of Data Received
- Discussion on Undesirable Results and Minimum Thresholds
- Next steps
- Next Meeting – August 3<sup>rd</sup>
- Monthly Meetings – first Friday after each Board meeting

# 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, HydroFocus
- Dennis Gibbs, Santa Barbara Pistachio Company
- Neil Currie, Cleath-Harris Geologists
- Matt Naftaly, Dudek



TO: Standing Advisory Committee  
Agenda Item No. 8c

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

DATE: July 26, 2018

SUBJECT: Current Basin Water Conditions

**Issue**

Update on the Current Basin Water Conditions.

**Recommended Motion**

None – information only.

**Discussion**

An update on the current basin water conditions is provided as Attachment 1.

Attachment 1

## Cuyama Basin Groundwater Sustainability Agency

# Current Basin Water Conditions

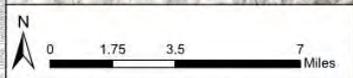
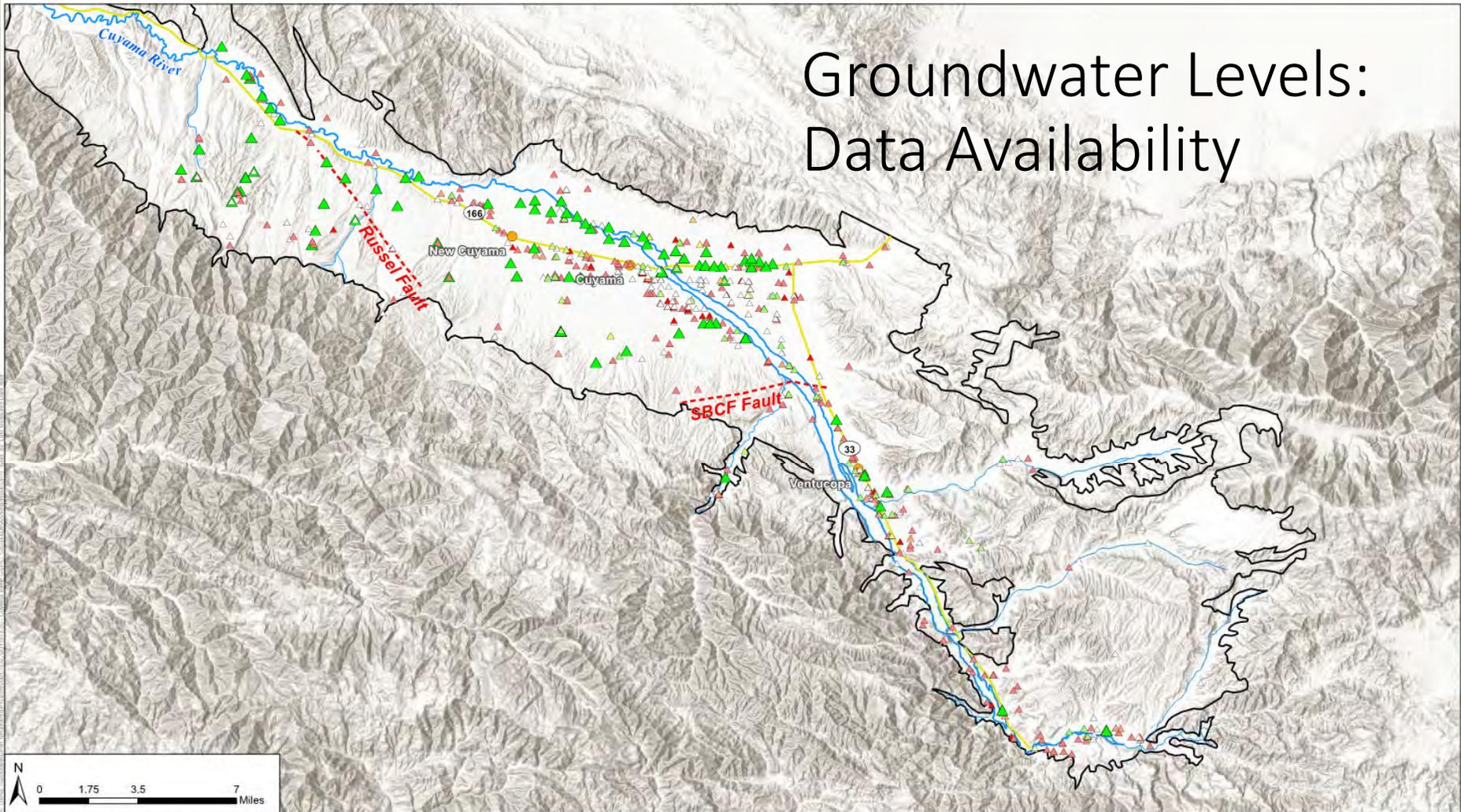
July 26, 2018



# Current Basin Water Conditions

- Groundwater Levels
- Groundwater Quality
- Subsidence
- Surface Water Flows

# Groundwater Levels: Data Availability

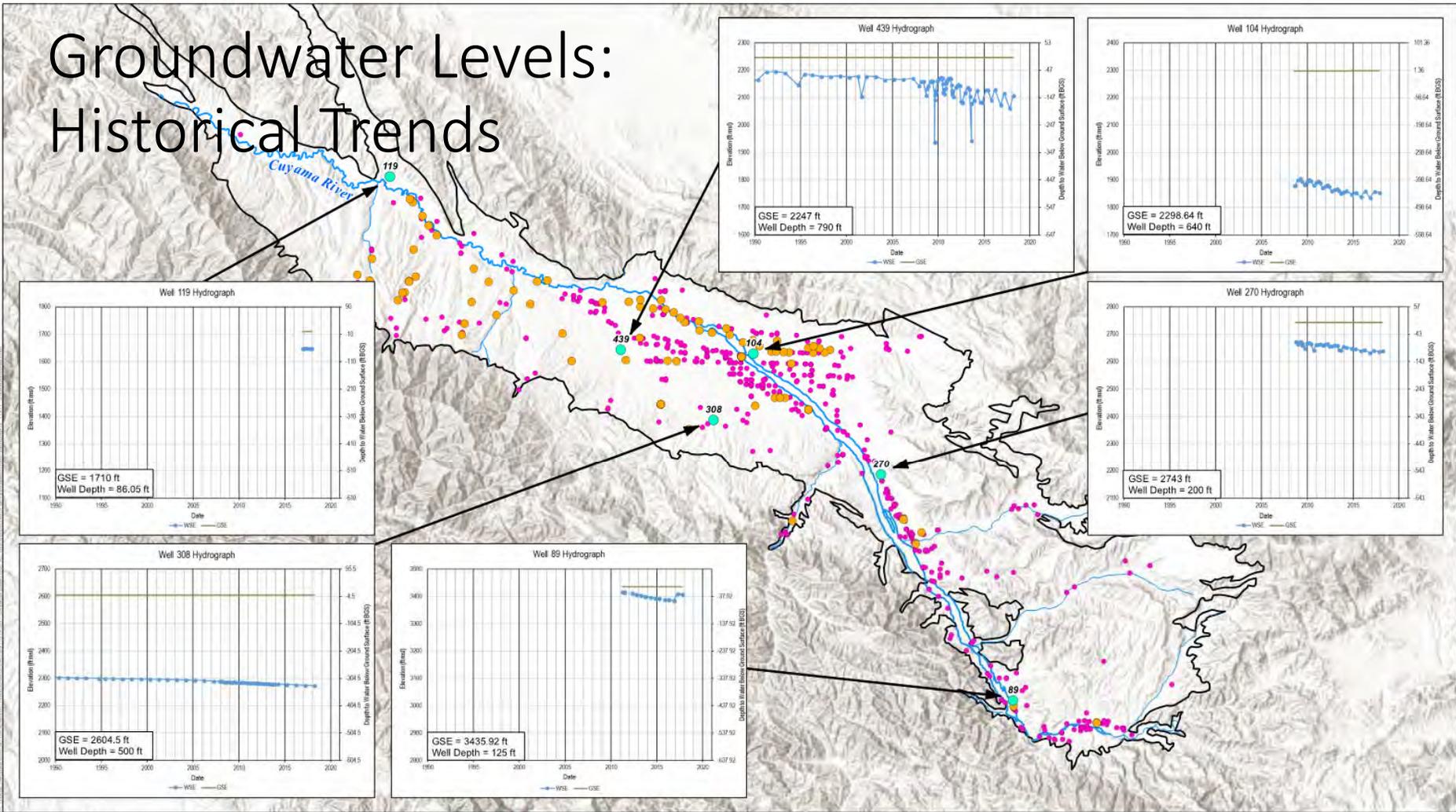


Cuyama GW Basin Wells by Last Measurement Date	
Cuyama Basin Groundwater Sustainability Agency	
Cuyama Valley Groundwater Basin Groundwater Sustainability Plan	
July 2018	



Legend		Most Recent Year with Measurements	
Cuyama Basin	Cuyama River	2017 - 2018	1980 - 1989
Towns	Streams	2010 - 2016	1970 - 1979
Highways	Russell Fault	2000 - 2009	1960 - 1969
	SBCF Fault	1990 - 1999	1950 - 1959
		Pre-1950	No Measurement Data

# Groundwater Levels: Historical Trends



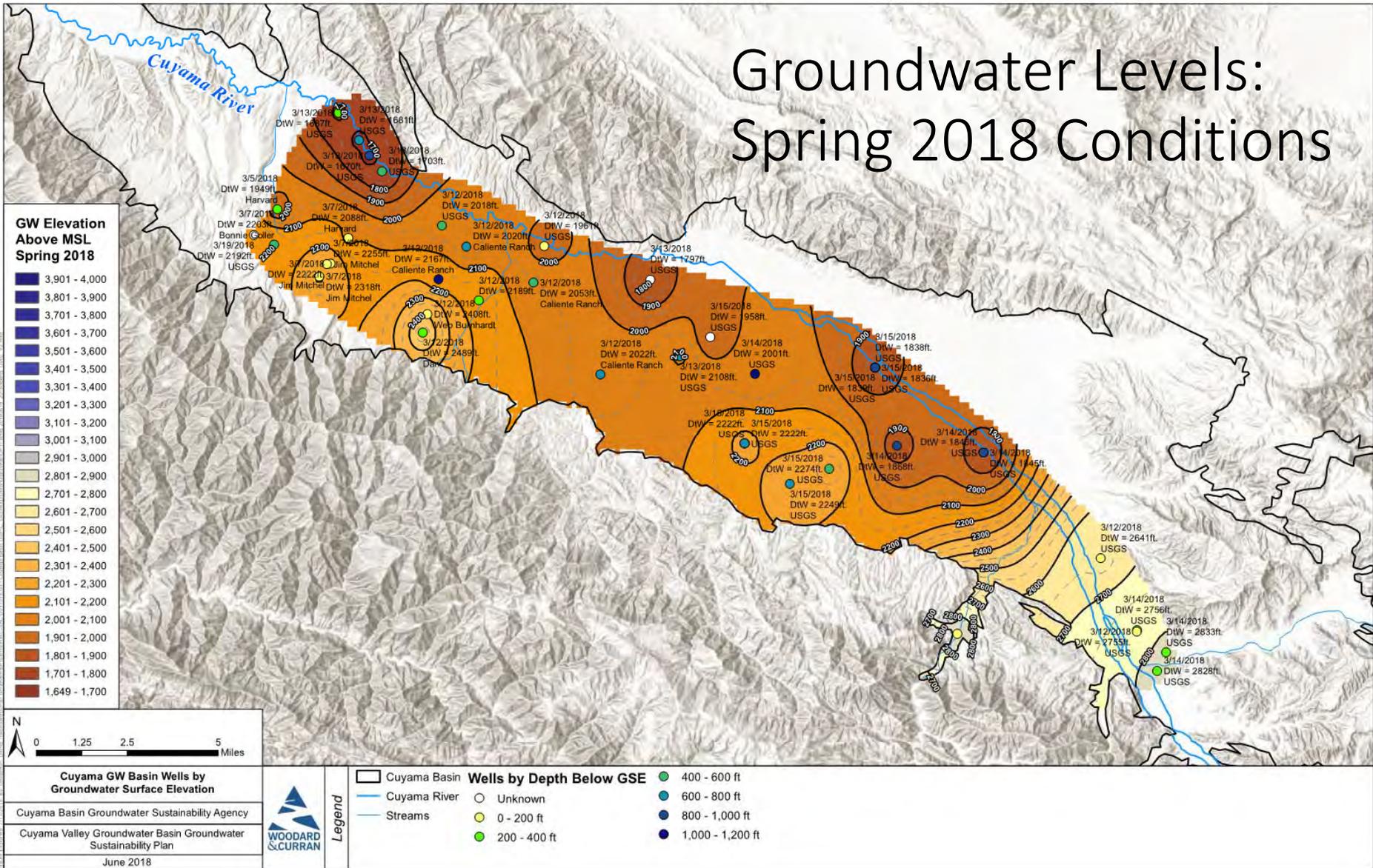
**Cuyama Basin: Wells and Selected Hydrographs**  
 Cuyama Basin Groundwater Sustainability Agency  
 Cuyama Valley Groundwater Basin Groundwater Sustainability Plan  
 May 2018



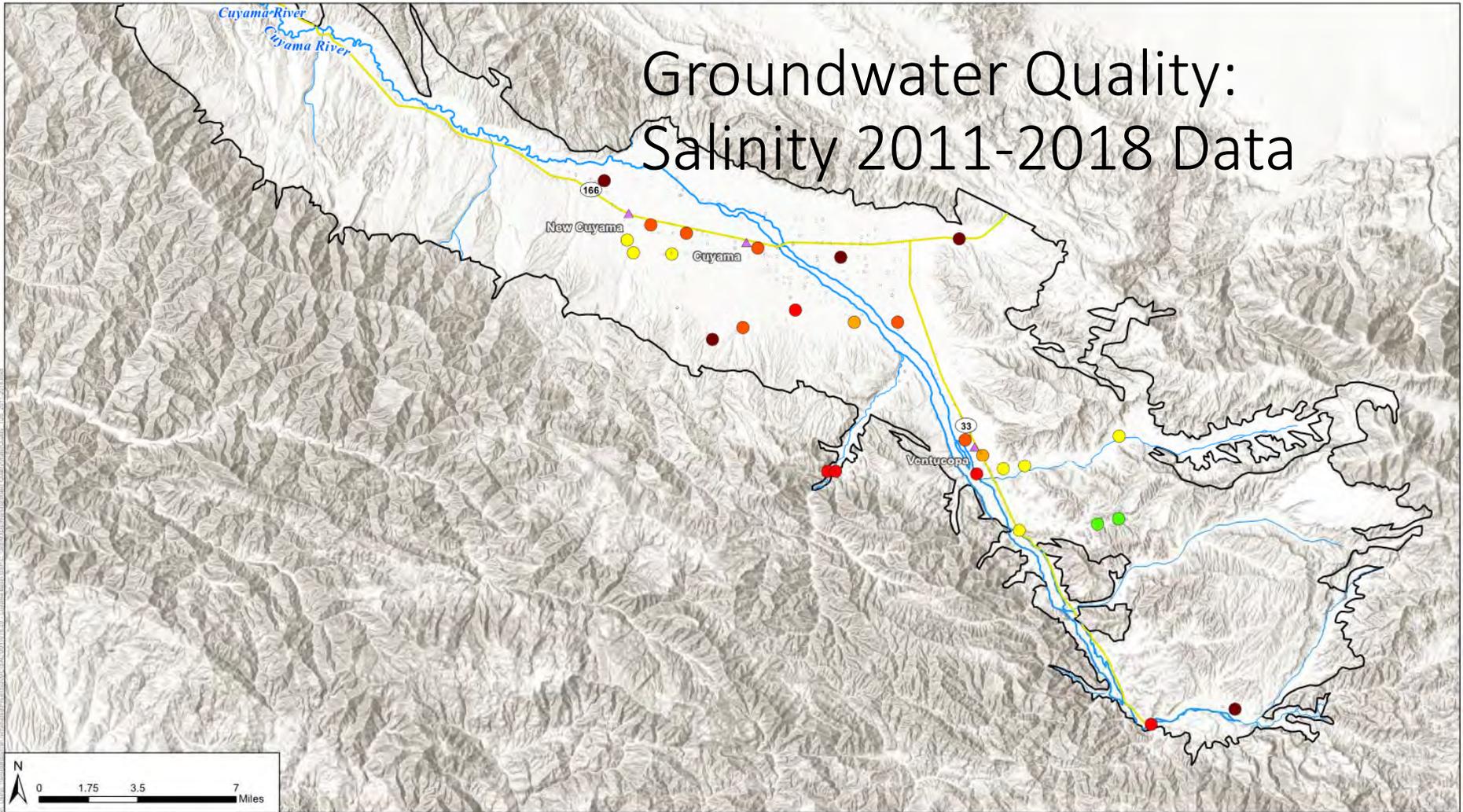
- Legend**
- Cuyama Basin
  - Cuyama River
  - Streams
  - Selected Monitoring Wells with Hydrographs
  - Monitoring Wells Last Measured in 2017-2018
  - Monitoring Wells Not Measured in 2017-2018



# Groundwater Levels: Spring 2018 Conditions



# Groundwater Quality: Salinity 2011-2018 Data

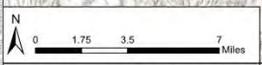
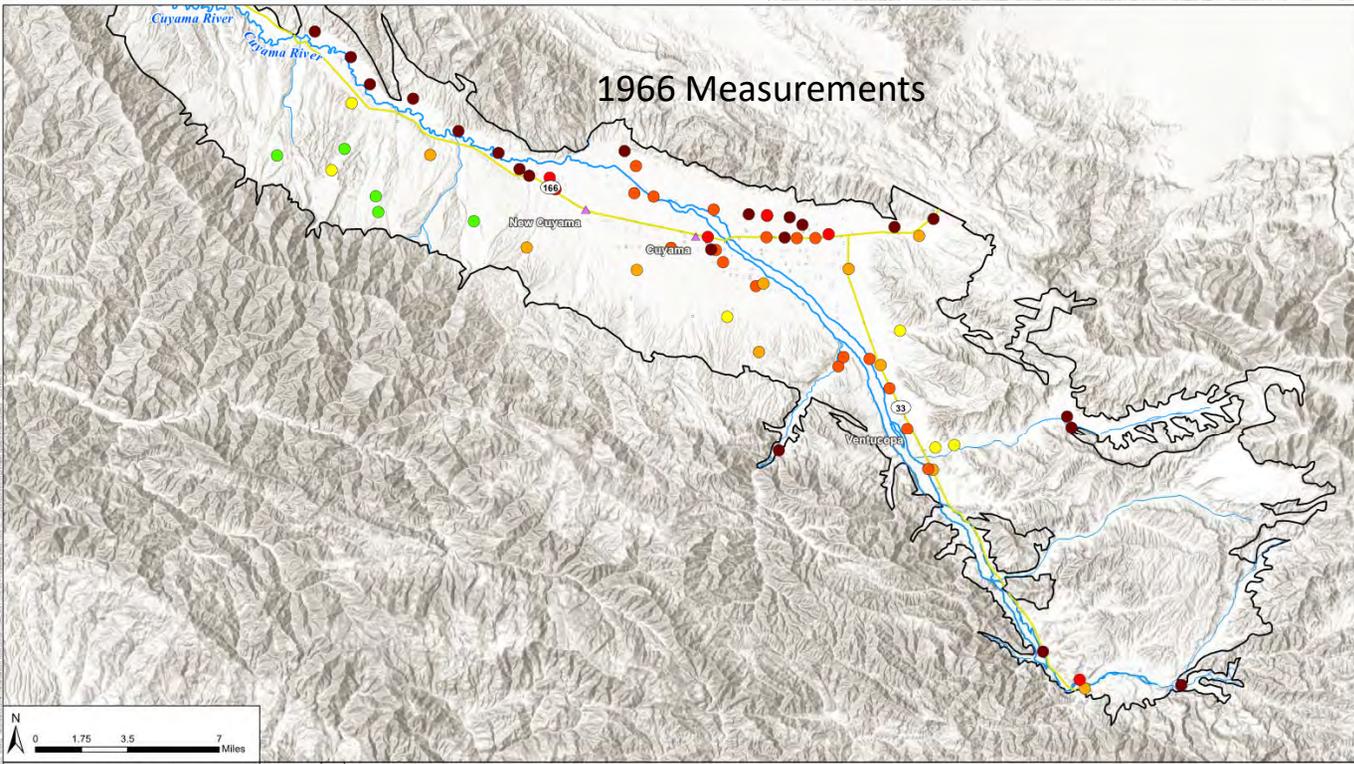
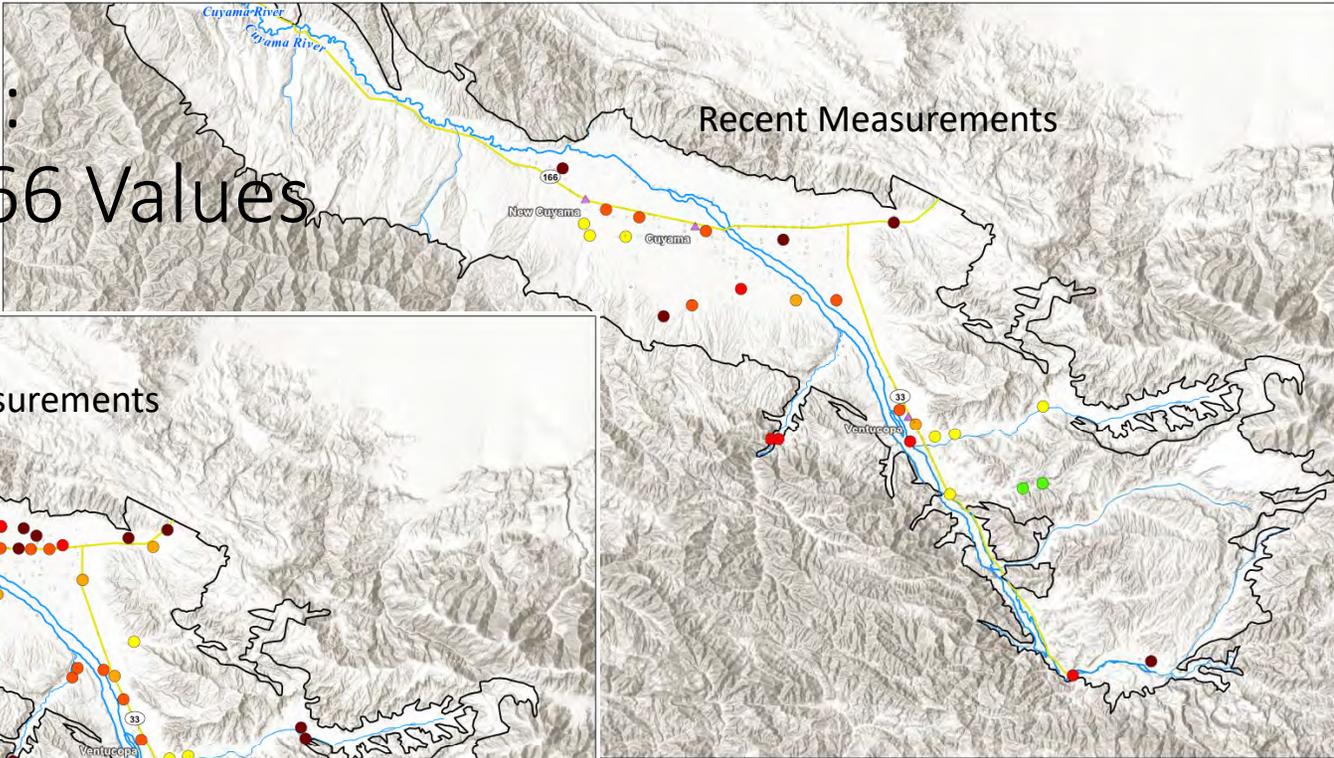


**2011-2018 Average Well Measurements of Total Dissolved Solids, mg/L**  
 Cuyama Basin Groundwater Sustainability Agency  
 Cuyama Valley Groundwater Basin Groundwater Sustainability Plan  
 July 2018



Legend	
No Measurements	1,500 - 1,750 mg/L
< 500 mg/L	1,750 - 2,000 mg/L
500 - 1,000 mg/L	> 2,000 mg/L
1,000 - 1,500 mg/L	

# Groundwater Quality: Recent Salinity vs 1966 Values

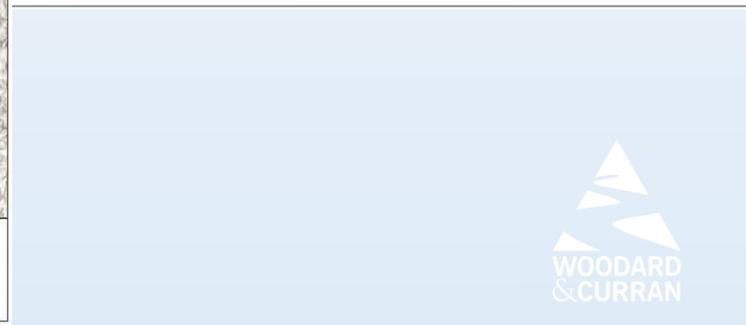


1966 Average Well Measurements of Total Dissolved Solids, mg/L  
 Cuyama Basin Groundwater Sustainability Agency  
 Cuyama Valley Groundwater Basin Groundwater Sustainability Plan  
 July 2018

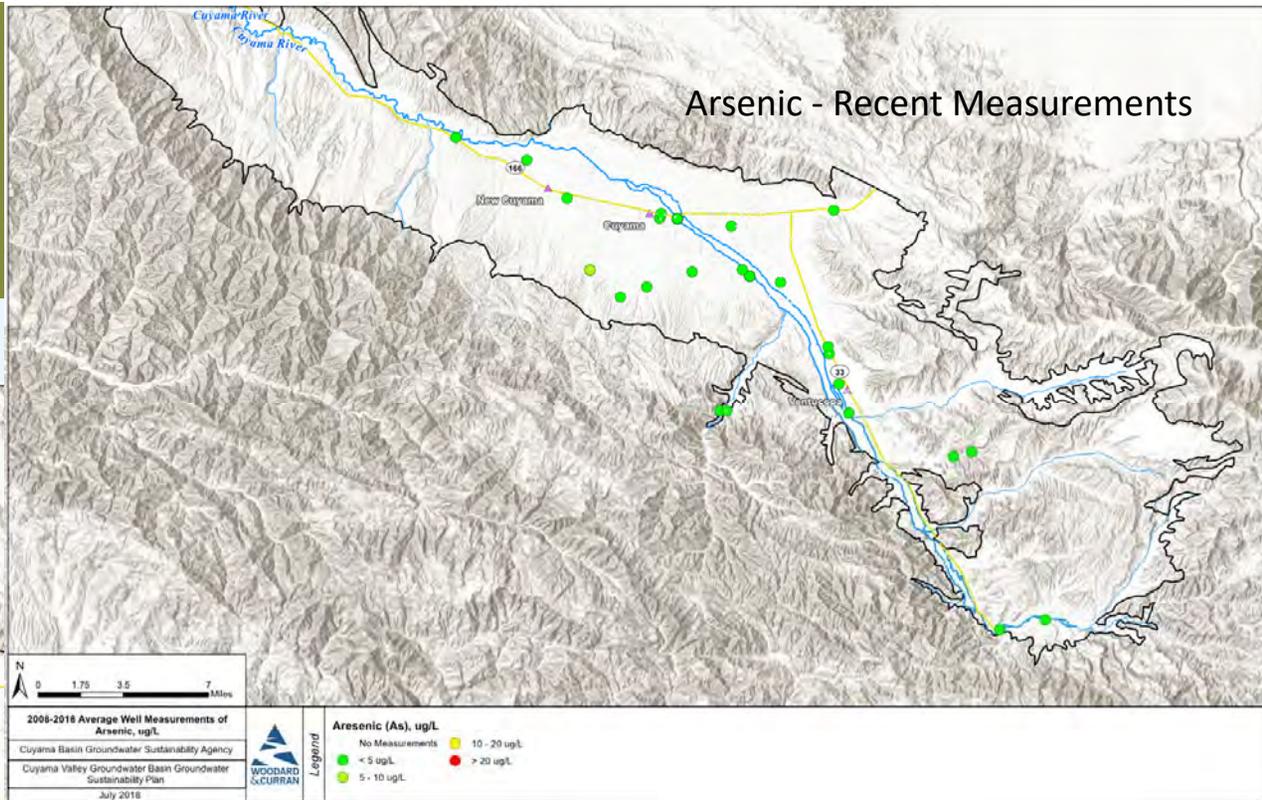
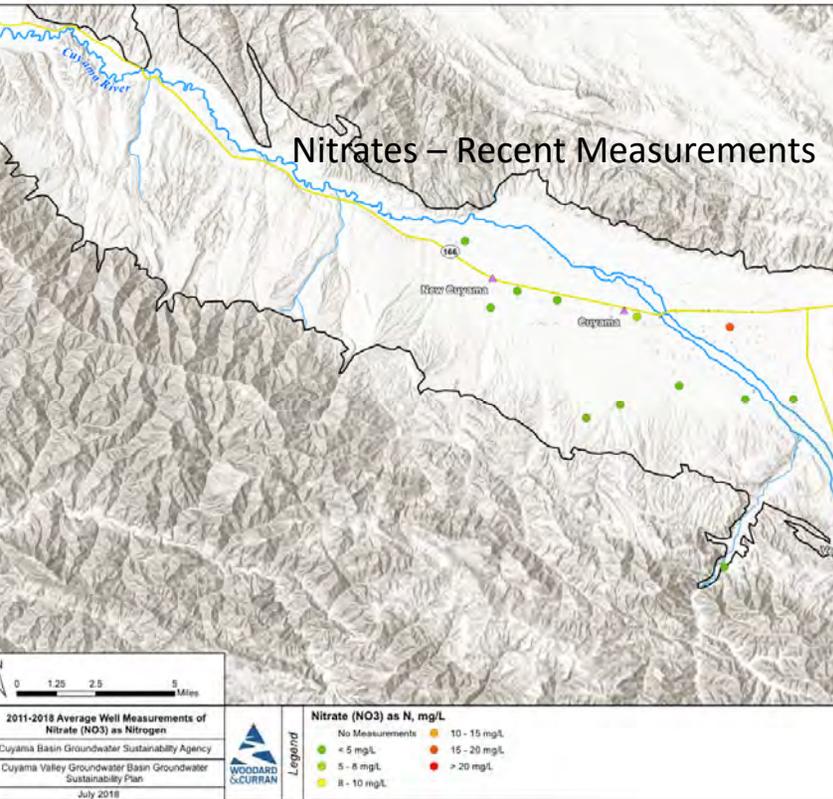


Legend

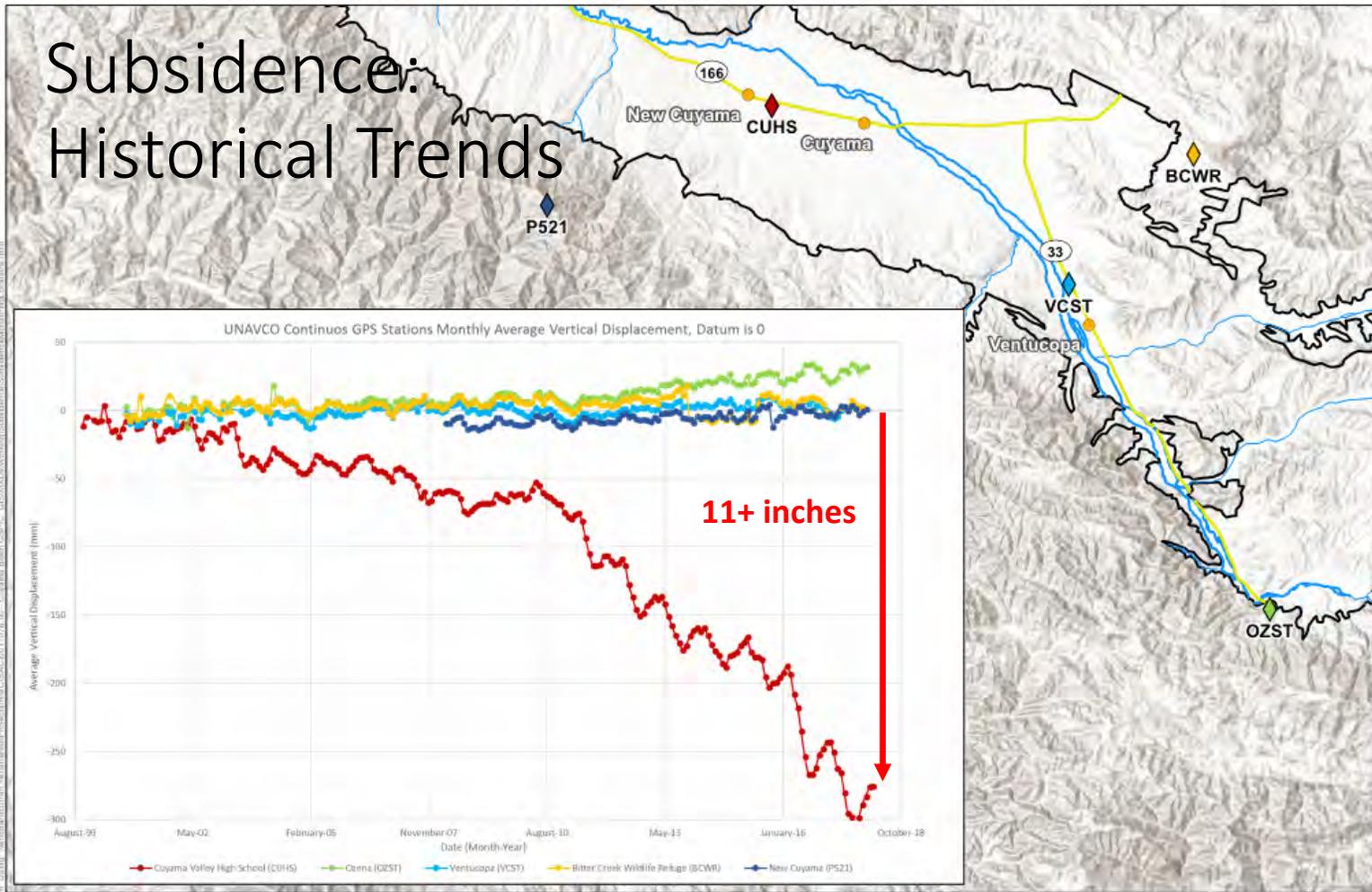
TDS, mg/L	
No Measurements	1,500 - 1,750 mg/L
< 500 mg/L	1,750 - 2,000 mg/L
500 - 1,000 mg/L	>2,000 mg/L
1,000 - 1,500 mg/L	



# Groundwater Quality: Nitrates and Arsenic

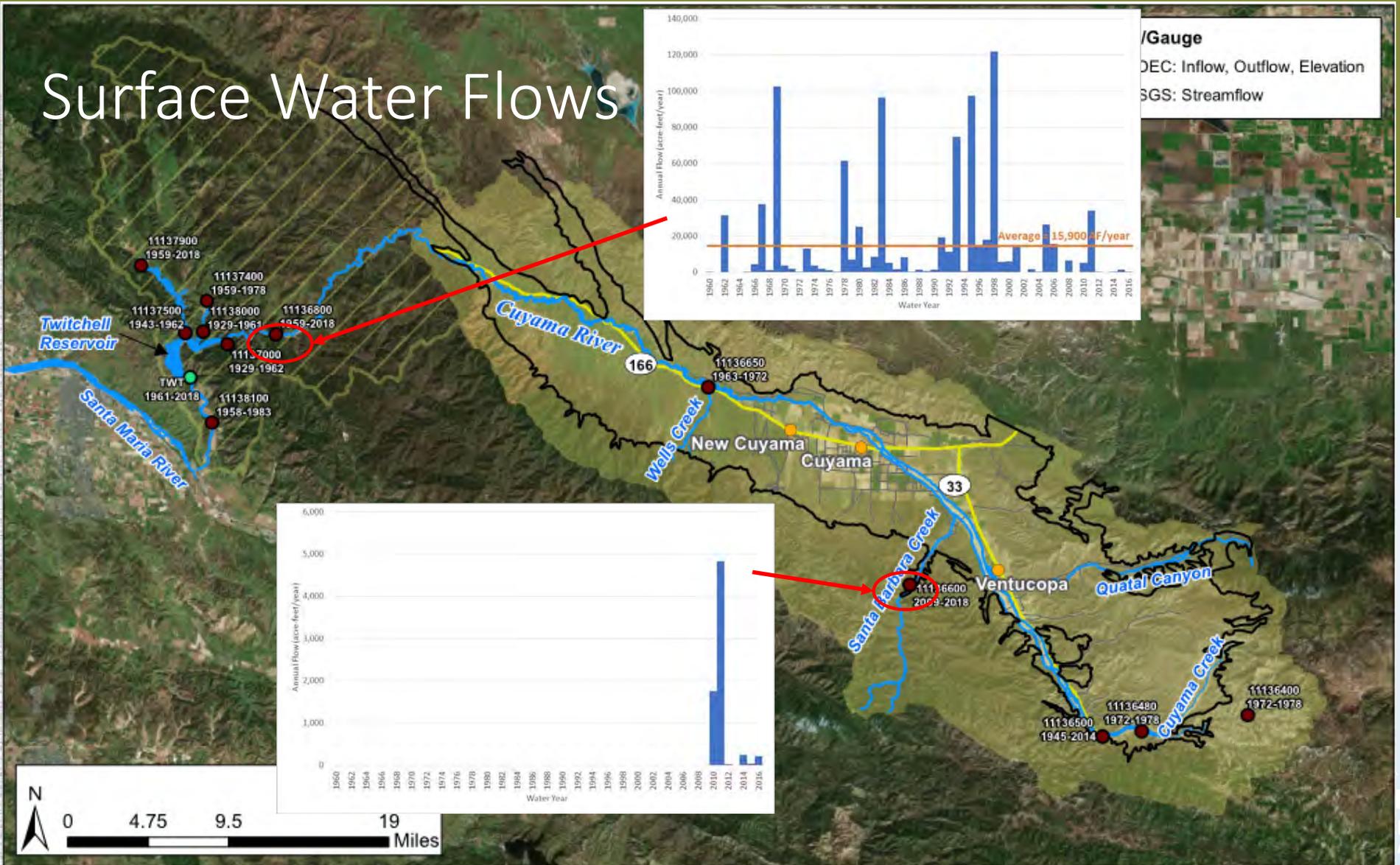


# Subsidence: Historical Trends



<p><b>Subsidence Monitoring Locations</b> Cuyama GW Basin</p> <p>Cuyama Basin Groundwater Sustainability Agency</p> <p>Cuyama Valley Groundwater Basin Groundwater Sustainability Plan</p> <p>July 2018</p>			<p><b>Legend</b></p> <ul style="list-style-type: none"> <li>Cuyama Basin</li> <li>Towns</li> <li>Highways</li> <li>Cuyama River</li> <li>Streams</li> </ul>		

# Surface Water Flows





TO: Standing Advisory Committee  
Agenda Item No. 8d

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

DATE: July 26, 2018

SUBJECT: Draft Undesirable Results Narrative

**Issue**

Update on the Draft Undesirable Results Narrative.

**Recommended Motion**

None – information only.

**Discussion**

An update on the draft Undesirable Results narrative is provided as Attachment 1.

# Memorandum - **DRAFT**

## Undesirable Results Statements

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**Subject:** Undesirable Results Statements  
**Prepared For:** Cuyama Valley Basin Groundwater Sustainability Plan  
**Prepared by:** John Ayres, Brian Van Linden  
**Reviewed by:** Ali Taghavi, Lyndel Melton  
**Date:** June 18, 2018

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This memorandum presents a draft version of the Undesirable Results section of the Cuyama Valley Groundwater Basin (basin) Groundwater Sustainability Plan (GSP). The Undesirable Results statements in this section are a key component of the GSP, as other GSP components must be developed to set quantitative thresholds on monitoring points that indicate where Undesirable Results would occur on the monitoring network, and to shape the monitoring network to detect the Undesirable Results.

This memorandum has two sections: The first section is the draft Undesirable Results section, and the second section contains guidance from relevant portions of the GSP regulations about Undesirable Results and guidance about Undesirable Results from the Sustainable Management Criteria Best Management Practices (BMP).

A public workshop was held on June 6<sup>th</sup>, 2018 where sustainability and undesirable outcomes were discussed. Input from that meeting was tallied in a table where the inputs were tied to the most relevant GSP component. The sorted results were used to guide creation of the Undesirable Results statements and are included in Attachment A.

### Draft Undesirable Results Statements

Undesirable results are defined for use in SGMA as one or more of the following effects caused by groundwater conditions occurring throughout the basin:

- (1) Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. Overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and groundwater recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods.
- (2) Significant and unreasonable reduction of groundwater storage.
- (3) Significant and unreasonable seawater intrusion.
- (4) Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies.
- (5) Significant and unreasonable land subsidence that substantially interferes with surface land uses.
- (6) Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

Undesirable results related to seawater intrusion are not present in the basin and are not likely to occur in the basin.

Information is provided below for each effect, as it applies to the basin. For the sustainability indicators relevant to the basin, the discussion includes a description of the undesirable result, identification of undesirable results, potential causes of undesirable results, and potential effects of undesirable results on beneficial uses. For the indicator not present, justification for not establishing undesirable results is provided. The information was developed based on the water code, regulations, BMP, and stakeholder input.

## **Chronic Lowering of Groundwater Levels**

### Description of Undesirable Results

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.

### Identification of Undesirable Results

This result is considered to occur during GSP implementation when XX% of representative monitoring wells (XX of XX) for levels fall below their minimum groundwater elevation thresholds for (two to four) consecutive years.

### Potential Causes of Undesirable Results

Potential causes of Undesirable Results for the chronic lowering of groundwater levels are groundwater pumping that exceeds the average sustainable yield in the basin, and changes in precipitation in the Cuyama Watershed in the future.

### Potential Effects of Undesirable Results

If groundwater levels were to reach Undesirable Results, the Undesirable Results could cause potential dewatering of existing groundwater infrastructure, starting with the shallowest wells, could potentially adversely affect groundwater dependent ecosystems, and potentially cause changes in irrigation practices, crops grown, and adverse effects to property values. Additionally, reaching Undesirable Results for groundwater levels could adversely affect domestic and municipal uses, which rely on groundwater in the subbasin.

## **Reduction of Groundwater Storage**

### Description of Undesirable Results

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.

### Identification of Undesirable Results

This result is considered to occur during GSP implementation when XX% of proxy monitoring wells (XX of XX) for levels (and quality) fall below the proxy for groundwater storage minimum thresholds for (two to four) consecutive years.

#### Potential Causes of Undesirable Results

Potential causes of Undesirable Results for the reduction in groundwater storage are groundwater pumping that exceeds the average sustainable yield in the basin, and decreases in precipitation in the Cuyama Watershed in the future.

#### Potential Effects of Undesirable Results

If reduction of groundwater in storage were to reach Undesirable Results, the Undesirable Results could cause potential de-watering of existing groundwater infrastructure, starting with the shallowest wells, could potentially adversely affect groundwater dependent ecosystems, and potentially cause changes in irrigation practices, crops grown, and adverse effects to property values. Additionally, reaching Undesirable Results for reduction of groundwater in storage could adversely affect domestic and municipal uses, which rely on groundwater in the subbasin.

### **Seawater Intrusion**

Seawater intrusion is not an applicable sustainability indicator, because seawater intrusion is not present and is not likely to occur due to the distance between the basin and the Pacific Ocean, bays, deltas, or inlets.

### **Degraded Water Quality**

#### Description of Undesirable Results

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.

#### Identification of Undesirable Results

This result is considered to occur during GSP implementation when XX% of representative monitoring points (XX of XX sites) exceed the minimum threshold for a constituent for two consecutive years.

#### Potential Causes of Undesirable Results

Potential causes of Undesirable Results for the degraded water quality are conditions where groundwater pumping degrades the groundwater quality.

#### Potential Effects of Undesirable Results

If groundwater quality were degraded to reach Undesirable Results, the Undesirable Results could potentially cause a shortage in supply to groundwater users, with domestic wells being most vulnerable as treatment costs or access to alternate supplies can be high for small users. Some water quality issues could potentially cause more impact on agricultural uses than municipal or domestic uses, depending on the impact of the contaminant to these water use sectors. Water quality degradation could cause potential changes in irrigation practices, crops grown, and adverse effects to property values. Additionally, reaching

Undesirable Results for groundwater quality could adversely affect municipal uses, which could have to install treatment systems.

## **Land Subsidence**

### Description of Undesirable Results

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.

### Identification of Undesirable Results

This result is detected to occur during GSP implementation when XX% of representative subsidence monitoring sites (XX of XX sites) exceed the minimum threshold for subsidence over five years.

### Potential Causes of Undesirable Results

Potential causes of future Undesirable Results for land subsidence are likely tied to groundwater pumping resulting in dewatering of compressible clays in the subsurface.

### Potential Effects of Undesirable Results

If land subsidence conditions were to reach Undesirable Results, the Undesirable Results could potentially cause damage to infrastructure, including water conveyance facilities and flood control facilities roads, utilities, buildings, and pipelines.

## **Depletions of Interconnected Surface Water**

### Description of Undesirable Results

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.

### Identification of Undesirable Results

This result is considered to occur during GSP implementation when XX% of representative monitoring wells on the groundwater level monitoring network (XX of XX sites) exceed the proxy minimum thresholds for depletions of interconnected surface water.

### Justification of Groundwater Elevations as a Proxy

Use of groundwater elevation as a proxy metric for Undesirable Results is necessary given the difficulty and cost of direct monitoring of depletions of interconnected surface water. The depletion of interconnected surface water is driven by a gradient between water surface elevation in the surface water body and groundwater elevations in the connected, shallow groundwater system. By setting minimum thresholds on shallow groundwater wells near surface water, this gradient is managed, and, in turn, depletions of interconnected surface water are managed.

### Potential Causes of Undesirable Results

Potential causes of future Undesirable Results for depletions of interconnected surface water are likely tied to groundwater production, particularly in the shallowest zones, where surface water and groundwater are connected. Increased depletions could result in lowering of groundwater elevations in shallow aquifers near surface water courses, which changes the hydraulic gradient between the water surface elevation in the surface water course and the groundwater elevation, resulting in an increase in depletion.

### Potential Effects of Undesirable Results

If depletions of interconnected surface water were to reach Undesirable Results, groundwater dependent ecosystems could be affected.

## **Related Regulations and Best Management Practices**

### **Undesirable Results Regulations § 354.26:**

The regulations have seven entries about Undesirable Results:

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

"(b) The description of Undesirable Results shall include the following:"

"(1) The cause of groundwater conditions occurring throughout the basin that would lead to or has led to Undesirable Results based on information described in the basin setting, and other data or models as appropriate."

"(2) The criteria used to define when and where the effects of the groundwater conditions cause Undesirable Results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin."

"(3) Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from Undesirable Results."

"(c) The Agency may need to evaluate multiple minimum thresholds to determine whether an Undesirable Result is occurring in the basin. The determination that Undesirable Results are occurring may depend upon measurements from multiple monitoring sites, rather than a single monitoring site."

"(d) An Agency that is able to demonstrate that Undesirable Results related to one or more sustainability indicators are not present and are not likely to occur in a basin shall not be required to establish criteria for Undesirable Results related to those sustainability indicators."

### **Sustainable Management Criteria Best Management Practices**

The BMP describes sustainability indicators and their relationship to Undesirable Results.

#### ***Sustainability Indicators***

Sustainability indicators are the effects caused by groundwater conditions occurring throughout the basin that, when significant and unreasonable, become Undesirable Results.<sup>6</sup> Undesirable Results are one or more of the following effects:

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. Overdraft during a period of

drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and groundwater recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods

- Significant and unreasonable reduction of groundwater storage
- Significant and unreasonable seawater intrusion
- Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies
- Significant and unreasonable land subsidence that substantially interferes with surface land uses
- Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

The significant and unreasonable occurrence of any of the six sustainability indicators constitutes an Undesirable Result.

The default position for GSAs should be that all six sustainability indicators apply to their basin. If a GSA believes a sustainability indicator is not applicable for their basin, they must provide evidence that the indicator does not exist and could not occur. For example, GSAs in basins not adjacent to the Pacific Ocean, bays, deltas, or inlets may determine that seawater intrusion is not an applicable sustainability indicator, because seawater intrusion does not exist and could not occur. In contrast, simply demonstrating that groundwater levels have been stable in recent years is not sufficient to determine that land subsidence is not an applicable sustainability indicator. As part of the GSP evaluation process, the Department will evaluate the GSA's determination that a sustainability indicator does not apply for reasonableness.

### ***Significant and Unreasonable Conditions***

GSAs must consider and document the conditions at which each of the six sustainability indicators become significant and unreasonable in their basin, including the reasons for justifying each particular threshold selected. A GSA may decide, for example, that localized inelastic land subsidence near critical infrastructure (e.g., a canal) and basinwide loss of domestic well pumping capacity due to lowering of groundwater levels are both significant and unreasonable conditions. These general descriptions of significant and unreasonable conditions are later translated into quantitative Undesirable Results, as described in this document. The evaluation of significant and unreasonable conditions should identify the geographic area over which the conditions need to be evaluated so the GSA can choose appropriate representative monitoring sites.

<b>Sustainability Goal 1: To maintain a viable groundwater resource for the beneficial use of the people and the environment of the Cuyama Groundwater Basin now and into the future.</b>					
<b>Sustainability Indicator <sup>2</sup></b>	<b>I. GROUNDWATER ELEVATION</b>	<b>II. GROUNDWATER STORAGE</b>	<b>III. WATER QUALITY</b>	<b>IV. LAND SUBSIDENCE</b>	<b>V. SURFACE WATER CONNECTIVITY</b>
<b>Undesirable Result Considerations</b> <sup>3</sup>	Chronic lowering of groundwater levels indicating unreasonable depletion of supply, which results in: <ul style="list-style-type: none"> <li>Adverse impacts to the viability of agriculture, and the agricultural economy.</li> <li>Adverse impacts to the viability of CSD and other domestic water users.</li> <li>Dewatering of wells.</li> </ul>	Unreasonable reduction of groundwater storage, which results in: <ul style="list-style-type: none"> <li>Adverse impacts to the viability of agriculture, and the agricultural economy.</li> <li>Adverse impacts to the viability of CSD and domestic uses.</li> <li>Dewatering of wells.</li> </ul>	Significant and unreasonable degraded water quality that adversely impacts drinking, irrigation, industrial, and environmental uses: <ul style="list-style-type: none"> <li>Drinking</li> <li>Domestic uses (Swamp coolers, laundry)</li> <li>Agriculture</li> </ul>	Significant and unreasonable land subsidence that substantially interferes with surface land uses causing: <ul style="list-style-type: none"> <li>Damage to public and private infrastructure (e.g., roads and highways, pipelines, utilities, public buildings, residential and commercial structures).</li> <li>Permanent loss of groundwater storage capacity.</li> </ul>	Significant and unreasonable depletions of interconnected surface water that results in: <ul style="list-style-type: none"> <li>Adverse impacts to agricultural uses</li> <li>Adverse impacts to riparian habitat</li> </ul>
<b>Minimum Threshold Considerations</b> <sup>4</sup>	<ul style="list-style-type: none"> <li>Well depths</li> <li>Historic recorded lows in monitoring wells</li> <li>Conditions in spring of 2015</li> </ul>	<ul style="list-style-type: none"> <li>Well depths</li> <li>Historic recorded lows in monitoring wells</li> <li>Conditions in spring of 2015</li> </ul>	<ul style="list-style-type: none"> <li>Salinity MCL (Maximum Contaminant Level) for drinking water and agriculture</li> <li>Arsenic MCL for drinking water</li> <li>Conditions in spring of 2015</li> </ul>	<ul style="list-style-type: none"> <li>Land subsidence rate and magnitude indicating in-elastic land subsidence at established monuments.</li> <li>Conditions in spring of 2015</li> </ul>	<ul style="list-style-type: none"> <li>Based on an amount of water contributed from surface water to groundwater.</li> </ul>
<b>Measurable Objective Considerations</b> <sup>5</sup>	<ul style="list-style-type: none"> <li>Drought buffer</li> <li>Operational flexibility buffer</li> <li>Conditions prior to 2015</li> </ul>	<ul style="list-style-type: none"> <li>Drought buffer</li> <li>Operational flexibility buffer</li> <li>Conditions prior to 2015</li> </ul>	<ul style="list-style-type: none"> <li>Drought buffer</li> <li>Operational flexibility buffer</li> <li>Conditions prior to 2015</li> </ul>	<ul style="list-style-type: none"> <li>To be determined</li> </ul>	<ul style="list-style-type: none"> <li>To be determined</li> </ul>
<b>Planning Principles</b> <sup>6</sup>	<ul style="list-style-type: none"> <li>All stakeholders, and other agencies/entities will cooperatively develop the GSP.</li> <li>The planning process will be inclusive and transparent.</li> <li>The GSP will use empirical data and quantitative objectives.</li> <li>The GSP will be considerate of the diverse needs of the basin's population.</li> <li>The GSP will work towards sustaining economic activity in the region.</li> </ul>				

**Notes:**

- Sustainability Goal** refers to the existence and implementation of one or more groundwater sustainability plans that achieve sustainable groundwater management by identifying and causing the implementation of measures targeted to ensure that the applicable basin is operated within its sustainable yield.
- Sustainability Indicator** refers to any of the effects caused by groundwater conditions occurring throughout the basin that, when significant and unreasonable, cause undesirable results.
- Undesirable Result** means one or more of the following effects caused by groundwater conditions occurring in the basin: (1) Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. (2) Significant and unreasonable reduction of groundwater storage. (3) Significant and unreasonable seawater intrusion. (4) Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies. (5) Significant and unreasonable land subsidence that substantially interferes with surface land uses. (6) Depletion of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.
- Minimum Threshold** refers to a numeric value for each sustainability indicator used to define undesirable results.
- Measurable Objective** refers to specific, quantifiable goals for the maintenance or improvement of specified groundwater conditions that have been included in an adopted Plan to achieve the sustainability goal for the basin within 20 years. Uses the same metric as defined by the minimum threshold for the same sustainability indicator.
- Planning Principles** describes "how" the planning process will be conducted and provide overall guidance.

# Cuyama Basin Groundwater Sustainability Agency

## Draft Undesirable Results Narrative

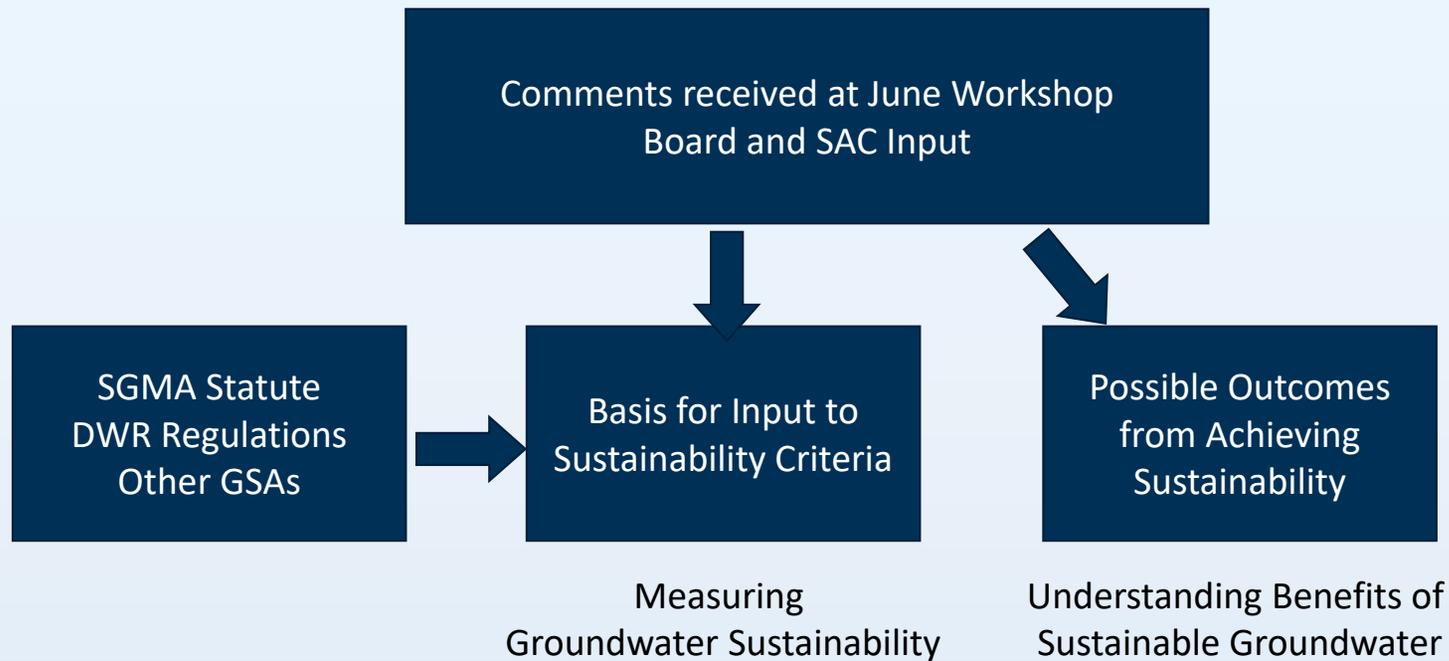
July 26, 2018



# Sustainability Indicators in the Cuyama Basin

Sustainability Indicators	Lowering GW Levels	Reduction of Storage	Land Subsidence	Surface Water Depletion	Degraded Water Quality
					
Metrics Defined by SGMA	Groundwater elevation	Total volume	Rate and extent of subsidence	Volume or rate of depletion	Migration of plumes; constituent concentrations

# Sources of Input for Development of Sustainability Criteria



# Framework for Developing Sustainable Management Criteria (see handout)

## ■ Groundwater Elevation and Groundwater Storage

Sustainability Indicator <sup>2</sup>	I. GROUNDWATER ELEVATION	II. GROUNDWATER STORAGE
<b>Undesirable Result Considerations</b> <sup>3</sup>	<p>Chronic lowering of groundwater levels indicating unreasonable depletion of supply, which results in:</p> <ul style="list-style-type: none"> <li>• Adverse impacts to the viability of agriculture, and the agricultural economy.</li> <li>• Adverse impacts to the viability of CSD and other domestic water users.</li> <li>• Dewatering of wells.</li> </ul>	<p>Unreasonable reduction of groundwater storage, which results in:</p> <ul style="list-style-type: none"> <li>• Adverse impacts to the viability of agriculture, and the agricultural economy.</li> <li>• Adverse impacts to the viability of CSD and domestic uses.</li> <li>• Dewatering of wells.</li> </ul>
<b>Minimum Threshold Considerations</b> <sup>4</sup>	<ul style="list-style-type: none"> <li>• Well depths</li> <li>• Historic recorded lows in monitoring wells</li> <li>• Conditions in spring of 2015</li> </ul>	<ul style="list-style-type: none"> <li>• Well depths</li> <li>• Historic recorded lows in monitoring wells</li> <li>• Conditions in spring of 2015</li> </ul>
<b>Measurable Objective Considerations</b> <sup>5</sup>	<ul style="list-style-type: none"> <li>• Drought buffer</li> <li>• Operational flexibility buffer</li> <li>• Conditions prior to 2015</li> </ul>	<ul style="list-style-type: none"> <li>• Drought buffer</li> <li>• Operational flexibility buffer</li> <li>• Conditions prior to 2015</li> </ul>

# Framework for Developing Sustainable Management Criteria (see handout)

## ■ Water Quality

Sustainability Indicator <sup>2</sup>	III. WATER QUALITY
<b>Undesirable Result Considerations</b> <sup>3</sup>	Significant and unreasonable degraded water quality that adversely impacts drinking, irrigation, industrial, and environmental uses: <ul style="list-style-type: none"> <li>• Drinking</li> <li>• Domestic uses (Swamp coolers, laundry)</li> <li>• Agriculture</li> </ul>
<b>Minimum Threshold Considerations</b> <sup>4</sup>	<ul style="list-style-type: none"> <li>• Salinity MCL (Maximum Contaminant Level) for drinking water and agriculture</li> <li>• Arsenic MCL for drinking water</li> <li>• Conditions in spring of 2015</li> </ul>
<b>Measurable Objective Considerations</b> <sup>5</sup>	<ul style="list-style-type: none"> <li>• Drought buffer</li> <li>• Operational flexibility buffer</li> <li>• Conditions prior to 2015</li> </ul>

# Framework for Developing Sustainable Management Criteria (see handout)

## ■ Land Subsidence

Sustainability Indicator <sup>2</sup>	IV. LAND SUBSIDENCE
<b>Undesirable Result Considerations</b> <sup>3</sup>	Significant and unreasonable land subsidence that substantially interferes with surface land uses causing: <ul style="list-style-type: none"> <li>• Damage to public and private infrastructure (e.g., roads and highways, pipelines, utilities, public buildings, residential and commercial structures).</li> <li>• Permanent loss of groundwater storage capacity.</li> </ul>
<b>Minimum Threshold Considerations</b> <sup>4</sup>	<ul style="list-style-type: none"> <li>• Land subsidence rate and magnitude indicating in-elastic land subsidence at established monuments.</li> <li>• Conditions in spring of 2015</li> </ul>
<b>Measurable Objective Considerations</b> <sup>5</sup>	<ul style="list-style-type: none"> <li>• To be determined</li> </ul>

# Framework for Developing Sustainable Management Criteria (see handout)

## ■ Surface Water Connectivity

Sustainability Indicator <sup>2</sup>	V. SURFACE WATER CONNECTIVITY
<b>Undesirable Result Considerations</b> <sup>3</sup>	Significant and unreasonable depletions of interconnected surface water that results in: <ul style="list-style-type: none"> <li>• Adverse impacts to agricultural uses</li> <li>• Adverse impacts to riparian habitat</li> </ul>
<b>Minimum Threshold Considerations</b> <sup>4</sup>	<ul style="list-style-type: none"> <li>• Based on an amount of water contributed from surface water to groundwater.</li> </ul>
<b>Measurable Objective Considerations</b> <sup>5</sup>	<ul style="list-style-type: none"> <li>• To be determined</li> </ul>

# Undesirable Results Narrative Document

- Draft GSP Section provided to SAC and Board for review as part of Board Packet on July 20<sup>th</sup>
- Undesirable Results Narrative describes:
  - Draft Undesirable Results Statements
  - Related Regulations and Best Management Practices
  - Undesirable Results Regulations
  - Sustainable Management Criteria Best Management Practices
- Comments are due on Friday, August 17



TO: Standing Advisory Committee  
Agenda Item No. 8e

FROM: Charles Gardiner and Mary Currie, Catalyst Group

DATE: July 26, 2018

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 Groundwater Sustainability Plan (GSP) outreach consultant the Catalyst Group's stakeholder engagement update is provided as Attachment 1 and the second newsletter is provided as Attachment 2.

Attachment 1

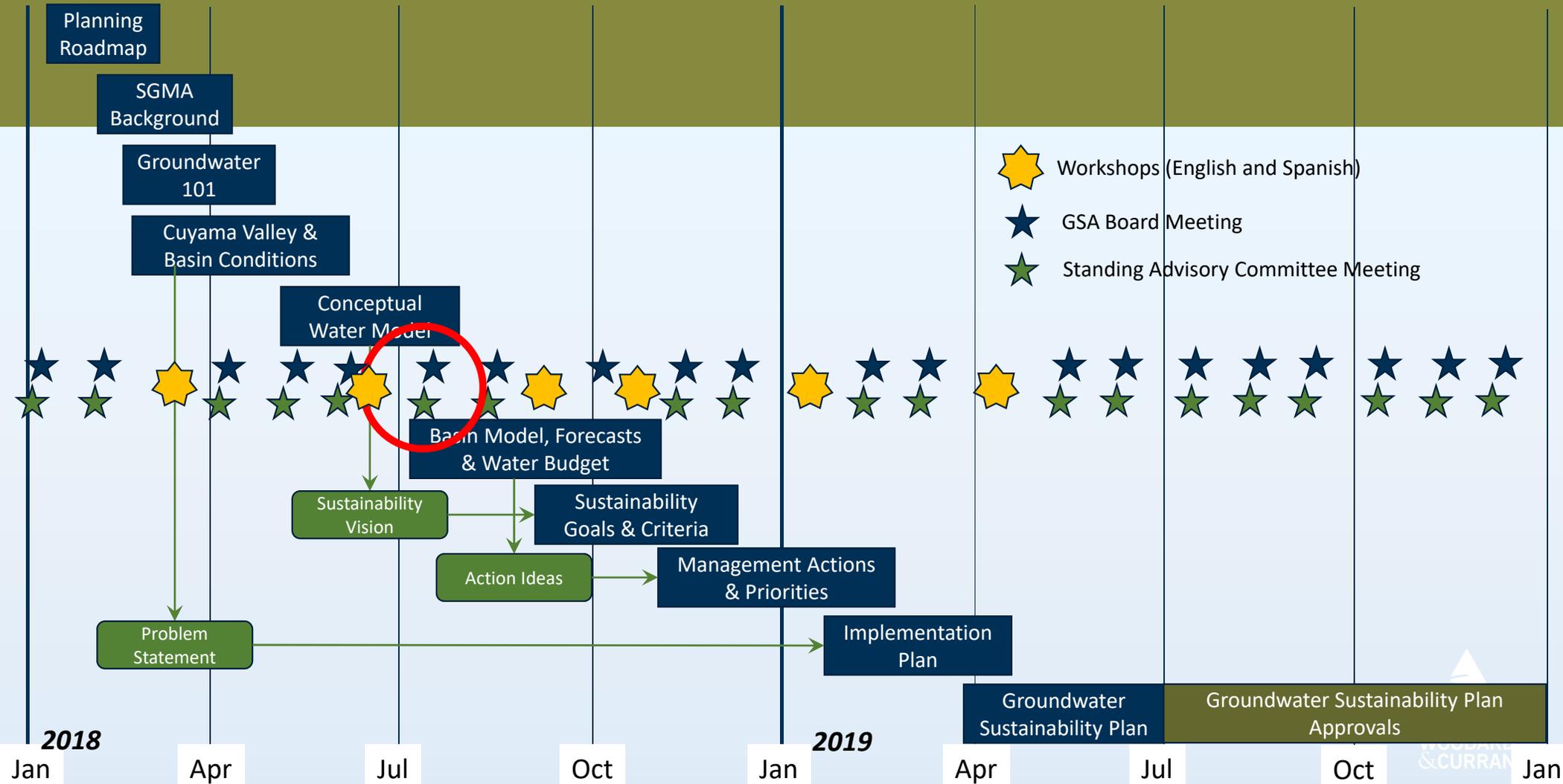
## Cuyama Basin Groundwater Sustainability Agency

# Groundwater Sustainability Plan Stakeholder Engagement Update

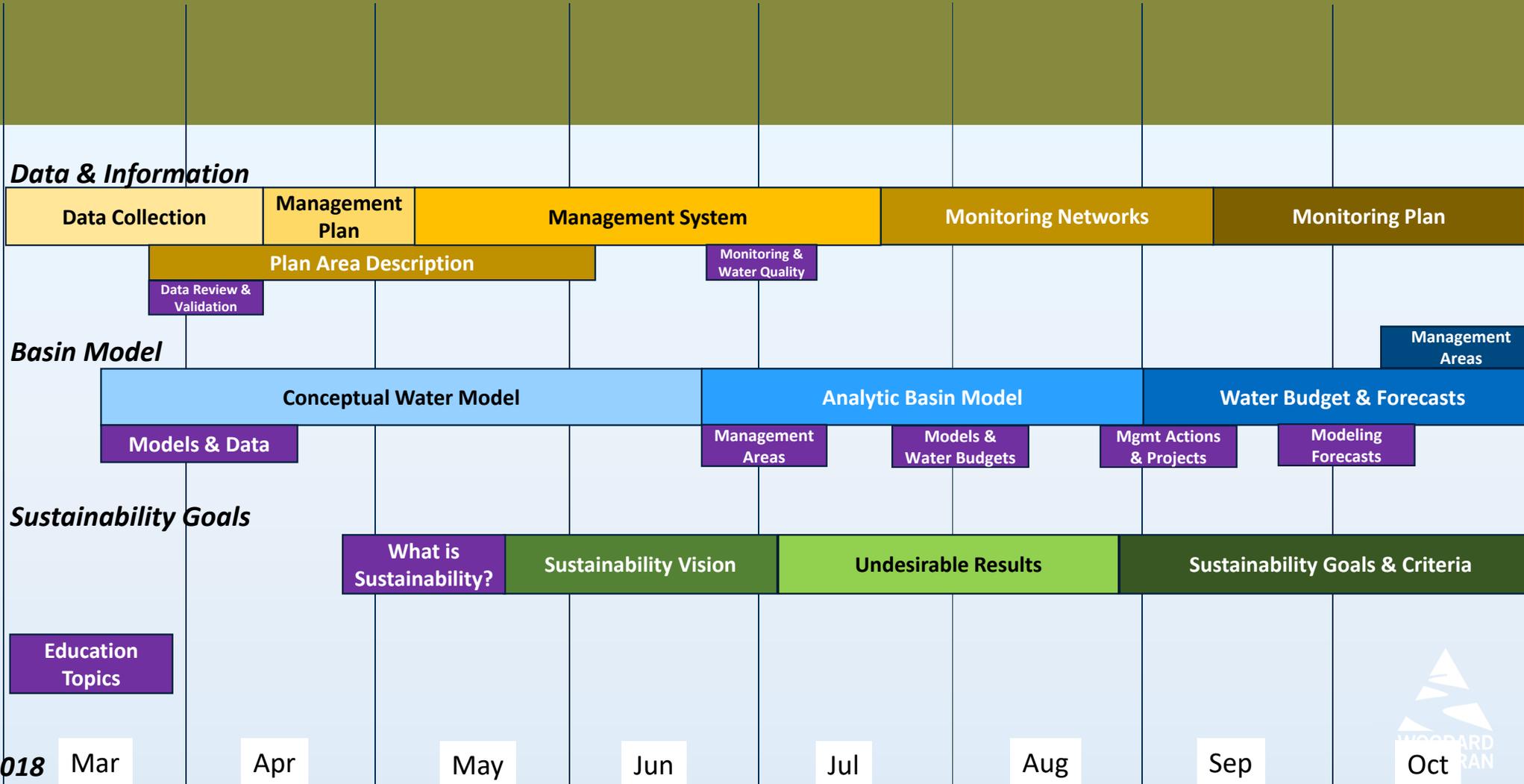
June 26, 2018



# Cuyama Basin Groundwater Sustainability Plan – Planning Roadmap



# Cuyama Basin Groundwater Sustainability Plan – Discussion Topics



# Outreach Activities

- **Next Community Workshops, September 5, 6:30 to 8:30 pm at Cuyama Valley Recreation District**
  - Email to GSP contact list and postcard to property owners
- **Planned Community Workshops Topics include:**
  - Initial Model Results – Historical Use
  - Assumptions for Current and Future Conditions
  - Conceptual Management Areas
  - Introduction to Management Actions and Projects
- **CBGSA Newsletter, Edition 2, August 2018**
  - Included in Cuyama Valley Recreation District Newsletter
  - Mailed to ~100 Post Office boxes in New Cuyama on or about August 1
  - Emailed to GSP contact list and posted on GSA website



# Cuyama Basin Groundwater Sustainability Agency

Cuyama Basin Groundwater Sustainability Newsletter

Edition 2, August 2018

## Groundwater Sustainability Plan for Cuyama Basin is Underway, Everyone is Encouraged to Participate

Groundwater is one of our most critical resources. It is a source for drinking water, it is used for irrigation to grow crops, and wildlife need it to survive. Groundwater is a little tricky because we can't see it. We know that groundwater supplies are less today than they were back in the 1970s. We know that both farming and populations centers across the state have increased over the last few decades, increasing groundwater use significantly.

In 2014, recognizing that groundwater supplies and the communities that depend on them were being affected by increased use, California enacted the **Sustainable Groundwater Management Act**, referred to as SGMA.

After SGMA was enacted, the California Department of Water Resources then developed a list of 21 "critically overdrafted" basins in California – and the Cuyama Basin is one. Critically overdrafted means that more water is being pumped from underground aquifers, where groundwater is stored, than is being replaced by rainfall and surface water recharge (water that percolates from the surface down into an aquifer). Groundwater levels have declined to the point that

water users and natural resources are affected or threatened.

In 2017, the Cuyama Basin Groundwater Sustainability Agency (CBGSA) was formed. The CBGSA is responsible for developing a Groundwater Sustainability Plan (GSP) for the Cuyama Basin. The GSP must be completed by January 31, 2020.

The goal of the GSP is to identify management actions and projects that will bring groundwater use in the Cuyama Basin into balance by 2040. The GSP will be updated every five years through 2040 to ensure that progress is being made toward this goal.



*Photo courtesy of Sunridge Nurseries*

Decisions needed for the GSP development will be made by an eleven-member Board of Directors (Board) for the CBGSA. The Board established a Standing Advisory Committee (SAC) of community members to advise the Board. For a listing of Board and SAC members, visit [www.cuyamabasin.org](http://www.cuyamabasin.org).

The Cuyama Basin is at a critical juncture where change in groundwater management is vital to the economic welfare and quality of life in the area. As a resident, business owner, or employee, your participation in the GSP development is important for the future of the Valley. We look forward to seeing you at the next community workshops (English and Spanish language) on September 5, 2018, 6:30 pm to 8:pm, Cuyama Valley Recreation District. For more information:

[www.cuyamabasin.org](http://www.cuyamabasin.org).

Jim Beck, Executive Director, CBGSA, [jbeck@hgcpm.com](mailto:jbeck@hgcpm.com)

## Progress Made with GSP

***The Plan Area Description presents the water resource experts understanding of the lay of the land in the Cuyama Basin.***

***The Hydrogeologic Conceptual Model provides the context to develop water budget, the numerical model, and the monitoring network.***

Considerable progress has been made – both on the technical aspects and community outreach. The water resource technical experts at the firm of Woodward & Curran have completed the **Plan Area Description** section of the GSP and are nearing completion of the **Hydrogeologic Conceptual Model** portion of the **Basin Settings** section. As sections of the GSP are completed, they will be posted online at <http://cuyamabasin.org/resources.html>

The Plan Area Description is a detailed description of the Cuyama Basin, including major streams and creeks, geologic faults and formations, soil types, groundwater monitoring wells, groundwater production wells, precipitation data, surface water data, land use designations, Cuyama River flows, and groundwater level trends. The Plan Area also describes existing surface water and groundwater monitoring programs, existing water management programs, and land use plans in the Plan Area.



Discussion at the Spanish Language workshop on June 6.

The Hydrogeologic Conceptual Model (HCM) is a simplified, descriptive, conceptual representation of the Cuyama Basin's physical characteristics. The HCM provides the geologic information needed to understand how water moves through the Cuyama Basin. It describes the geology of the area, the water quality of the main aquifers, the topography, surface water, and current recharge options.

The HCM section is part of the **Basin Settings** section of a GSP which has three subsections:

1. Hydrological Conceptual Model
2. Groundwater Conditions. This section describes and presents a) groundwater trends, levels, hydrographs and level contour maps, b) estimates changes in groundwater storage, c) identifies groundwater quality issues, d) addresses subsidence and surface water interconnection.
3. Water Budget: This subsection includes a) the data used in water budget development, b) discusses how the budget was calculated, c) provides water budget estimates for historical conditions, current conditions and projected conditions.

The Groundwater Conditions and the Water Budget sections are under development now and will be discussed at future meetings and posted online when they are available.

## Frequently Asked Questions

### 1. What is a Groundwater Sustainability Plan (GSP)?

The GSP is a “roadmap” for how the Cuyama Basin will achieve long-term groundwater sustainability. The GSP sets long-term goals and targets for the groundwater basin and begins to measure progress towards those goals. The GSP will also identify projects and management actions that will be needed to achieve or maintain sustainable groundwater conditions in the Cuyama Basin by 2040.

### 2. What is a Groundwater Monitoring Plan?

The monitoring of groundwater in key locations in the Cuyama Basin will be an essential tool for achieving long-term groundwater sustainability. A network of monitoring wells will be identified to track what is happening with groundwater levels through to 2040.

### 3. What is a Water Budget?

A water budget estimates all of the water movement and uses in the Cuyama Valley, just as a household budget looks at the money coming in and the money being spent. The water budget includes information about rainfall, surface water flows, groundwater pumping and recharge, and water use for crops and human consumption. The water budget is used to identify and evaluate what actions are needed to get the water budget back in balance by 2040.

## Message from the Standing Advisory Committee (SAC)

One of the key goals of the CBGSA is to encourage the active involvement of diverse social, cultural, and economic elements of the population within the basin during the development and implementation of the GSP. The GSP stakeholder outreach process is aimed at inviting and encouraging input from local farmers, ranchers, businesses, and residents.

At the June 6 workshops, the primary topic was about sustainability and what it means for the Cuyama Valley. The discussion was interactive, as attendees were asked to share their vision for the future of the Cuyama Valley. And what sustainability means to them. There was considerable agreement among the attendees that the future has to be different.

When asked to discuss what is important to the future of the Cuyama Valley, attendees generally shared agreement in these areas:

- ✓ Balanced water use is critical. We need to stop the overdraft.
- ✓ Water is linked to jobs and a healthy environment.
- ✓ Improved water quality is important.
- ✓ Farmers need to use water efficiently. Farming practices must adjust to bring the water use into balance.

Not all of the concerns expressed about the future of water in the Cuyama Basin will be solved by the GSP. It was important that community members shared their vision for the future as this will aid the technical team in identifying groundwater management actions and projects that include community perspectives.

I invite you to join us at a future SAC meeting and the September 5 workshops (English and Spanish), 6:30 to 8:30 pm at the Cuyama Valley Recreation District. For a schedule of upcoming Board, SAC, and workshop topics, visit [www.cuyamabasin.org/resources](http://www.cuyamabasin.org/resources).

I encourage you to add your voice to this important planning for the future of the Cuyama.

*Robbie Jaffe*, Standing Advisory Committee Chair



Interactive discussion about groundwater sustainability at the English Language workshop on June 6.

## SGMA Sustainable Groundwater Management 101

SGMA defines **sustainable groundwater management** as the management and use of groundwater in a

manner that can be maintained without causing undesirable results. The GSP must describe how the Valley will achieve sustainable groundwater management by 2040. The CBGSA Board, SAC, and landowners, farmers, ranchers, and residents will work together over the next few months to assist the technical experts in developing sustainable criteria for managing groundwater in the Cuyama Basin.

The sustainable criteria include the following:

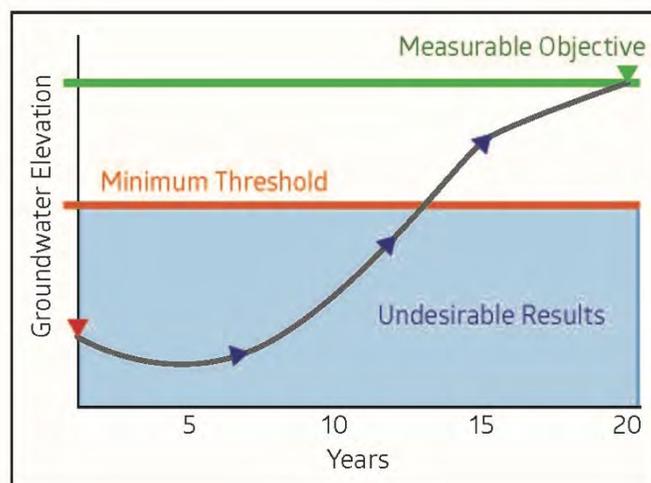
**Identifying Undesirable Results:** SGMA defines five indicators of sustainability applicable to the Cuyama Basin:

1. **Land subsidence**
2. **Further lowering of groundwater levels**
3. **Reduction of groundwater storage**
4. **Surface water depletions**
5. **Water quality degradation**

Undesirable results occur when conditions related to any of the five sustainability indicators become significant and unreasonable. Undesirable results are defined for each sustainability indicator.

**Setting Minimum Thresholds:** The lowest acceptable level for each sustainability indicator without significant and unreasonable undesirable results for the Valley.

**Setting Measurable Objectives:** A management target that provides a usable buffer above the minimum threshold for droughts and other variables in the Valley. Sustainable conditions within a basin are achieved when the CBGSA meets the sustainability criteria and demonstrates that the basin is being operated within its *sustainable yield*. Sustainable yield can only be reached if the basin is not experiencing undesirable results. Undesirable results must be eliminated through the implementation of projects and management actions.



**Figure 1 Above:** Hypothetical example shows how the Minimum Threshold, Measurable Objective, Undesirable Results relate to one another over a 20 years during which the GSP is targeted to bring groundwater into balance in a given region.

## Get Involved, Help Shape Your Future

1. Visit [www.cuyamabasin.org](http://www.cuyamabasin.org) for more information about GSP developments and reports
2. Attend a monthly meeting of the Board of Directors, 1st Wednesday, 4 p.m.
3. Attend a monthly meeting of the Standing Advisory Committee, Thursday preceding the first Wednesday of the month at 4 p.m.
4. Attend the next community workshops (English and Spanish language) are September 5, 6:30 to 8:30 pm, Cuyama Valley Recreation District, 4885 Primero St, New Cuyama.
5. Send an Email: [tblakslee@hgcpm.com](mailto:tblakslee@hgcpm.com) or write a letter: Cuyama Basin GSA, 4900 California Ave, Tower B, 2nd Floor, Bakersfield, CA 93309 or call during normal business hours, Monday - Friday, 9 am to 4 pm: (661) 477-3385

### Attend an Upcoming Meeting

Board of Directors: **August 1, September 5, October 3**

Standing Advisory Committee: **August 30, September 27, October 25**

The Board of Directors and Standing Advisory Committee meetings are held at the Cuyama Family Resource Center, 4689 CA-166, New Cuyama. Meetings are open to the public and public comments are welcomed. Agendas, minutes, and meeting materials are available 72 hours before the meetings at [www.cuyamabasin.org](http://www.cuyamabasin.org).