Monitoring Data Entry

Monitoring data, including groundwater elevation, groundwater quality, streamflow, and precipitation may be input either manually through the data entry tool or by using templates in the import tool. Figure 6-3 is a screenshot of the data entry interface.

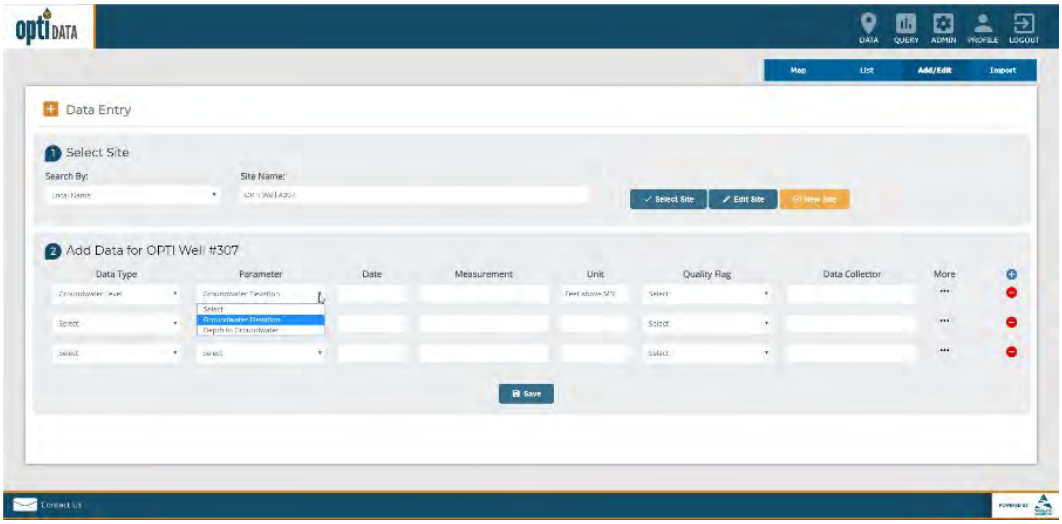

Figure 6-3: Screenshot of Data Entry Tool Interface

The data entry tool allows users to select a site and add data for the site using a web-based form. The following information is collected:

- Data type (e.g. groundwater elevation, groundwater quality, streamflow, or precipitation)
- Parameter for selected data type, units populate based on selection
- Date of measurement
- Measurement value
- Quality flag (i.e., quality assurance description for the measurement such as “Pumping,” “Can’t get tape in casing,” etc. as documented by the data collector)
- Data collector
- Supplemental information based on data type (i.e., reference point elevation, ground surface elevation, etc.)

Data import templates include the same data entry fields and are available for download from the DMS. The Microsoft Excel-based templates contain drop-down options and field validation similar to the data entry interface.

Data Validation

Quality control helps ensure the integrity of the data added to the DMS. The entities that maintain the monitoring data loaded into the DMS may have performed previous validation of that data; no effort was made to check or correct that previous validation, and it was assumed that all data records provided were valid. While it is nearly impossible to determine complete accuracy of the data added to the DMS since the DMS cannot detect incorrect measurements due to human error or mechanical failure, it is possible to verify that the data input into the DMS meets some data quality standards. This helps promote user confidence in the data both stored and published for visualization and analysis.

Upon saving the data via the data entry interface or by importing the data using the Microsoft Excel templates, the following data validation checks are performed by the DMS:

- **Duplicate measurements** – The DMS checks for duplicate entries based on the unique combination of site, data type, date, and measurement value.
- **Inaccurate measurements** – The DMS compares data measurements against historical data for the site and flags entries that are outside the historical minimum and maximum values.
- **Incorrect data entry** – Data field entries are checked for correct data type (e.g., number fields do not include text, date fields contain dates, etc.).

Users are alerted to any validation issues and may either update the data entries or accept the values and continue with the entry/import. Users may access partially completed import validation through the import logs that are saved for each data import. The partially imported datasets are identified in the import log with an incomplete icon under the status field. This allows a second person to also access the imported data and review prior to inclusion in the DMS.

6.2.3 Visualization and Analysis

Transparent visualization and analysis tools enable use of the same data and methodologies, allowing stakeholders and neighboring GSAs to use the same data and methods for tracking and analysis. In the DMS, data visualization and analysis are performed in both map and list views, as described below.

Map View

The map view displays all sites (i.e., groundwater wells, stream gages, precipitation meters, etc.) in a map-based interface (Figure 6-4). The sites are color-coded based on associated data type and may be filtered by different criteria, such as number of records or monitoring entity. Users may click on a site to view the site detail information and associated data. The monitoring data records are displayed in both chart and table formats. In these views, the user may view different parameters for the data type. The chart and table may be updated to display selected date ranges, and the data may be exported to Microsoft Excel.

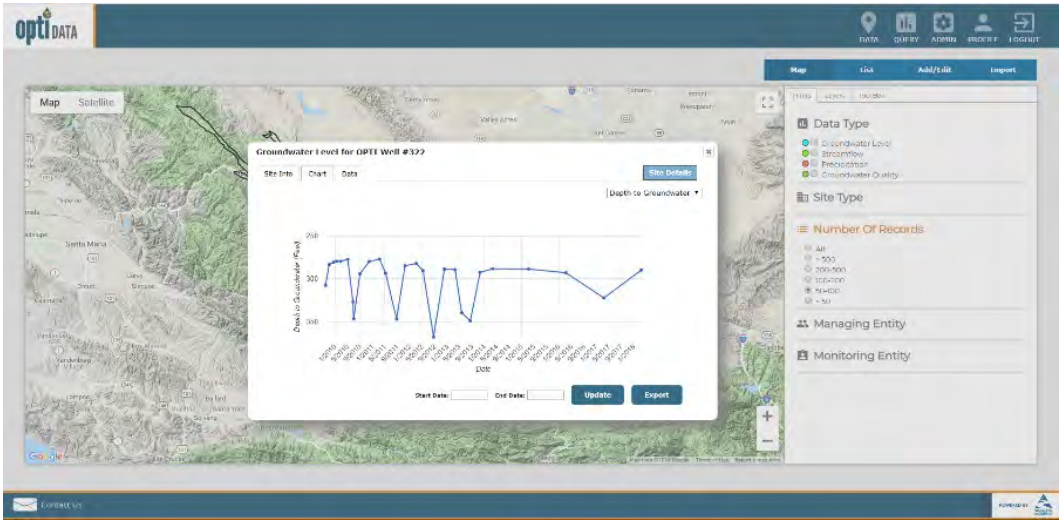

Figure 6-4: DMS Map View

List View

The list view displays all sites (i.e., groundwater wells, stream gages, precipitation meters, etc.) in a tabular interface. The sites are listed according to names and associated entities. The list can be sorted and filtered by different criteria such as number of records or monitoring entity. Similar to the map view, users may click on a site to view the site detail information and associated data. The monitoring data records are displayed in both chart and table formats. In these views, the user may view different parameters for the data type. The chart and table may be updated to display selected date ranges, and the data may be exported to Microsoft Excel.

Analysis Tools

The toolbox is available in the map view and offers administrative and entity users access to the well tiering tool to support monitoring plan development. The DMS' flexible platform allows for the development and addition of future analysis tools, including contouring, total water budget visualization, and management area tracking.

6.2.4 Query and Reporting

The DMS has the ability to format and export data and analysis at different levels of aggregation, and in different formats, to support local decision making and for submission to various statewide and local programs (i.e., SGMA, CASGEM Program, GAMA Program, etc.).

Ad Hoc Query

Data in the DMS can be queried and reported using the query tool. The query tool includes the ability to build ad hoc queries using simple options. The data can be queried by the following criteria:

- Monitoring or managing entity
- Site name
- Data type

Once the type of option is selected, the specific criteria may be selected (e.g., groundwater elevation greater than 100 feet). Additionally, users may include time periods as part of the query. The query options can build upon each other to create reports that meet specific needs. Queries may be saved and will display in the saved query drop-down menu for future use.

Query results are displayed in a map format and a list format. In both the map and list views, the user may click on a well to view the associated data. Resulting query data may be exported to Microsoft Excel.

Standard Reports

The DMS can be configured to support wide-ranging reporting needs through the reports tool. Standard report formats may be generated based on a predetermined format and may be created at the click of a button. These report formats may be configured to match state agency requirements for submittals, including annual reporting of monitoring data that must be submitted electronically on forms provided by DWR.

6.3 Data Included in the DMS

Because many monitoring programs operate in the Basin at both the local and state/federal levels, a cross-sectional analysis was conducted during GSP development in the Cuyama Basin to document and assess the availability of water-related data in the Basin. Statewide and federal databases that provide data relevant to Basin were also assessed.

The DMS can be configured to include a wide variety of data types and associated parameters. Based on the analysis of existing datasets from the Basin and GSP needs, Table 6-3 lists the data that are identified and currently configured in the DMS. The DMS includes 730 wells, of which 488 have historical groundwater elevation data and 294 have historical groundwater quality measurements.

Table 6-3: Data Types and Their Associated Parameters Configured in the DMS

Data Type	Parameter	Units	Currently Has Data in DMS
Groundwater Elevation	Depth to Groundwater	feet	Yes
	Groundwater Elevation	feet	Yes
Groundwater Quality	TDS	mg/L	Yes
	Nitrate (NO_3)	mg/L	Yes
	Arsenic	µg/L	Yes
	Benzene	µg/L	--
	Chloride	mg/L	--
	Hexavalent Chromium (Cr(VI))	µg/L	--
	1,2-Dibromo-3-Chloropropane (DBCP)	µg/L	--
	Methyl Tertiary-Butyl Ether (MTBE)	µg/L	--
	Perchlorate	µg/L	--
	Tetrachloroethylene (PCE)	µg/L	--
	Specific Electrical Conductivity (SC)	micromhos per centimeter (µmhos/cm)	--
	1,1,1-Trichloroethane (111-TCA)	µg/L	--
	Trichloroethylene (TCE)	µg/L	--
	1,2,3-Trichloropropane (123-TCP)	µg/L	--
	Chloride (CL)	parts per million (ppm)	--
	Electrical Conductivity (EC)	millimhos (mmhos)	--
	TDS	ppm	--
Streamflow	Streamflow	cubic feet per second (cfs)	Yes
Precipitation	Precipitation	inches	Yes
	Reference Evapotranspiration (ETo)	--	--
	Average Air Temperature	--	--
Subsidence	Subsidence	vertical (in millimeters)	Yes

Additional data types and parameters can be added and modified as the DMS grows over time.

The datasets were collected from a variety of sources, as shown in Table 6-4. Each dataset was reviewed for overall quality and consistency prior to consolidation and inclusion in the database. In many cases, there were discrepancies between the ground surface elevation (GSE) of a well from different sources. In these cases of discrepancy, the GSE of the well was updated using the USGS digital elevation model (DEM).

The groundwater wells shown in the DMS are those that included datasets provided by the monitoring data sources for groundwater elevation and quality. These do not include all wells currently used for production, and may include wells historically used for monitoring that do not currently exist. Care was taken to minimize duplicate well information in the DMS. As datasets were consolidated, sites were evaluated based on different criteria (e.g., naming conventions, location, etc.) to determine if the well was included in a different dataset. Data records for the wells were then associated with the same well, where necessary.

After the datasets were consolidated and reviewed for consistency, they were loaded into the DMS. Using the DMS data viewing capabilities, the datasets were then reviewed for completeness and consistency to ensure imports were successful.

Table 6-4: Sources of Data Included in the Data Management System

Data Source	Datasets Collected	Date Collected	Activities Performed
US Geological Survey (USGS)	• Groundwater Elevation • Streamflow • Precipitation	5/4/2018	• Removed duplicate records • Recalculated GSE based on DEM on select wells
DWR CASGEM Program/WDL	• Groundwater Elevation	4/18/2018	• Removed duplicate records • Recalculated GSE based on DEM on select wells
San Luis Obispo County	• Groundwater Elevation • Groundwater Quality	4/2/2018	• Removed duplicate records • Recalculated GSE based on DEM on select wells
SBCWA	• Groundwater Elevation • Precipitation	3/27/2018	• Removed duplicate records • Recalculated GSE based on DEM on select wells
Ventura County	• Groundwater Elevation • Groundwater Quality • Precipitation	3/8/2018	• Removed duplicate records • Recalculated GSE based on DEM on select wells
DWR Natural Resources Agency	• Groundwater Quality	6/14/2018	• Removed duplicate records
GeoTracker	• Groundwater Quality	6/5/2018	• Removed duplicate records
CEDEN	• Groundwater Quality	8/29/2018	• Removed duplicate records
National Water Quality Monitoring Council	• Groundwater Quality	6/1/2018	• Removed duplicate records
UNAVCO	• Ground Surface Elevation	3/12/2018	• None
Local Data	• Groundwater Elevation • Groundwater Quality • Other	Various	• Removed duplicate records • Recalculated GSE based on DEM on select wells

7 Projects and Management Actions

7.1 Introduction

This chapter of the Cuyama Basin Groundwater Sustainability Agency's (CBGSA's) *Groundwater Sustainability Plan* (GSP) includes the Projects, Management Actions and Adaptive Management information that satisfies Sections 354.42 and 354.44 of the Sustainable Groundwater Management Act (SGMA) regulations.[1] These projects and their benefits will help achieve sustainable management goals in the Cuyama Groundwater Basin (Basin).

7.2 Management Areas

The CBGSA has designated two areas in the Basin as management areas: the Central Basin Management Area and the Ventucopa Management Area, which are both defined as regions with modeled overdraft conditions greater than 2 feet per year that are projected by the model to drop below minimum threshold levels before 2040 (see Figure 7-1). Management actions and projects within these management areas may be managed by the CBWD pursuant to any agreement with the CBGSA. Future changes in management area boundaries will be considered based on updates to numerical modeling as additional information is collected. The Central Basin Management Area is located in the middle of the CBGSA area, and includes the community of Cuyama as well as the surrounding agricultural land uses that are located in areas with greater than 2 feet overdraft. While the Cuyama Community Service District (CCSD) service area also has modeled overdraft exceeding 2 feet, it is not included in the management area because it is a domestic user of relatively small quantity (i.e., about 150 AFY). The Ventucopa Management Area is located south of the Central Basin Management Area and includes the community of Ventucopa. The two management areas are generally separated from one another by the Santa Barbara Canyon Fault. Both are located nearly entirely within the boundaries of the Cuyama Basin Water District. The remaining areas in the Basin are not included in a management area, and generally operate with balanced groundwater pumping and recharge, based on modeling of Basin water budgets.

[1] SGMA's requirements for GSPs can be read here: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/GSP_Emergency_Regulations.pdf

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New Cuyama

166

Cuyama

Bell

Foothill

Foothill

33

N

0 1.25 2.5 5 Miles

Figure 7-1 - Cuyama GW Basin
Average Groundwater Level Change

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

November 2019

WOODARD &CURRAN

Legend

- Cuyama Basin
- CuyamaCSD_Boundary
- Highways
- Foothill and Bell Roads
- Towns
- Cuyama River
- Streams
- Central Management Area
- Ventucopa Management Area

Average Annual Modeled Groundwater Level Change (ft./year)

- -7.7 to -5
- -5 to -4
- -4 to -3
- -3 to -2
- -2 to -1
- -1 to -0.2
- >-0.2

Final Exported 11/19/2019 By: creighton_ustin C:\Users\creighton\OneDrive - Woodard & Curran_PCFolders\Desktop\Current Projects\01078-003 - Cuyama\01_Local Cuyama GIS_2018\08\31\MXDs\Working\GWL Change Maps\Report\Format A\vGWLChange_AdminBoundaries.mxd

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7.3 Overview of Projects and Management Actions

The CBGSA evaluated a range of potential projects and management actions to help address overdraft and move the Basin toward sustainability. Evaluation of the identified projects and management actions has resulted in a set of proposed activities. These proposed activities are shown in Table 7-1, along with their current status, potential timing, and anticipated costs. Benefits are summarized in Section 7.2 and discussed in detail in Sections 7.3 and 7.4.

Table 7-1: Proposed Projects, Management Actions, and Adaptive Management Strategies

Activity	Current Status	Anticipated Timing	Estimated Cost[a]
Project 1: Flood and Stormwater Capture	Conceptual project evaluated in 2015	• Feasibility study: 0 to 5 years • Design/Construction: 5 to 15 years	• Study: $1,000,000 • Flood and Stormwater Capture Project: $600-$800 per AF ($2,600,000 – 3,400,000 per year)
Project 2: Precipitation Enhancement	Initial Feasibility Study completed in 2016	• Refined project study: 0 to 2 years • Implementation of Precipitation Enhancement: 0 to 5 years	• Study: $200,000 • Precipitation Enhancement Project: $25 per AF ($150,000 per year)
Project 3: Water Supply Transfers/Exchanges	Not yet begun	• Feasibility study/planning: 0 to 5 years • Implementation in 5 to 15 years	• Study: $200,000 • Transfers/Exchanges: $600-$2,800 per AF (total cost TBD)
Project 4: Improve Reliability of Water Supplies for Local Communities	Preliminary studies/planning complete	• Feasibility studies: 0 to 2 years • Design/Construction: 1 to 5 years	• Study: $100,000 • Design/Construction: • $1,800,000
Management Action 1: Basin-Wide Economic Analysis	Not yet begun	2020-2021	$100,000
Management Action 2: Pumping Allocations in Central Basin Management Area	Preliminary coordination begun	• Pumping Allocation Study completed: 2022 • Allocations implemented: 2023 through 2040	• Plan: $300,000 • Implementation: $150,000 per year
Adaptive Management	Not yet begun	Only implemented if triggered; timing would vary	TBD

Table 7-1: Proposed Projects, Management Actions, and Adaptive Management Strategies			
Activity	**Current Status**	**Anticipated Timing**	**Estimated Cost[a]**

[a] Estimated cost based on planning documents and professional judgment
AF = acre-feet

7.3.1 Addressing Sustainability Indicators

The proposed projects would contribute toward eliminating the projected groundwater overdraft described in the Chapter 2's Water Budget section and in maintaining groundwater levels above those identified in Chapter 5 by reducing groundwater pumping or enhancing net recharge into the groundwater aquifer. The sustainability indicators are measured directly or by proxy, with groundwater elevation used as either the direct or proxy indicator for all sustainability indicators with the exception of water quality and subsidence. Table 7-2 summarizes of how the projects and management actions in this GSP will address the applicable sustainability indicators for the Basin. Seawater intrusion is not applicable to the Basin, due to distance from the Pacific Coast.

Physical benefits of the projects and management actions in the GSP are described under each project and action in Section 7.3 and Section 7.4, below.

Table 7-2: Summary of How Projects and Management Actions Address Sustainability Indicators

Activity	Sustainability Indicator				
	Chronic Lowering of Groundwater Levels	Reduction of Groundwater Storage	Degraded Water Quality	Subsidence	Depletions of Interconnected Surface Water
Project 1: Flood and Stormwater Capture	Would increase recharge in the Basin, directly contributing to groundwater levels.	Would increase recharge in the Basin, directly contributing to groundwater storage.	Would contribute to groundwater levels through increased recharge, reducing groundwater quality degradation associated with declining groundwater levels.	Would support maintaining groundwater levels in the Basin, reducing potential for subsidence.	Increasing groundwater recharge with flood and stormwater capture would reduce the potential for groundwater levels to decline and negatively impact surface water flows.
Project 2: Precipitation Enhancement	Increases precipitation and associated groundwater recharge; reduces groundwater pumping because increased precipitation would reduce irrigation needs.	Increases volume of stored groundwater; reduces groundwater pumping	Would increase groundwater recharge, reducing groundwater quality degradation associated with declining groundwater levels.	Reduced groundwater pumping and increased groundwater recharge reduces the cause of subsidence	Would increase surface water flows in the Basin and increase groundwater recharge, which together would reduce the potential for negative surface water flow impacts associated with decreasing groundwater levels.
Project 3: Water Supply Transfers/Exports	Would allow for increased stormwater capture without interfering with downstream water rights, directly contributing to groundwater levels.	Would allow additional groundwater recharge of stormwater, directly contributing to groundwater storage.	Would allow for increased groundwater recharge, reducing groundwater quality degradation associated with lowering of groundwater levels.	Would increase potential groundwater recharge, reducing the potential for subsidence.	Would increase groundwater recharge, which would reduce the potential for negative surface water flow impacts associated with decreasing groundwater levels.
Project 4: Improve Reliability of Water Supplies for Local Communities	Would provide an alternate pumping supply for CCSD, CMWC and VWSC customers to reduce water supply reliability issues caused by historical groundwater level reductions in the Basin.	N/A	Provides for improved water quality in the potable water system, and through construction of compliant wells, reduces potential for groundwater quality impacts of improperly designed/constructed wells and failing wells within CCSD and VWSC systems.	N/A	N/A
Management Action 1: Basin-Wide Economic Analysis	Would evaluate the long-term economic impacts of project implementation, which will allow the region to plan for economic changes if implementation is pursued and help avoid economically catastrophic decision-making that could result in dramatic changes to groundwater use and levels.				
Management Action 2: Pumping Allocations in Central Basin Management Area	Would limit groundwater pumping, with allocations decreasing over time until groundwater pumping reaches sustainability	Reducing groundwater pumping will help decrease the reduction of groundwater storage associated with high levels of pumping.	Reducing groundwater pumping will help alleviate groundwater degradation associated with lowering of groundwater levels.	Reduced groundwater pumping would reduce the risk of subsidence associated with lowering of groundwater levels.	Reduced groundwater pumping would help protect groundwater levels, thereby reducing the potential for negative impacts to surface water flows associated with lowering groundwater levels.
Adaptive Management	Adaptive management actions would be triggered if groundwater levels decrease sufficiently or do not demonstrate adequate recovery as projects are implemented. Adaptive management projects that are implemented would be selected because they would help address these sustainability indicators.				

Notes:
CCSD = Cuyama Community Services District
CMWC = Cuyama Mutual Water Company
VWSC = Ventucopa Water Supply Company

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7.3.2 Overdraft Mitigation

The proposed projects and management actions would support maintenance of groundwater levels above minimum thresholds through increased recharge or through reductions in pumping. Overdraft is caused when pumping exceeds recharge and inflows in the Basin over a long period of time. Improving the water balance in the Basin will help to mitigate overdraft.

7.3.3 Water Balance Management for Drought Preparedness

Communities in the Basin rely on groundwater to meet water needs. During drought, groundwater becomes more important due to limited precipitation. Projects that support groundwater levels through increased recharge help to protect groundwater resources for use during future drought, as well as help protect the Basin from the impacts of drought on groundwater storage. Projects that reduce pumping will help manage the Basin for drought preparedness by reducing demands on the Basin both before and during drought, supporting groundwater levels in non-drought years, and decreasing the impacts of drought on users, reducing the need to increase pumping when precipitation levels are low.

7.4 Projects

Projects included in this GSP are generally capital projects that could be implemented by the CBGSA or its member agencies on a volunteer basis that provide physical benefits to enhance supplies.

7.4.1 Flood and Stormwater Capture

Flood and stormwater capture would include infiltration of stormwater and flood waters to the groundwater basin using spreading facilities (recharge ponds or recharge basins) or injection wells. Spreading basins are generally more affordable than injection wells because water does not need to be treated prior to recharge into the Basin. While specific recharge areas have not yet been selected, areas of high potential for recharge were identified north and east of the Cuyama River near the Ventucopa Management Area, as well as in select areas of the Central Management Area. It is likely that locating spreading facilities near the Cuyama River represents the easiest method of capturing and recharging flood and stormwaters. Agricultural lands may be used in lieu of or in addition to specialized spreading facilities, or installation of “mini dams” on the Cuyama river to slow flows and increase in-stream recharge. The likeliest of these flood and stormwater capture and recharge options to be implemented is the use of spreading basins, because it will maximize volumes of water captured and recharged into the groundwater basin. Agricultural spreading is usually achieved through intentional overirrigation; in the Basin, agricultural irrigation uses groundwater, and new facilities would still be required to implement agricultural spreading that would not negatively impact groundwater levels. Mini dams could have negative environmental impacts and would not capture as much flow as dedicated spreading basins.

This project would include development of a feasibility study to identify specific flood capture and recharge locations and to refine the potential yield and cost, as well as determine the downstream impacts of implementation and how to address those potential impacts..

Public Notice and Outreach

Project notice and outreach would likely be conducted during implementation of a flood and stormwater capture project. Some of this outreach would likely occur as part of the California Environmental Quality Act (CEQA) process (see below), though additional outreach may be conducted depending on public perception of the proposed project. Public notice and outreach is not anticipated during development of the feasibility study, beyond potential outreach to landowners whose property is identified as potential sites for spreading facilities.

Permitting and Regulatory Processes

Completion of a feasibility study would not require any permits or regulatory approvals beyond approval of the governing board for the agency funding the study or contracting with any potential consultant who may be retained to complete the analysis.

Implementation of a flood and stormwater capture and recharge project would require construction permits, streambed alteration agreements from the California Department of Fish and Wildlife for diversions from the Cuyama River, CEQA compliance, and potential 401 permits from U.S. Army Corps of Engineers. Additional permits may be required to complete construction and initiate operation of spreading facilities. The CBGSA would need to secure easements to or purchase the land for the spreading facilities. Additionally, the CBGSA may need to obtain surface water rights agreements from the California State Water Resources Control Board. Any water rights would need to address water rights existing downstream water rights.

Project Benefits

Implementation of flood and stormwater capture projects would provide additional infiltration into the Basin, which would increase the volume of groundwater in the Basin, reducing overdraft and increasing available supply. The 2015 *Long Term Supplemental Water Supply Alternatives Report* (Santa Barbara County Water Agency [SBCWA], 2015), completed an analysis of potential stormwater recharge options along multiple rivers in Santa Barbara County, including Cuyama River. The analysis assumed the Cuyama River would experience sufficient flows for stormwater recharge three of every 10 years, and a maximum available stormwater volume during those events as 14,700 acre-feet (AF). Capturing this volume of water would require 300 acres of land for spreading facilities, and could provide a up to 4,400 acre-feet per year (AFY) of stormwater (averaged over 10 years), assuming the maximum event year supply is captured. Benefits of an implemented floodwater/stormwater capture project would be measured by the volume of flow entering the spreading facility, less an assumed percentage of evaporative loss.

Actual benefits could be lower once evaporative loss is accounted for, and if the final design for spreading facilities is not sized for the maximum storm event, or if the maximum event year is not realized as frequently as anticipated. If coupled with precipitation enhancement (see Section 7.3.2), additional benefits may be realized, though some overlap in benefits may occur.

Project Implementation

The circumstance of implementation for a flood or stormwater capture project would be if the refined feasibility study recommends a project and finds it is both cost effective and would result in a meaningful volume of incremental supply.

Completion of the feasibility study would be undertaken by the CBGSA, which would hire a consultant to perform the analysis. In addition, the CBGSA would initiate coordination activities with downstream users to evaluate the potential for a stormwater capture project in the Basin to affect downstream users' supply reliability and develop potential projects or actions to offset supplies that may be diverted by stormwater capture and recharge in the Basin.

Implementation of spreading facilities for stormwater capture would require land acquisition, construction of spreading facilities, diversion from Cuyama River, and associated pipelines and pumps. If pursued, the CBGSA anticipates implementing the project either directly or through one of its member agencies.

Supply Reliability

The success of a flood and stormwater capture project depends on the frequency of precipitation events that result in sufficient flows for capture and recharge, the recharge capacity of the spreading facilities, and the location of flows in relation to the diversion point to the spreading facilities. Rainfall is generally limited to November through March in the region, and total rainfall is low, averaging 13 inches over the last 50 years (see Water Budget section of Chapter 2). The project would allow for the limited surface water flows to be captured and used, and if implemented, a flood and stormwater capture project would improve supply reliability in the Basin by increasing groundwater recharge, allowing more water to be available to Basin users.

Legal Authority

The CBGSA has the legal authority to conduct a feasibility study for flood and stormwater capture and recharge project. Once a preferred alternative is identified by the feasibility study, the project would be implemented by the CBGSA or one of its member agencies . Implementation of the project would also depend on the outcomes of a water rights evaluation to clarify the CBGSA's ability capture flood and stormwater without impacting downstream water rights. If this project would affect downstream water rights, the CBGSA would need to negotiate an exchange with downstream users to avoid adverse downstream effects.

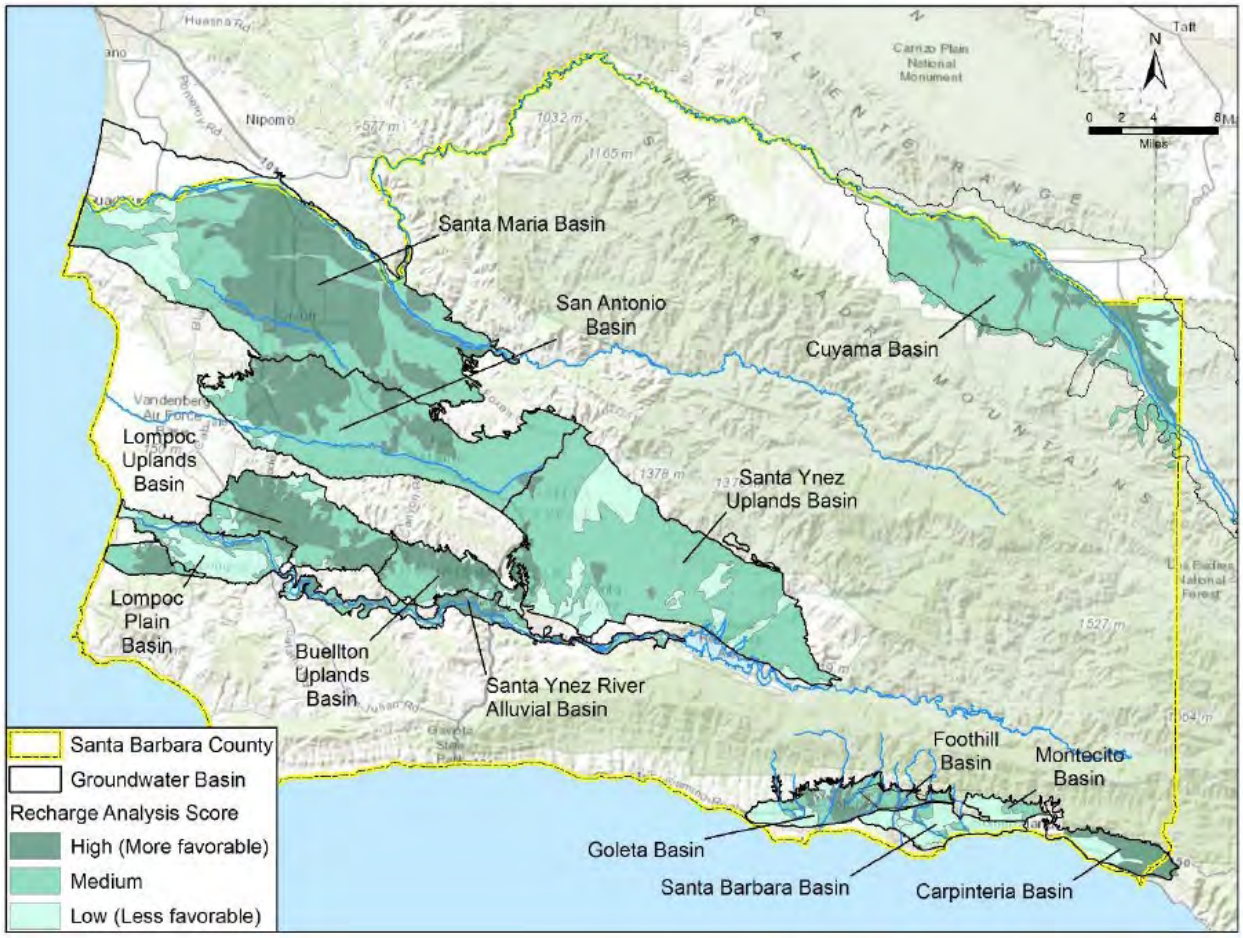
Implementation would require acquisition of targeted land for spreading facilities, which may require purchase or an easement to allow for project implementation. As public water supply agencies, any of the CBGSA members have authority to implement the project once land is acquired and applicable permits secured.

Project Costs

Implementation costs would vary depending on the ultimate size and location of the spreading facilities, and any compensatory measures required for downstream users. Per acre-foot costs would also vary depending on the amount of stormwater captured and successfully recharged. The primary cost for implementation of spreading facilities is the land purchase cost. Because the project would capture flood and stormwater (as opposed to imported or purchased water), there would be no supply costs to operate the project. The 2015 report estimated flood and stormwater capture and recharge from Cuyama River using spreading basins would cost $600 to $800 per AF (SBCWA, 2015).

Technical Justification

The use of spreading facilities for groundwater recharge is common in many areas across the state where groundwater basins are used for storage. The 2015 *Long Term Supplemental Water Supply Alternatives Report* (SBCWA, 2015) provides the basis for the estimated maximum volume of water that could be recharged by a flood or stormwater capture and recharge project. The storage potential of the Basin is based on the highest historical storage less the current storage, with the difference being unused storage potential. The Cuyama Basin has a high storage potential, greater than 100,000 AF, meaning it would be able to accommodate recharge of more than 100,000 AF. The size of the spreading facilities is based on the volume of water available for capture, and the recharge factor of a proposed site. The volume of water that could be recharged is based on the volume of water that could be diverted off of the river during peak storm flow events. Recharge potential was determined by analyzing the existing groundwater depth and hydrological soil type, and infiltration rates based on relative infiltration rate for hydrologic soil groups. High recharge potential were areas with hydrologic soils in group A/B, and had infiltration rates of 0.6 feet per day. As shown in Figure 7-2, the majority of the Basin located in Santa Barbara County has medium or high potential for groundwater recharge, with the highest potential east of the Cuyama River in the Ventucopa Management Area. The 2015 report was limited to Santa Barbara County and does not cover the portions of the Basin located in Ventura, San Luis Obispo, and Kern counties.



Source: SBCWA, 2015

Figure 7-2: Groundwater Recharge Potential in Santa Barbara County

The 2015 report recommended additional studies to refine the high-level analysis in the report. Under this project, the CBGSA would develop a study to refine the areas of potential recharge, including areas of the Basin with potential to provide land for spreading facilities that were excluded from the 2015 report due to being located outside of Santa Barbara County. The feasibility study would, calculate the potential evaporative loss, evaluate alternatives to determine the preferred size and location of spreading facilities, refine costs for the alternatives, and calculate the potential supply from implementation of the preferred alternative.

Basin Uncertainty

This project would take advantage of the uncertain rainfall in the region and capture it for future use when precipitation levels are high. This would help bolster groundwater supplies and improve supply reliability in the Basin.

CEQA/NEPA Considerations

The feasibility study would not trigger CEQA or National Environmental Policy Act (NEPA) actions because it does not qualify as a project under either program. If a flood and stormwater capture project is implemented, CEQA would be required and completed prior to construction. NEPA would only be required if federal permitting, such as a 401 permit from U.S. Army Corps of Engineers, or if federal funding is pursued.

7.4.2 Precipitation Enhancement

A precipitation enhancement project would involve implementation of a cloud seeding program to increase precipitation in the Basin. This project would target cloud seeding in the upper Basin, southeast of Ventucopa, and would include introduction of silver iodide into clouds to increase nucleation (the process by which water in clouds freeze to then precipitate out). Based on the findings of the *Feasibility/Design Study for a Winter Cloud Seeing Program in the Upper Cuyama River Drainage, California* (SBCWA, 2016), such a program would use both ground-based seeding and aerial seeding to improve the outcomes of the program. Ground-based seeding would be conducted using remote-controlled flare systems, set up along key mountain ridges and could be automated. Aerial seeding would use small aircraft carrying flare racks along its wings to release silver iodide into clouds while flying through and above them.

Precipitation enhancement modeling assumed cloud seeding would increase precipitation by 10 percent from November through March, the time of the year with highest potential for rainfall in the Basin, for an average annual increase in precipitation of about 16,000 AF. With this assumption regarding precipitation increase, the numerical modeling estimated that an increase of 1,500 AF of additional annual average supply within the Basin over 50 years could be achieved. The portion of the increased precipitation would potentially benefit areas downstream of the Cuyama Basin.

This project would complete a detailed study to refine the potential yield and cost of implementation in the Basin.

Public Notice and Outreach

Completion of a detailed study would include at least one public meeting (potentially at a regularly scheduled CBGSA Board meeting) to present the details of a precipitation enhancement project, costs and benefits, as well as provide an opportunity to receive comments from the public about potential concerns. If a precipitation enhancement project is pursued for implementation, it would not require public notice or outreach, except for approval by a governing body for the CBGSA that would occur in a public meeting.

Permitting and Regulatory Processes

Completion of a study to refine the feasibility of a precipitation enhancement project would not require any permits or undergo a regulatory process. If a precipitation enhancement project is pursued for implementation, it is expected to be implemented under the existing SBCWA program, and would be covered under existing permits for that program.

Project Benefits

The *Feasibility/Design Study for a Winter Cloud Seeing Program in the Upper Cuyama River Drainage, California* (SBCWA, 2016) found that cloud seeding activities both in the region and in other locations around the world resulted in increased precipitation. This increase was found to be an increase in duration, rather than intensity. The existing cloud seeding program in Santa Barbara County was estimated to increase precipitation between 9 and 21 percent between December and March. The feasibility study estimated average seasonal increases of 5 to 15 percent if this program is implemented.

Based on a 10 percent increase in precipitation between November and March, modeling demonstrates an average annual benefit of 1,500 AF per year could be achieved over a 50 year period. This includes an annual average of 400 AF of deep percolation, 400 AF available in stream seepage, and 700 AF in boundary flow. There would also be an average annual increase in Cuyama River outflow of 2,700 AF. Figure 7-3 shows the potential long-term benefits of a precipitation enhancement program. Actual benefits would be measured by evaluating rainfall data after seeding compared to long-term average rainfall in non-seeded years.

The project would complete a refined feasibility study to determine the expected precipitation yield and costs of a precipitation enhancement project. Expected benefits would be refined in that study, prior to the CBGSA making a decision to implement a precipitation enhancement program.

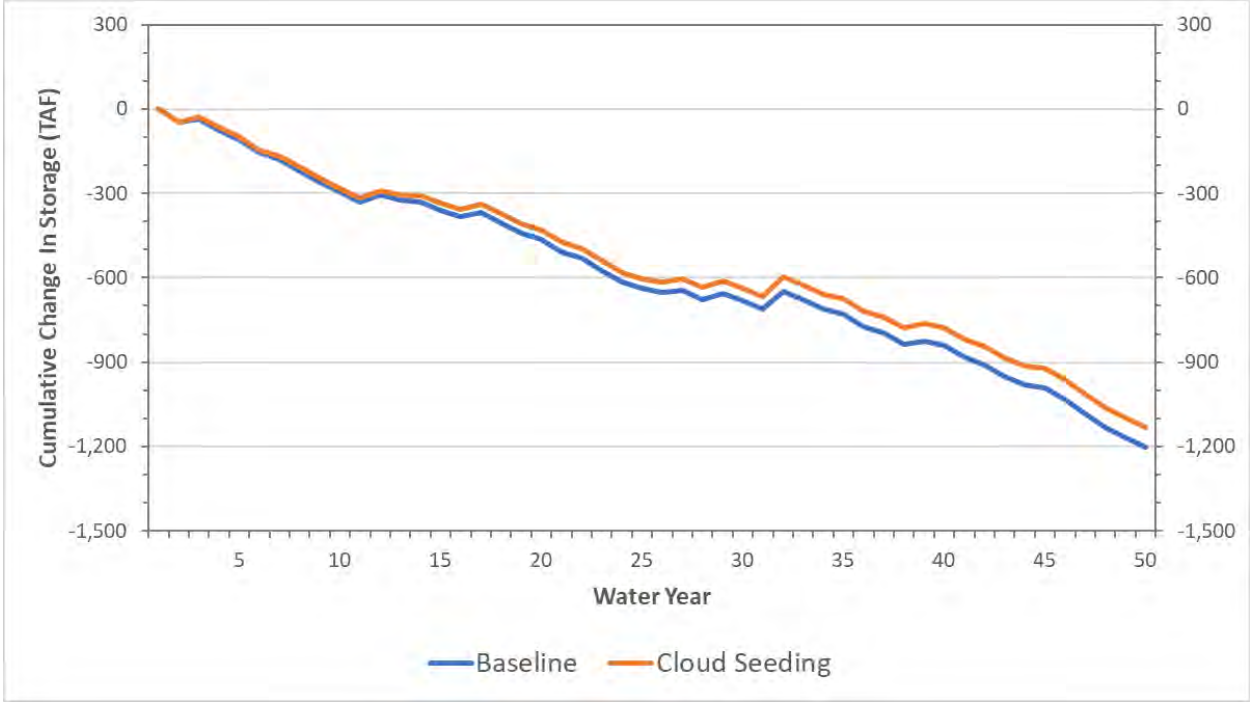


Figure 7-3: Potential Change in Groundwater Storage from Precipitation Enhancement

Project Implementation

The circumstance of implementation for a precipitation enhancement project would be if the refined project study determines it is a cost-effective measure likely to result in meaningful increases in precipitation in the Basin. The circumstance of implementation for the refined study is current conditions, where the CBGSA is ready to consider implementation of precipitation enhancement to support reduced overdraft in the Basin.

Implementation of this project would require installation of two or three additional ground-based seeding sites, referred to as an Automated High Output Ground Seeding System (AHOGS). Each AHOGS site would include:

- Two flare masts, which each hold 32 flares and includes spark arrestors to minimize fire risk
- A control box with communications system, firing sequence relays and controls, data logger, and battery
- A solar panel/charge regulation system to power the site
- Cell phone antenna
- Lightning protection

Aerial seeding would require outfitting the appropriate plane with flare racks.

Implementation of this project would likely be achieved by incorporating it into the existing precipitation enhancement activities being implemented by the SBCWA. Because implementation would be achieved through an existing program, the CBGSA does not anticipate needing to purchase and install new models or control systems beyond those necessary for the additional seeding sites and equipment.

Supply Reliability

Precipitation enhancement has been shown to provide measurable benefit to regions when implemented thoughtfully. Although the amount of precipitation increase that the project could provide is uncertain, evidence suggests potential for an average annual increase of 0.5 to 2.5 inches if this project is implemented (SBCWA, 2016), which would help to improve overall supply reliability in the Basin by increasing precipitation, reducing the need for groundwater pumping and increasing groundwater recharge. This project is not dependent on existing supplies or imported supplies for successful implementation and benefits to the Basin.

Legal Authority

The project would be implemented by the SBCWA, one of the member agencies of the CBGSA. The SBCWA already implements precipitation enhancement in the region, and has the legal authority to expand the program within its service area, which includes the Basin.

Project Costs

The 2016 *Feasibility Study* (SBCWA, 2016) recommended installing two or three AHOGS units for ground-based seeding. Each AHOGS unit would cost $30,000 to build and test, and between $4,000 and $6,000 each to install. Annual maintenance was estimated at $10,000 each. There would be minimal costs associated with initiating aerial seeding for the Basin because it would be implemented as part of the existing precipitation enhancement efforts in the region. Operational costs for aerial seeding would include flight costs ($550 per hour in 2016), and the cost of the seeding flares. Seeding flares in 2016 cost $90 apiece, and up to 50 flares used aerially and approximately 25 flares per AHOGS site in the four-month project period. Annual set-up, take-down, and reporting costs for this project are estimated at $15,000 for a combined ground-based and aerial seeding effort for the Basin, as well as personnel costs of $5,000 per month.

The 2015 *Feasibility Study* estimated that ground-based seeding would cost $45,500 to $67,500 for four months, and aerial seeding would cost $37,750 for four months, assuming that aircraft costs are funded by the existing program.

Total costs are expected to be between $20 and $30 per AF of water under this project, though exact costs would depend on the success of the program in a given year, and market conditions for project materials and aircraft time.

Technical Justification

Cloud seeding as a concept has existed for decades, and target nucleation of supercooled water droplets that exist in clouds. Supercooled water is water that has been cooled below freezing temperatures (0 degrees Celsius or 32 degrees Fahrenheit), but remains in liquid form, rather than frozen. Supercooled water above -39 degrees Celsius must encounter an impurity to freeze, referred to as freezing nuclei. In the 1940s, particles of silver iodide were discovered to be able to cause freezing of supercooled water droplets in clouds. Silver iodide is the most common freezing nuclei used for cloud seeding in which silver iodide is injected into clouds to promote precipitation. A research program in Santa Barbara County on cloud seeding was conducted in the 1960-70s in which silver iodide was released into “convective bands” as random “seeded” or “non-seeded” (no iodide) convective bands, and resulting precipitation measured by a large network of precipitation gauges. This study evaluated both ground-based seeding and seeding by aircraft. Both methods found seeding resulted in a large area of increased precipitation. Additional studies in other regions in the 1990s found that additional precipitation from cloud seeding was a result of the increased duration of the precipitation event, rather than an increase in intensity. Cloud seeding has been conducted most winters since 1981 in portions of Santa Barbara County, which have had an estimated benefit of 9 to 21 percent increase in precipitation. The 2016 *Feasibly Study* for precipitation enhancement in the Upper Cuyama River Basin estimated a potential 5 to 15 percent increase in rainfall if a seeding project was implemented (SBCWA, 2016).

Basin Uncertainty

This project would improve precipitation yields in the Basin, helping to reduce the impacts of variable precipitation and providing for increased opportunities for groundwater recharge and stormwater capture. Further, increased precipitation duration and yields would reduce demands for groundwater for irrigation, reducing the risk of crop failure associated with water supply reliability challenges.

CEQA/NEPA Considerations

If this project is implemented, it is anticipated to be incorporated into the existing cloud seeding program implemented by SBCWA. The existing seeding program achieved CEQA coverage under the Santa Barbara Mitigated Negative Declaration (MND), finalized in 2013. This project would achieve CEQA coverage either under this existing MND, or Santa Barbara Water Agency would be required to prepare an addendum to the MND to incorporate the Cuyama Basin target area for the seeding program. Unless the project pursues federal funding, NEPA is not anticipated to be required.

7.4.3 Water Supply Transfers/Exchanges

This project would evaluate the feasibility of purchasing transferred water and exchanging it with downstream users (downstream of Lake Twitchell) to allow for additional stormwater and floodwater capture in the Basin to protect water rights of downstream users. Because this action is intended only as a complement to a potential stormwater or floodwater capture project, all potential purchase transfer water would originate outside of the Cuyama River watershed, and this action would not include the transfer or sale of existing Cuyama Basin groundwater out of the watershed. The study would be coordinated with the floodwater and stormwater capture in Section 7.3.1, as the feasibility of such an exchange would affect the maximum volumes of stormwater that would be captured under that project. If the feasibility study finds there is limited interest from downstream users, implementation would not be pursued.

Public Notice and Outreach

Public noticing would not be required for the feasibility study though outreach would be conducted as part of the study to determine willingness of downstream users to participate in an exchange.

Permitting and Regulatory Processes

No permits or regulatory processes would be necessary for development of the feasibility study. Agreements would need to be executed to secure additional water supply for use in a transfer/exchange, as well as to exchange water with downstream users. No other permits are anticipated to be required to implemented water transfers/exchanges.

Project Benefits

Implementation of a water transfer/exchange program would allow the CBGSA to increase stormwater capture if the Flood and Stormwater Capture project (see Section 7.3.1) is implemented because it would reduce the potential water rights conflicts that could arise from increased stormwater capture. The Basin does not have a physical connection to supplies outside the Basin, and is therefore limited in the types of

projects that could be implemented to increase supplies. This project would allow the CBGSA to maximize the new water supply that could be available to the Basin if flood and stormwater capture is implemented. This project would be limited to the feasibility study, and would not have direct benefits. If a water transfer/exchange program is implemented as a result of the outcomes of the feasibility study, benefits would be measured by the successful execution of transfer/exchange agreements and the increased capacity of the stormwater capture and spreading facilities made possible by these agreements. Water supply benefits would be measured by the volume of water captured above the volume that would have been allowed had the transfer/exchange agreements not been implemented.

Project Implementation

The circumstance for implementation of the feasibility study would be exploration of the feasibility of flood and stormwater capture and recharge (see Section 7.3.1). Implementation of this project would occur if downstream users expressed interest in participation in water transfers/exchanges and the feasibility study determined the potential increase in supply that transfer/exchanges would provide is cost effective for achieving supply reliability and groundwater sustainability goals.

The CBGSA would develop the feasibility study in coordination with the Flood and Stormwater Capture Project's feasibility study. Based on the outcomes of the two feasibility studies and the level of interest of downstream users, the CBGSA would determine whether implementation of a transfer/exchange project is a preferred action for the CBGSA. Implementation of the transfer/exchange program would entail coordination amongst participants: the CBGSA, agencies who own the water to be used in the transfer, and downstream users who participate in the exchange.

Supply Reliability

Transfers and exchanges would require access to a reliable water supply from outside the Basin currently owned by an agency that has sufficient water rights to be willing to sell a portion of their water to the CBGSA for this project. Because this project would be used to increase the capacity of the stormwater capture project, benefits would be experienced only following a heavy precipitation event. It is likely that in years with large precipitation events, other parts of the state will also experience wet winters, increasing available supplies from sources like the State Water project, or other surface water supplies. The feasibility study would require an evaluation of supply reliability, and explore the potential mechanisms for a successful transfer/exchange program that would account for the uncertainty of precipitation events on a year-to-year basis and available supply and potential benefit to the Basin.

Legal Authority

The CBGSA, through its member water supply agencies, has the legal authority to enter into transfer and exchange agreements with other water suppliers and users. The CBGSA does not have the authority to increase its stormwater capture at a level that would impede downstream senior water rights holders from accessing their water rights, making this project a critical component of an expanded capacity stormwater project (beyond what could be achieved without this project).

Project Costs

A feasibility study would likely cost between $100,000 and $200,000 to complete, including outreach to downstream water users and potential sources of supply for the transfer/exchange program. Costs to implement a transfer and exchange program would be evaluated in the feasibility study and are estimated to range from $600 to $2,800 per AF. Costs would vary depending on the details of the transfer/exchange, source of new water, and parties involved.

Technical Justification

A transfer/exchange program would be at minimum a one-to-one exchange, meaning for each AF of water provided to downstream users through the program, the CBGSA could capture an additional AF of stormwater. The feasibility study would identify which supplies could be purchased to exchange with downstream users, based on supply availability, connectivity to downstream users, willingness of supply owners to participate, and cost. One purpose of the feasibility study would be to determine a preferred alternative for the transfer/exchange program, and provide a technical justification of the preferred program. If technical justification cannot be made, the program would be considered infeasible and would not be pursued.

Basin Uncertainty

The transfer/exchange project would help address uncertainty in the basin by allowing the CBGSA to increase groundwater recharge, using years with surplus surface water flows to supplement groundwater during dry years by increasing the volume of stormwater that can be captured without interfering with downstream users' water rights.

CEQA/NEPA Considerations

Development of a feasibility study would not trigger CEQA or NEPA. Water exchanges or transfers are not anticipated to include construction of new facilities. However, since a water exchange or transfer is a discretionary action, they are likely to be considered projects under CEQA or NEPA. NEPA documentation may be required if any of the water being exchanged or transferred is federal agency (i.e., Reclamation or USACE).

7.4.4 Improve Reliability of Water Supplies for Local Communities

The Basin is experiencing overdraft in the Central Basin and Ventucopa management areas, which are the population centers of the Basin. Domestic water users in these areas are experiencing water supply reliability challenges, and in the 2012-2016 drought experienced well failures. While the following actions would not affect the water budget in the Basin, they are intended to address ongoing water supply reliability issues affecting these communities. CCSD only has a single well to serve its customers, and no redundancy in its system. This management action would include consideration of opportunities to improve water supply reliability for Ventucopa and within the CCSD service area. Potential projects that would be considered under this management action include a replacement well for CCSD Well 2, which is currently abandoned, and improvements to Ventucopa Water Supply Company's (VWSC's) existing

well. While specific information is not available for improvements (and are therefore not discussed below) for the town of Cuyama, which is served by the CMWC, the CBGSA also supports potential future actions to benefit the town of Cuyama as well.

CCSD Replacement Well

The CCSD Replacement Well would drill a new well in CCSD's service area to replace Well 2, which has been abandoned due to an electrical failure that damaged the well and pumping equipment and subsequent damage the well incurred when an attempt was made to remove the pump. A replacement well for Well 2 was attempted, but found to produce water that was unsuitable for potable use due to the design and construction of the well. Construction of the new well would include:

- Drilling, installing, and testing a new well
- Installing a well head, submersible well pump, and electrical panel
- Construction of an 8-inch pipeline to connect the new well to CCSD's system

Ventucopa Well Improvements

The Ventucopa Well Improvements would construct a new water supply pump, pipelines, and meters for the existing Ventucopa Well 2 and seek approval for the well's use for drinking water from the County of Santa Barbara's Department of Health Services (DHS). These improvements would:

- Install a pump, electrical service, and controls at Well 2
- Construct an 8-inch pipeline from Well 2 to Ventucopa's existing hydropneumatic tank
- Install meters at Well #1 and Well 2
- Install a SCADA system for Well 2
- Install piping, valves, and inline mixer to blend water from Well 1 and Well 2

Public Notice and Outreach

Public notice and outreach would not be required beyond that necessary for approval at a public Board of Directors meeting or applicable CEQA.

Permitting and Regulatory Processes

CCSD's new well construction would require acquisition of a well drilling permit and approval of well design and well completion report. It would also require well testing that demonstrates the new well is capable of producing water that is suitable for drinking water. In addition to a well drilling permit from Santa Barbara County, CCSD's existing water system permits would need to be revised to include the new well and associated features.

Improvements to VWSC's well would require compliance with Santa Barbara County's regulations for water systems in the unincorporated county. VWSC would need to acquire the appropriate well drilling

permits from the County as well as receive DHS certification of the suitability of the upgraded well for potable use before water from Well 2 can be delivered to customers.

Project Benefits

These projects would improve supply reliability for Ventucopa and CCSD residents and customers by creating system redundancies and upgrades to address challenges with meeting existing demands associated with aging and failing infrastructure. As planned, up to 460 gallons per minute could be made available to CCSD and up to 55 gallons per minute available to VWSC as a result of this project. Benefits of this project would be measured by the volume of water produced by the two improved wells and reduction in the number of days system failures threaten access to water supplies.

Project Implementation

The circumstance of implementation for this project is identified need for system improvements to meet public health and safety concerns. Both CCSD and VWSC have documented challenges with their water supply systems, including lack of redundancy, wells that do not adequately meet domestic water supply requirements, and limited capacity (CCSD, 2018; VWSC, 2007).

The two components of this project would be implemented by their respective system owners, CCSD and VWSC. CCSD would be responsible for planning, design, construction, testing, and permitting of the new Well 4, while VWSC would be responsible for planning, design, construction, testing, and permitting of the Well 2 improvements.

Supply Reliability

This project would improve supply reliability to customers through system improvements designed to address known issues with accessing and conveying groundwater suitable for potable use.

Legal Authority

CCSD owns the property for the proposed well site, and has the legal authority to design and construct a new well. As the owner-operator of the CCSD system, CCSD also has the legal authority to connect the new well to its existing distribution system and deliver water from the new well to customers once all appropriate permits have been acquired.

VWSC already owns Well 2 and the other existing components of the proposed project. It has the legal authority to implement projects that serve the water supply needs of its customers, and once all appropriate permits have been acquired, is legally able to connect Well 2 to its existing system.

Project Costs

In total, these improvements are expected to cost approximately $1,175,000.

CCSD's 2018 Engineering Report for Well 4 estimated project costs of $489,800 for drilling and $485,280 for equipping, for a total cost of $975,080 (CCSD, 2018).

VWSC's 2007 *Ventucopa Water System Evaluation Report* estimated the well improvements included in this GSP would cost $191,200 (VWSC, 2007). Costs are assumed to have increased since 2007, and well improvements are currently expected to cost approximately $200,000 to implement.

Technical Justification

Both components of this project have completed initial planning efforts. Preliminary engineering and design has been completed for the CCSD Well 4 improvements, including the 2018 Engineering Report and preliminary design drawings. VWSC's well improvements were described and evaluated in the 2007 Evaluation Report. Implementation of this project would include final design for all components, as well as testing to ensure that well improvements meet the needs they are designed to address.

Basin Uncertainty

These improvements would reduce uncertainty associated with supply reliability in CCSD and VSWC's service areas.

CEQA/NEPA Considerations

Well drilling permits are a discretionary action in Santa Barbara County, which would trigger CEQA. CCSD and VSWC would need to complete the appropriate CEQA document to comply with these requirements prior to construction of this project. The project would not trigger NEPA unless federal funding or permits are required for completion of the project. The size and location of the project indicates it is unlikely to require federal permits, and NEPA is likely to only be required if federal funding is pursued.

7.5 Water Management Actions

Water management actions are generally administrative locally implemented actions that the CBGSA or its member agencies could take that affect groundwater sustainability. Typically, management actions do not require outside approvals, nor do they generally involve capital projects.

7.5.1 Basin-Wide Economic Analysis

Changes to pumping in the Basin and access to water supplies may have economic consequences given that the Basin is dominated by agricultural land uses that are dependent on groundwater availability. Implementation of stormwater capture may require purchase of agricultural land for the spreading facilities, which could affect agricultural output in the region. The small population of the Basin limits the available revenue to fund projects. This Project would entail developing a study of the economic impacts

of the projects and management actions included in the GSP. This would include an evaluation of how implementation of the project could affect the economic health of the region and on local agricultural industry. It would also consider the projected changes to the region's land uses and population and whether implementation of these projects would support projected and planned growth. The economic analysis would be considered by the CBGSA when deciding whether to implement a proposed project and potential when to implement the projects.

Public Notice and Outreach

This project is a study and would not require public notice or outreach. The results of the economic analysis will be presented at Stakeholder Advisory Committee (SAC) and CBGSA Board meetings.

Permitting and Regulatory Processes

No permits or regulatory approvals would be required to complete the economic analysis.

Project Benefits

The economic analysis would provide information to the CBGSA regarding the potential economic benefits and drawbacks to implementation of different projects under the GSP. This project would not provide direct benefits as related to water supply or groundwater sustainability, but would allow the CBGSA to move forward with implementation of projects that would continue to sustain local economies and would not inadvertently cause substantial economic harm, which could affect the ability of a proposed project to continue to provide benefits.

Project Implementation

The circumstance of implementation for this project would be consideration of the implementation of any project included in this GSP or otherwise considered by the CBGSA. The CBGSA would implement this project with the assistance of an economic consultant that would complete the analysis based on data for the region and information provided by the CBGSA.

Supply Reliability

This project is a study and does not depend on any water supply for implementation or successful completion.

Legal Authority

The CBGSA is a joint-powers authority with authority to authorize an economic study for the projects in this GSP.

Project Costs

A basin-wide economic analysis is expected to range from $50,000 to $100,000 in costs, depending on the available data and level of analysis desired. Exact costs would be determined during selection of the economic analyst.

Technical Justification

This project is a study that would use economic methods and analysis tools consistent with the standards and practices of the industry.

Basin Uncertainty

This project would help understand the economic uncertainty around implementation of the projects in this GSP. Improved understanding of the economic implications of a project would help the CBGSA decide which projects should move forward to support basin sustainability without unintended consequences that could increase overall uncertainty in the basin, including uncertainty regarding groundwater demands in the basin associated with the local and regional economy.

CEQA/NEPA Considerations

As a study, the basin-wide economic analysis would not trigger CEQA or NEPA.

7.5.2 Pumping Allocations in Central Basin Management Area

As described in Section 2.3 of this GSP, the Basin is in overdraft conditions and to achieve balanced pumping and recharge groundwater users must decrease pumping by approximately 67 percent, in the absence of projects that increase recharge in the Basin or otherwise offset demands. While the projects identified in Section 7.3 would increase the water available to users in the Basin through increased recharge and precipitation, they are not expected to reduce the groundwater deficit sufficiently to achieve the Basin's sustainability goals. As such, the CBGSA will implement pumping allocations.

Outlined here is a framework for how CBGSA would develop and implement pumping allocations in the Basin. This project would involve development of pumping allocations in the Central Basin Management Area. Consistent with the magnitude of projected overdraft estimated by the numerical model, pumping allocations would not apply to the Ventucopa Management Area or to users outside of a Management Area. CCSD would be provided allocations based on historical water use, and would not be required to reduce pumping over time, but would be limited in how much pumping could increase in the future.

There are four key steps to developing pumping allocations:

1. Determine the Sustainable Yield of the Basin
2. Allocate sustainable yield of native groundwater to users based on:
   a. Historical use
   b. Land uses and irrigated areas
3. Determine how new/additional supplies would be allocated
4. Develop a timeline for reducing pumping to achieve allocations over time

Sustainable Yield of the Basin Absent Projects and Water Management Actions

The sustainable yield of the Basin absent projects and water management actions is the volume of water that can be extracted from the Basin annually without affecting overall groundwater storage. and the sustainable yield of the Basin is estimated to be approximately 20,000 AFY, as described in the Water Budget section of Chapter 2. The sustainable yield of the Basin represents the volume of groundwater that can be allocated. Because pumping allocations would only be imposed on users in the Central Basin Management Area, the CBGSA would need to determine the sustainable yield for only the Central Basin Management Area, which would be less than the overall sustainable yield of the Basin.

Develop Allocations

The CBGSA would develop allocations based on estimated historical use, existing land uses, and total irrigated acreage. The CBGSA would determine historical use by analyzing data about water use during the 20-year historical period from 1998 to 2017. This period aligns with the historical period of the water budget analysis described in Chapter 2. Water use would be estimated either using remote sensing and land use data to estimate agricultural consumption or from data provided by pumpers in the Basin, including private pumpers and water agencies. CCSD's allocation would be based on historical use, with an allowance for changes in population in the CCSD service area. CCSD would not be required to reduce use in the future under this action. As such, once CCSD's allocation has been determined, it would be removed from the total volume of groundwater available for allocation to non-CCSD users in the Central Basin Management Area.

A specific approach for allocation of pumping volumes among agricultural users in the Central Basin management area has not been determined. Potential options include allocation on the basis of historical use, on irrigated acreage, or on total acreage. The CBGSA would work with landowners and agencies to determine the appropriate approach for pumping allocations for agricultural users.

Determine Allocation of New or Additional Supplies

As the CBGSA implements projects in this GSP, additional groundwater supplies are expected to become available. These supplies would be used to reduce groundwater overdraft. The CBGSA anticipates that any new supplies made available through project implementation would be added to the total volume of water that would be allocated to the beneficiaries of those projects identified during project development. The mechanism for accounting for additional water made available by project implementation would be determined when the allocation method is refined.

Timeline for Implementation

The required decreases in pumping volumes to achieve balanced groundwater use in the Basin may result in substantial reductions in water availability over current use. The CBGSA plans to complete the pumping allocation plan in 2022, with pumping reductions beginning in 2023 at 5 percent of the total required reduction to achieve sustainability, and an additional 5 percent reduction in 2024. From 2025 to 2038, pumping would be reduced by 6.5 percent annually, so as to achieve sustainability in the Basin in 2038. Figure 7-4 shows the planned pumping reduction in the Basin. Individual users would be expected

to reduce pumping at different rates to achieve the overall pumping reductions and meet their individual pumping allocations. The pumping allocation plan would identify how much each user or user-type would be required to reduce pumping annually to achieve the allocation and the overall Basin sustainability goals.

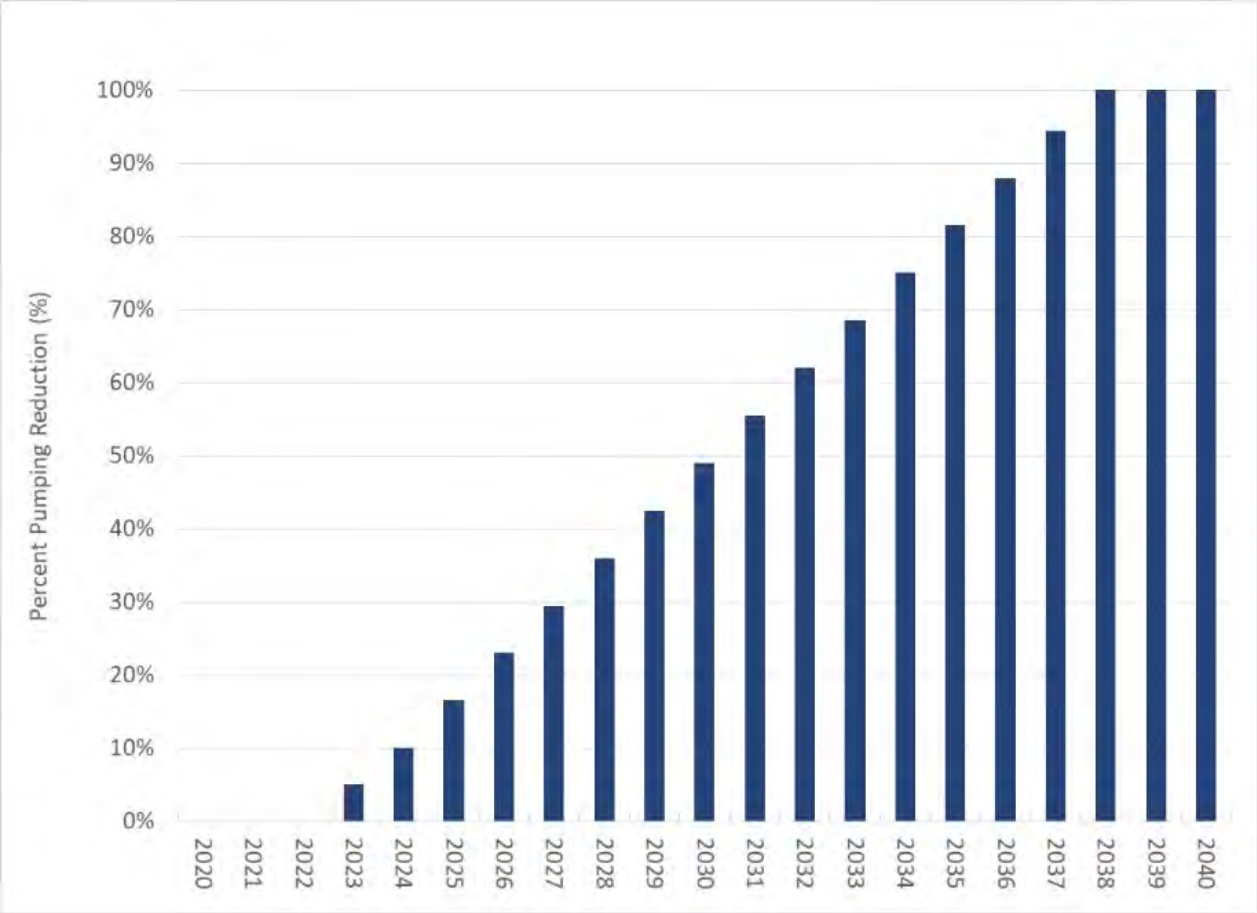


Figure 7-4: Glide Path for Central Basin Management Area Groundwater Pumping Reductions

Public Notice and Outreach

Development of a pumping allocation plan would require substantial public input to understand the potential impacts of pumping allocations and baseline needs that should be accounted for. The CBGSA anticipates that public outreach would include multiple public workshops and meetings, potential website and/or email announcements, along with other public notices for the workshops. The pumping allocation plan would be circulated for public comment before finalized, though final approval of the plan would be made by CBGSA in partnership with its member agencies.

Permitting and Regulatory Processes

Development of a pumping allocation plan would not require any permitting, but would require consideration of existing water rights and applicable permits and regulations associated with groundwater pumping in the Basin.

Management Action Benefits

A pumping allocation plan would identify how the region will achieve sustainable pumping in the Basin. Implementation and enforcement of a pumping allocation plan would directly reduce groundwater pumping. Benefits would be measured by the change in total volume of groundwater pumped from the Basin and how many users are in compliance with their pumping allocations.

Management Action Implementation

The circumstance of implementation for developing a pumping allocation plan is identification of unsustainable groundwater pumping practices in the Basin. The CBGSA recognizes recharge and pumping in the Basin are not balanced, and action must be taken to achieve sustainability. CBGSA would lead development of a pumping allocation plan, in partnership with its member agencies and local groundwater users. The planning process is expected to be completed in 2022, with allocations implemented beginning in 2023. Successful implementation would require compliance from groundwater users with the pumping allocation plan, and enforcement by the CBGSA and its member agencies. Successful roll-out of the pumping allocation plan would require substantial public outreach to inform users of their annual allocation and expected annual reduction in groundwater pumping. Mechanisms for enforcement would be outlined in the pumping allocation plan, and are expected to be enforced by CBGSA's member agencies.

Supply Reliability

This project does not rely on the supplies from outside the Basin because it is a planning effort that will result in conservation. It will support overall supply reliability by reducing overdraft in the Basin and moving the Basin towards sustainability.

Legal Authority

CBGSA has the authority to develop a pumping allocation plan, and will perform implementation and enforcement of allocations through metering, water accounting, and implementing pumping fees.

Management Action Costs

Development and initiation of a pumping allocation management and tracking program is expected to cost up to $300,000 to conduct the analysis, set up the measurement and tracking system and conduct outreach. Costs to implement the plan would depend on the level of enforcement required to achieve allocation targets and the level of outreach required annually to remind users of their allocation for a given year. The pumping allocation plan would include a cost estimate for enforcement and implementation. Annual management of the program is estimated to cost about $150,000 per year.

Technical Justification

Pumping allocations would provide direct reductions of groundwater pumping. The pumping allocation plan would develop allocations based on historical use data and land use data, and would clearly describe the methodology and justification for the methodology used when setting pumping allocations.

Basin Uncertainty

The Basin is currently experiencing overdraft, and if current pumping practices continue conditions in the Basin are expected to worsen, increasing uncertainty regarding the availability of reliable groundwater supplies. Development of a pumping allocation plan would provide an opportunity to reduce overdraft-related uncertainty in the Basin by shifting pumping towards sustainable levels over time.

CEQA/NEPA Considerations

Development of a pumping allocation plan is most likely not a project as defined by CEQA and NEPA and would therefore not trigger either. Reducing pumping over time is also not expected to trigger CEQA or NEPA because it does not meet the definition of a CEQA or NEPA project. As any plan is developed, CEQA and NEPA will be considered to determine if compliance is required.

7.6 Adaptive Management

Adaptive management allows the CBGSA to react to the success or lack of success of actions and projects implemented in the Basin and make management decisions to redirect efforts in the Basin to more effectively achieve sustainability goals. The GSP process under SGMA requires annual reporting and updates to the GSP at minimum every 5 years. These requirements provide opportunities for the CBGSA to evaluate progress towards meeting its sustainability goals and avoiding undesirable results.

Adaptive management triggers are thresholds that, if reached, initiate the process for considering implementation of adaptive management actions or projects. For CBGSA, the trigger for adaptive management and CBGSA's next steps would be as follows:

- **Pumping reductions are more than 5 percent off the glide path identified in the pumping allocation plan:** CBGSA would evaluate why pumping allocations are not being met and implement additional outreach or enforcement, as appropriate.
- **If the Basin is within the Margin of Operational Flexibility, but trending toward Undesirable Results, *and* within 10 percent of the Minimum Threshold:** CBGSA will investigate the cause and determine appropriate actions.

7.7 References

Cuyama Community Services District (CCSD). 2018. *Well No. 4 Drilling and Equipping Project Engineering Report.* February.

Santa Barbara County Water Agency (SBCWA). 2015. *Long Term Supplemental Water Supply Alternatives Report.* December.

Santa Barbara County Water Agency (SBCWA). 2016. *Feasibility/Design Study for a Winter Cloud Seeding Program in the Upper Cuyama River Drainage, California.* June.

Ventucopa Water Supply Company (VWSC). 2007. *Water System Evaluation Report*. February.

7.2 Supplemental Section 7.2: Projects and Management Actions, Management Areas

The following sections provide additional information regarding the Ventucopa management area and the northwestern region of the Basin.

Ventucopa Management Area

As noted in the Executive Summary of the GSP, the CBGSA intends to re-evaluate the need for pumping reductions in the Ventucopa region of the Basin after further evaluating groundwater conditions over a two-to-five-year period following submission of the GSP. At the time that the GSP was submitted, the CBGSA felt that it was premature to prescribe pumping reductions in the Ventucopa region on the basis of CBWRM model results because the development of the model in that portion of the Basin posed significant challenges:

- Limited groundwater level data was available for model calibration. Only three calibration wells were available in that area of the Basin (wells 62, 85, and 617). Since submission of the GSP, a new multi-completion monitoring well has been installed in the area, which will provide additional information for model calibration going forward.
- Characterization of streamflows and their effect on the groundwater aquifer was challenging because there were no streamflow gages on the Cuyama River with measurements taken during the calibration period and limited information was available regarding stream geometry in the region. Since submission of the GSP, a new streamflow gage has been installed on the Cuyama River upstream of the Ventucopa region.
- Groundwater pumping levels in the region were based on estimates from available land use information. However, unlike the central area of the Basin, cropping patterns in this portion of the Basin were not provided by local landowners but were instead estimated using satellite imagery. Furthermore, specific well locations were not available in this portion of the Basin. The CBGSA has addressed these shortcomings through the requirement of landowners to install meters on production wells and to report well information starting in calendar year 2022.
- The magnitude of water budget estimates in the region were relatively small as compared to the Basin as a whole, which meant that a small change in the estimate for a single water budget component could have a large effect on the estimated change in storage (and corresponding estimates of long-term groundwater elevation change). In particular, some Basin stakeholders have raised a concern that the model may be underestimating stream seepage into the aquifer in this stretch of the Cuyama River.
- Due to time and budget constraints during GSP development, model development and calibration prioritized development of an accurate representation of the central Basin portion of the aquifer (where long-term overdraft was known to occur) with lesser emphasis on other parts of the model. The primary model calibration objective during CBWRM development of the Ventucopa region was

to ensure that groundwater levels matched historical trends at the boundary of the central Basin and Ventucopa region.

Table 7-3 shows the average annual groundwater budget in the Eastern threshold region for the 50-year current and projected simulation (without climate change) included in the GSP. While the historical simulation showed a small surplus in the region, the future projected simulation showed a deficit of about 700 acre-feet per year (AFY), which corresponded to the groundwater level declines shown in Figure 7-1. This quantity is small compared to an overall Basin groundwater storage deficit of 25,000 AFY, and it is approximately 10% of the total groundwater inflow in this region. This can be well within the range of uncertainties in any of the water budget components, and the range of overdraft can be +/- 10%. In light of the uncertainties, and lack of sufficient data on the water budget components to verify the model projected water budget, the CBGSA determined that implementing a management action in the region at this early stage may be premature. Instead, the CBGSA is determined to compile and analyze additional data and information on groundwater levels, surface water flows, groundwater pumping, as well as information on channel geometry and subsurface conditions. This information will be used to further enhance the capabilities of the model for analysis of projected water budgets and groundwater conditions in the region, and to determine possible management actions to address any possible projected overdraft conditions.

Table 7-3: Eastern Region Groundwater Budget Summary (acre-feet per year)

	Current and Projected Simulation (2018-2067)
Inflows	
Deep percolation	4,100
Stream seepage	1,300
Subsurface inflow	700
Total Inflows	***6,100***
Outflows	
Groundwater pumping	6,800
Total Outflows	***6,800***
Change in Storage	**-700**

Northwestern Region

In the northwestern region, management actions were not included in the GSP because the available information did not indicate a projected overdraft in that region. The following information was considered during development of the GSP:

- The CBWRM model indicated a balance between groundwater inflows and outflows in the region in all of the water budget scenarios that were simulated.
- The Cleath-Harris Geologists (CHG) document Sustainability Thresholds for Northwestern Region, Cuyama Valley, dated December 7, 2018 , developed under contract with the North Fork Vineyard. This document identified minimum thresholds for this area that would be protective of groundwater pumping capacity for production wells in this area. CHG proposed minimum thresholds for the region would result in a twenty percent reduction in the saturated thickness screened by the production wells, which would produce a similar reduction in transmissivity and pumping capacity of the production wells. As discussed above, the CBGSA set thresholds that are somewhat more conservative than this, representing a fifteen percent reduction in saturated thickness.

The technical analyses described in Section 5.2 regarding Potential Corrective Action 1 indicates that the potential drawdown due to the minimum thresholds set for wells 841 and 845 could have a small effect on GDEs and domestic wells in the area. However, the thresholds set in the monitoring wells located in the vicinity of these Basin resources are set at protective levels that would be indicative of any issues that may arise, allowing the CBGSA to make an appropriate adaptive management response (Section 7.6). Therefore, the available evidence indicates that management actions are not required in this region at this time.

7.6 Supplemental Section 7.6: Projects and Management Actions, Adaptive Management

Adaptive management strategies may also be triggered for other reasons, such as reports by stakeholders of Basin conditions that have impacted beneficial uses or users. Stakeholders may notify the CBGSA of their concerns by (i) submitting a publicly available well reporting form (available on the CBGSA website) to the GSA, (ii) contacting the Basin manager as described in Section 1.1.1 – Contact Information, or (iii) bringing the concerns to public meetings.

If an investigation based on monitoring data and/or stakeholder reporting indicates that groundwater management in the Basin may be adversely affecting beneficial users, the CBGSA Board will determine if a response by the CBGSA is required. This will include the formation of an ad hoc committee to investigate the cause(s) of changing Basin conditions, conducting data analysis, and discussion of potential adaptive management response strategies. If appropriate, the CBGSA will implement response strategies to correct the issue; these strategies could include localized pumping management plans, installation of additional monitoring, installation of replacement wells, potential changes to sustainability criteria or pumping reduction schedule included in the GSP, or other solutions to address specific concerns and Basin conditions.

8. IMPLEMENTATION PLAN

8.1 Plan Implementation

Implementation of this Draft GSP includes implementation of the projects and management actions included in Chapter 7, as well as the following:

- Cuyama Basin Groundwater Sustainability Agency (CBGSA) administration and management
- Implementing the monitoring program
- Developing annual reports
- Developing required five-year GSP updates

This chapter also describes the contents of both the annual and five-year reports that must be provided to DWR as required by SGMA regulations.

8.1.1 Implementation Schedule

Figure 8-1 illustrates the GSP's implementation schedule. Included in the chart are activities necessary for ongoing GSP monitoring and updates, as well as tentative schedules for projects and management actions. Additional details about the activities included in the schedule are provided in these activities' respective sections of this GSP. Adaptive management would only be implemented if triggering events are reached, as described in Chapter 7, and are shown as ongoing in the schedule.

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Figure 8-1. GSP Implementation Schedule

ID	Task Name
1	**Cuyama GSP Implementation**
2	**Plan Implementation**
3	Plan submittal to the State
4	Monitoring
5	**Annual Reports**
27	Five Year Report/Interim Target Evaluation 1
28	Five Year Report/Interim Target Evaluation 2
29	Five Year Report/Interim Target Evaluation 3
30	Plan Updates (as needed)
31	**GSP Administration**
32	CBGSA Administration
33	Stakeholder and Board Engagement
34	Outreach
35	**Project Implementation**
36	**1. Flood and Stormwater Capture**
37	Planning
38	Construction
39	Benefits
40	**2. Precipitation Enhancement**
41	Planning
42	Construction
43	Benefits
44	**3. Water Supply Transfers/Exchanges**
45	Planning
46	Agreement Negotiation
47	Implementation of Transfers
48	**4. Improve Reliability of Water Supplies for Local Communities**
49	CCSD Replacement Well - Planning & Design
50	CCSD Replacement Well - Construction & Permitting
51	CCSD Replacement Well - Testing
52	VWSC Well Improvements - Planning & Design
53	VWSC Well Improvements - Construction & Permitting
54	VWSD Well Improvements - Testing
55	
56	

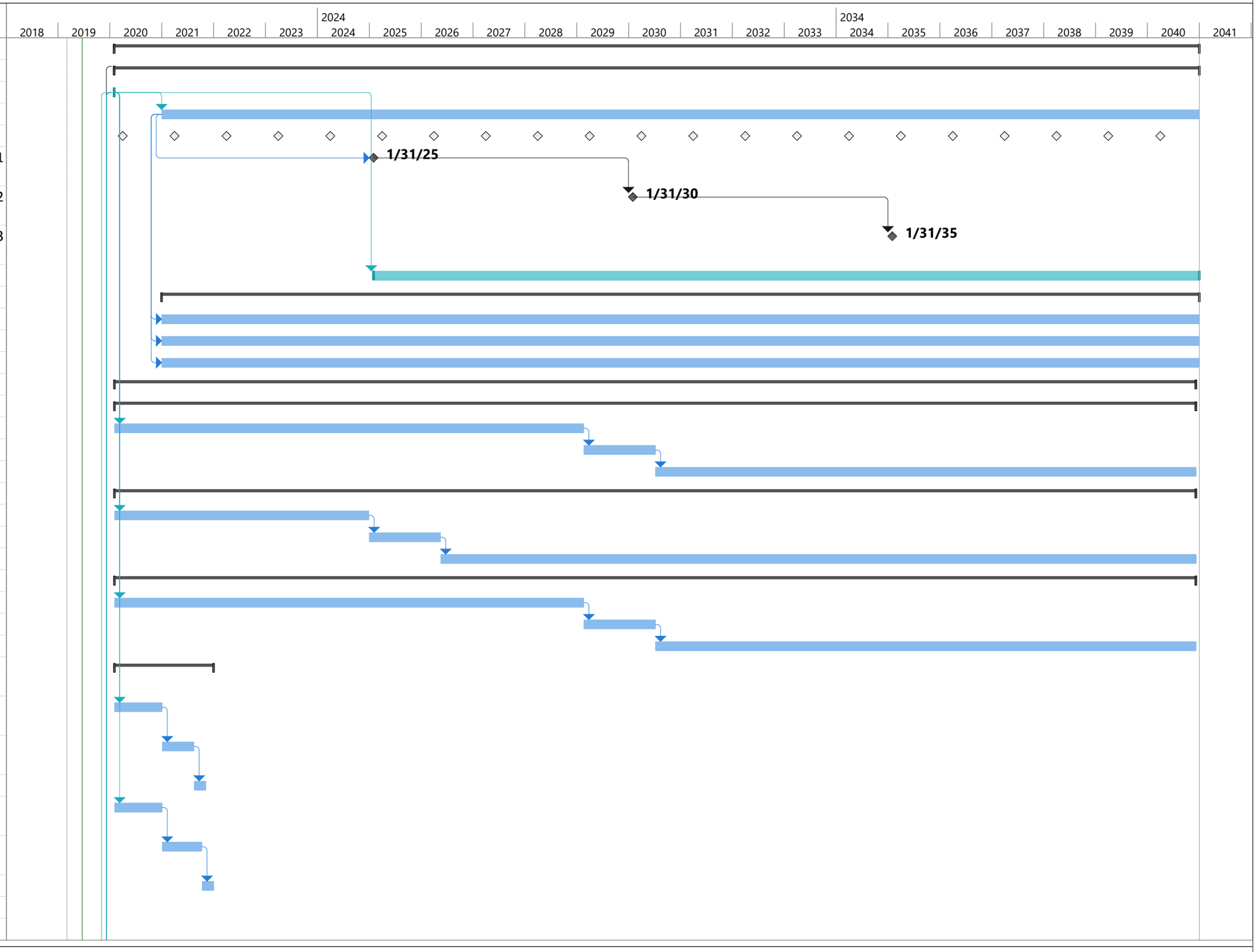
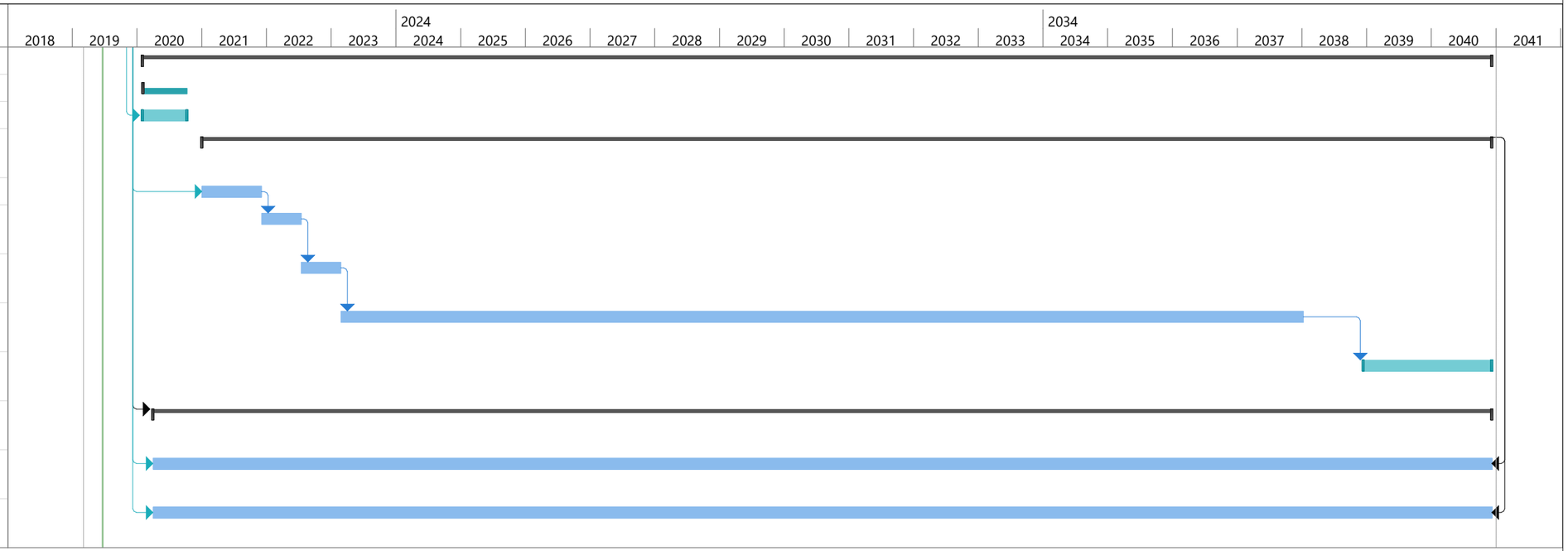


Figure 8-1. GSP Implementation Schedule

ID	Task Name
57	**Management Action Implementation**
58	**1. Basin-Wide Economic Analysis**
59	Plan Development
60	**2. Pumping Allocations in Central Basin Management Area**
61	Develop Allocation Method
62	Determine Allocation of New Water Supplies
63	Develop Timeline for Pumping Reduction
64	Implement Annual Pumping Reductions
65	Maintain Pumping Allocations
66	**Adaptive Management Action Implementation**
67	Evaluate Unimplemented Projects
68	Revisit Projects not included in GSP



8.2 Implementation Costs and Funding Sources

CBGSA operations and GSP implementation will incur costs, which will require funding by the CBGSA. The five primary activities that will incur costs are listed below. Table 8-1 summarizes these activities and estimated budgets. These estimates will be refined during GSP implementation as more information becomes available.

- Implementing the GSP
- Implementing GSP-related projects and management actions
- CBGSA operations
- Developing annual reports
- Developing five-year evaluation reports

Table 8-1: CBGSA and GSP Implementation Costs

Activity	Estimated Cost[a]
GSP Implementation and CBGSA Management	
CBGSA Administration and Legal Support	$390,000 annually
Stakeholder and Board Engagement	$140,000 annually
Outreach	$25,000 annually
GSP Implementation Program Management	$75,000 annually for fiscal years (FYs) with no five-year reports; $125,000 annually for FYs with five-year reports
Monitoring Program, including Data Management	$160,000 annually; additional costs to establish monitoring program in FY 2021 ($150,000) and FY 2021 ($50,000)
Annual Reporting	$40,000 annually
Five-Year GSP Updates	$800,000 every five years (across two fiscal years)
Projects and Management Actions	
Project 1: Flood and Stormwater Capture	Construction: $46 million Operations and maintenance: $500,000
Project 2: Precipitation Enhancement	$150,000 annually
Project 3: Water Supply Transfers/Exchanges	$600 to $2,800 per AF (total cost to be determined)
Project 4: Basin-Wide Economic Analysis	$100,000
Management Action 1: Improve Reliability of Water Supplies for Local Communities	$1.8 million
Management Action 2: Pumping Allocations in Central Basin Management Area	Allocation development: $300,000 Implementation/maintenance: $150,000 annually
Adaptive Management	To be determined

Table 8-1: CBGSA and GSP Implementation Costs	
Activity	**Estimated Cost[a]**
[a] Estimates are rounded and based on full implementation years (FY 2021 through FY 2040). Different costs may be incurred in FY 2020 as GSP implementation begins.	

8.2.1 GSP Implementation and Funding

Costs associated with GSP implementation and CBGSA operations include the following:

- **CBGSA administration and legal support:** Overall program management, coordination activities, and legal services
- **Stakeholder/Board engagement:** Bi-monthly SAC meetings, bi-monthly CBGSA Board meetings, bi-monthly calls with the CBGSA Board ad-hoc committees, and semi-annual public workshops
- **Outreach:** Email communications, newsletters, and website management
- **GSP implementation program management:** Program management and oversight of project and management action implementation, including coordination among GSA Board, staff and stakeholders, coordination of GSA implementation technical activities, oversight and management of CBGSA consultants and subconsultants, budget tracking, schedule management, and quality assurance/quality control of project implementation activities
- **Monitoring:** manage satellite imagery to track water usage, conduct groundwater level and quality monitoring, and manage data

Implementation of this GSP is projected to run between $800,000 and $1.3 million per year, and projects and management actions an additional $650,000 to $3.7 million per year. Development of this GSP was funded through a Proposition 1 Sustainable Groundwater Planning Grant. CBGSA operations are partially funded through this grant, and by volunteer contributions from CBGSA member agencies. Although ongoing operation of CBGSA could include contributions from its member agencies, which are ultimately funded through customer fees or other public funds, additional funding would be required to implement the GSP. Of the implementation activities in the GSP, only project implementation is likely to be eligible for grant or loan funding; funding through grants or loans have varying levels of certainty. As such, the CBGSA will develop a financing plan that will include one or more of the following financing approaches:

- **Pumping Fees:** Pumping fees would implement a charge for pumping that would be used to fund GSP implementation activities. To meet the funding needs of the GSP, fees would be lower when pumping is higher, such as current pumping levels, and higher when pumping is lower, such as when sustainable pumping levels are achieved. Although this funding approach would meet the financial needs of the GSP and CBGSA, it may discourage pumping reductions due to cost. The financing plan developed by the CBGSA would evaluate how to balance the need for funding with encouraging pumpers to commit to compliance with desired groundwater pumping reduction goals.

- **Assessments:** Assessments would charge a fee based on land areas. There are two methods for implementing an assessment based on acreage. The first option would assess a fee for all acres in the Basin outside of those in federal lands. This option would not distinguish between land use types. The second option would be to assess a fee only on irrigated acres. Similar to the pumping fee approach, assessment based on irrigated acreage could affect agricultural operations and contribute to land use conversions, which could affect the assessment amount or ability to fully fund GSP implementation.
- **Combination of fees and assessments:** This approach would combine pumping fees and assessments to moderate the effects of either approach on the economy in the Basin. This approach would likely include an assessment that would apply to all acres in the Basin, rather than just to irrigated acreage. It would be coupled with a pumping fee to account for those properties that use more water than others.

During development of a financing plan, the CBGSA would also determine whether to apply fees across the Basin as a whole or just within the management areas. The CBGSA may choose to apply an assessment across the Basin and a pumping fee within the management areas, or choose to set different levels of assessments or fees based on location within a management area or not, or they may choose another combination of the above approaches based on location. On July 10, 2019, the CBGSA Board voted to use a groundwater extraction fee to provide funding for CBGSA activities during the first year of GSP implementation and, on November 6, 2019, the Board established a groundwater extraction fee for the 2020 calendar year. Prior to implementing any fee or assessment program, the CBGSA would complete a rate assessment study and other analysis consistent with the requirements of Proposition 218.

The CBGSA will pursue grants and loans to help pay for project costs to the extent possible. If grants or loans are secured for project implementation, potential pumping fees and assessments may be adjusted to align with CBGSA operating costs and ongoing GSP implementation activities. A potential hurdle to the use of state grant funding is that delays in payment by the State can cause hardship for disadvantaged communities such as those in the Cuyama Basin. Therefore, it would be appropriate to expedite payments associated with DWR grant funding.

8.2.2 Projects and Management Actions

Costs for the projects and management actions are described in Chapter 7 of this GSP. Financing of the projects and management actions would vary depending on the activity. Potential financing for projects and management actions are provided in Table 8-2, though other financing may be pursued as opportunities arise or as appropriate.

Table 8-2: Financing Options for Proposed Projects, Management Actions, and Adaptive Management Strategies

Project/Activity		Responsible Entity	Potential Financing Options
Project 1: Flood and Stormwater Capture	Feasibility Study	CBGSA	• CBGSA Operating Funds • CBGSA Member Agencies (volunteer)
	Project Implementation	CBGSA or Member Agencies	• Grants • Loans • CBGSA Operating Funds • CBGSA Member Agencies (volunteer)
Project 2: Precipitation Enhancement	Feasibility Study	CBGSA	• CBGSA Operating Costs • CBGSA Member Agencies (volunteer)
	Project Implementation	CBGSA or Member Agencies	• CBGSA Operating Costs • CBGSA Member Agencies (volunteer)
Project 3: Water Supply Transfers/Exchanges	Feasibility Study	CBGSA	• CBGSA Operating Costs
	Project Implementation	CBGSA	• CBGSA Operating Costs
Project 4: Improve Reliability of Water Supplies for Local Communities	CCSD Well 4	Cuyama Community Services District (CCSD)	• Grants • Loans • CCSD Operating Costs
	VWSC Well 2	Ventucopa Water Supply Company (VWSC)	• Grants • Loans • VWSC Operating Costs
Management Action 1: Basin-Wide Economic Analysis	Economic Study	CBGSA	• CBGSA Operating Costs
Management Action 2: Pumping Allocations in Central Basin Management Area	Allocation Plan	CBGSA	• CBGSA Operating Costs
	Enforcement	CBGSA or Member Agencies	• CBGSA Operating Costs • Member Agency Operating Costs (volunteer)
Adaptive Management	-	CBGSA	• Grants • Loans • CBGSA Operating Costs

8.3 Annual Reports

Annual reports must be submitted by April 1 of each year following GSP adoption per California Code of Regulations. Annual reports must include three key sections as follows

- General Information
- Basin Conditions
- Plan Implementation Progress

An outline of what information will be provided in each of these sections in the annual report is included below. Annual reporting would be completed in a manner and format consistent with Section 356.2 of the SGMA regulations. As annual reporting continues, it is possible that this outline will change to reflect Basin conditions, CBGSA priorities, and applicable requirements.

8.3.1 General Information

General information will include an executive summary that highlights the key content of the annual report. As part of the executive summary, this section will include a description of the sustainability goals, provide a description of GSP projects and their progress as well as an annually-updated implementation schedule and map of the Basin. Key components as required by SGMA regulations include:

- Executive Summary
- Map of the Basin

8.3.2 Basin Conditions

Basin conditions will describe the current groundwater conditions and monitoring results. This section will include an evaluation of how conditions have changed in the Basin over the previous year and compare groundwater data for the year to historical groundwater data. Pumping data, effects of project implementation (e.g., recharge data, conservation, if applicable), surface water flows, total water use, and groundwater storage will be included. Key components as required by SGMA regulations include:

- Groundwater elevation data from the monitoring network
- Hydrographs of elevation data
- Groundwater extraction data
- Surface water supply data
- Total water use data
- Change in groundwater storage, including maps

8.3.3 Plan Implementation Progress

Progress toward successful plan implementation would be included in the annual report. This section of the annual report would describe the progress made toward achieving interim milestones as well as implementation of projects and management actions. Key components as required by SGMA regulations include:

- Plan implementation progress
- Sustainability progress

8.4 Five-Year Evaluation Report

SGMA requires evaluation GSPs regarding their progress toward meeting approved sustainability goals at least every five years. SGMA also requires developing a written assessment and submitting this assessment to DWR. An evaluation must also be made whenever the GSP is amended. A description of the information that will be included in the five-year report is provided below, and would be prepared in a manner consistent with Section 356.4 of the SGMA regulations.

8.4.1 Sustainability Evaluation

This section will contain a description of current groundwater conditions for each applicable sustainability indicator and will include a discussion of overall Basin sustainability. Progress toward achieving interim milestones and measurable objectives will be included, along with an evaluation of groundwater elevations (i.e., those being used as direct or proxy measures for the sustainability indicators) in relation to minimum thresholds. If any of the adaptative management triggers are found to be met during this evaluation, a plan for implementing adaptive management described in the GSP would be included.

8.4.2 Plan Implementation Progress

This section will describe the current status of project and management action implementation, and report on whether any adaptive management action triggers had been activated since the previous five-year report. An updated project implementation schedules will be included, along with any new projects that were developed to support the goals of the GSP and a description of any projects that are no longer included in the GSP. The benefits of projects that have been implemented will be included, and updates on projects and management actions that are underway at the time of the five-year report will be reported.

8.4.3 Reconsideration of GSP Elements

Part of the five-year report will include a reconsideration of GSP elements. As additional monitoring data are collected during GSP implementation, land uses and community characteristics change over time, and GSP projects and management actions are implemented, it may become necessary to revise the GSP. This section of the five-year report will reconsider the Basin setting, management areas, undesirable results,

minimum thresholds, and measurable objectives. If appropriate, the five-year report will recommend revisions to the GSP. Revisions would be informed by the outcomes of the monitoring network, and changes in the Basin, including changes to groundwater uses or supplies and outcomes of project implementation.

8.4.4 Monitoring Network Description

A description of the monitoring network will be provided in the five-year report. Data gaps, or areas of the Basin that are not monitored in a manner commensurate with the requirements of Sections 352.4 and 354.34(c) of the SGMA regulations will be identified. An assessment of the monitoring network's function will also be provided, along with an analysis of data collected to date. If data gaps are identified, the GSP will be revised to include a program for addressing these data gaps, along with an implemented schedule for addressing gaps and how the CBGSA will incorporate updated data into the GSP.

8.4.5 New Information

New information that becomes available after the last five-year evaluation or GSP amendment would be described and evaluated. If the new information would warrant a change to the GSP, this would also be included, as described in Section 8.4.3.

8.4.6 Regulations or Ordinances

The five-year report will include a summary of the regulations or ordinances related to the GSP that have been implemented by DWR since the previous report, and address how these may require updates to the GSP.

8.4.7 Legal or Enforcement Actions

Enforcement or legal actions taken by the CBGSA or its member agencies in relation to the GSP will be summarized in this section along with how such actions support sustainability in the Basin.

8.4.8 Plan Amendments

A description of amendments to the GSP will be provided in the five-year report, including adopted amendments, recommended amendments for future updates, and amendments that are underway during development of the five-year report.

8.4.9 Coordination

The CBGSA is the only GSA in the Cuyama Basin. It is adjacent to the Carrizo Basin, the Mil Potrero Area Basin, and Lockwood Valley Basin, which are very low priority basins per the CASGEM Program, and not yet required to comply with SGMA. Downstream from the Basin is the Santa Maria River Valley Basin, which is currently undergoing prioritization evaluation under the CASGEM Program. A GSA has

formed for the Santa Maria Basin Fringe Areas, which are located downstream from Twitchell Reservoir, and could be affected by stormwater capture activities by the CBGSA. The CBGSA may need to coordinate with this GSA, and will need to coordinate with various land use agencies and other entities to implement projects. This section of the five-year report will describe coordination activities between these entities, such as meetings, joint projects, or data collection efforts. If additional neighboring GSAs have been formed since the previous report, or changes in neighboring basins occurred, that result in a need for new or additional coordination within or outside the Basin, such coordination activities would be included as well.

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Cuyama Valley Groundwater Basin

Groundwater Sustainability Plan

Appendices

Prepared by:

July 2022

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Chapter 1 Appendices

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Chapter 1
Appendix A

Preparation Checklist for Groundwater Sustainability Plan Submittal

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SGMA Regulations Section	Water Code Section	Requirement	Description	Relevant GSP Section
Article 3. Technical and Reporting Standards				
352.2		Monitoring Protocols	• Monitoring protocols adopted by the GSA for data collection and management • Monitoring protocols that are designed to detect changes in groundwater levels, groundwater quality, inelastic surface subsidence for basins for which subsidence has been identified as a potential problem, and flow and quality of surface water that directly affect groundwater levels or quality or are caused by groundwater extraction in the basin	Chapter 4, *Monitoring Networks* in Appendix A, *Monitoring Protocols for Groundwater Level Monitoring Network*
Article 5. Plan Contents, Subarticle 1. Administrative Information				
354.4		General Information	• Executive Summary • List of references and technical studies	• Executive Summary • References section of each Chapter
354.6		Agency Information	• GSA mailing address • Organization and management structure • Contact information of Plan Manager • Legal authority of GSA • Estimate of implementation costs	• Chapter 1, *Agency Information, Plan Area and Communication* in Section 1.1, *Introduction and Agency Information* • Chapter 8, *Implementation Plan*
354.8(a)	10727.2(a)(4)	Map(s)	• Area covered by GSP • Adjudicated areas, other agencies within the basin, and areas covered by an Alternative • Jurisdictional boundaries of federal or State land • Existing land use designations • Density of wells per square mile	Chapter 1, *Agency Information, Plan Area and Communication* in Section 1.2, *Plan Area*
354.8(b)		Description of the Plan Area	• Summary of jurisdictional areas and other features	Chapter 1, *Agency Information, Plan Area and Communication* in Section 1.2, *Plan Area*
354.8(c) 354.8(d) 354.8(e)	10727.2(g)	Water Resource Monitoring and Management Programs	• Description of water resources monitoring and management programs • Description of how the monitoring networks of those plans will be incorporated into the GSP • Description of how those plans may limit operational flexibility in the basin • Description of conjunctive use programs	Chapter 1, *Agency Information, Plan Area and Communication* in Section 1.2, *Plan Area* Chapter 4, *Monitoring Networks*
354.8(f)	10727.2(g)	Land Use Elements or Topic Categories of Applicable General Plans	• Summary of general plans and other land use plans • Description of how implementation of the GSP may change water demands or affect achievement of sustainability and how the GSP addresses those effects • Description of how implementation of the GSP may affect the water supply assumptions of relevant land use plans • Summary of the process for permitting new or replacement wells in the basin • Information regarding the implementation of land use plans outside the basin that could affect the ability of the Agency to achieve sustainable groundwater management	Chapter 1, *Agency Information, Plan Area and Communication* in Section 1.2, *Plan Area*
354.8(g)	10727.4	Additional GSP Contents	**Description of Actions related to:**	Chapter 1, *Agency Information, Plan Area and*

SGMA Regulations Section	Water Code Section	Requirement	Description	Relevant GSP Section
			• Control of saline water intrusion • Wellhead protection • Migration of contaminated groundwater • Well abandonment and well destruction program • Replenishment of groundwater extractions • Conjunctive use and underground storage • Well construction policies • Addressing groundwater contamination cleanup, recharge, diversions to storage, conservation, water recycling, conveyance, and extraction projects • Efficient water management practices • Relationships with State and federal regulatory agencies • Review of land use plans and efforts to coordinate with land use planning agencies to assess activities that potentially create risks to groundwater quality or quantity • Impacts on groundwater dependent ecosystems	*Communication* in Section 1.2, *Plan Area* in Table 1-2: *Plan Elements from Plan Elements from CWC Section 10727.4*
354.10		Notice and Communication	• Description of beneficial uses and users • List of public meetings • GSP comments and responses • Decision-making process • Public engagement • Encouraging active involvement • Informing the public on GSP implementation progress	Chapter 1, *Agency Information, Plan Area and Communication* in Section 1.3, *Notice and Communication*
Article 5. Plan Contents, Subarticle 2. Basin Setting				
354.14		Hydrogeologic Conceptual Model	• Description of the Hydrogeologic Conceptual Model • Two scaled cross-sections • Map(s) of physical characteristics: topographic information, surficial geology, soil characteristics, surface water bodies, source and point of delivery for imported water supplies	Chapter 2, *Basin Settings* in Section 2.1, *Hydrogeologic Conceptual Model*
354.14(c)(4)	10727.2(a)(5)	Map of Recharge Areas	• Map delineating existing recharge areas that substantially contribute to the replenishment of the basin, potential recharge areas, and discharge areas	Chapter 2, *Basin Settings* in Section 2.1.9, *Topography, Surface Water, and Recharge*
	10727.2(d)(4)	Recharge Areas	• Description of how recharge areas identified in the plan substantially contribute to the replenishment of the basin	Chapter 2, *Basin Settings* in Section 2.1.9, *Topography, Surface Water, and Recharge*
354.16	10727.2(a)(1) 10727.2(a)(2)	Current and Historical Groundwater Conditions	• Groundwater elevation data • Estimate of groundwater storage • Seawater intrusion conditions • Groundwater quality issues	Chapter 2, *Basin Settings* in Section 2.2, *Groundwater Conditions*

SGMA Regulations Section	Water Code Section	Requirement	Description	Relevant GSP Section
			• Land subsidence conditions • Identification of interconnected surface water systems • Identification of groundwater-dependent ecosystems	
354.18	10727.2(a)(3)	Water Budget Information	• Description of inflows, outflows, and change in storage • Quantification of overdraft • Estimate of sustainable yield • Quantification of current, historical, and projected water budgets	Chapter 2, *Basin Settings* in Section 2.3, *Water Budget*
	10727.2(d)(5)	Surface Water Supply	• Description of surface water supply used or available for use for groundwater recharge or in-lieu use	Chapter 2, *Basin Settings* in Section 2.3, *Water Budget*
354.20		Management Areas	• Reason for creation of each management area • Minimum thresholds and measurable objectives for each management area • Level of monitoring and analysis • Explanation of how management of management areas will not cause undesirable results outside the management area • Description of management areas	• Chapter 4, *Monitoring Networks* • Chapter 5, *Minimum Thresholds, Measurable Objectives, and Interim Milestones* • Chapter 7, *Projects and Management Actions* in Section 7.2, *Management Areas*
Article 5. Plan Contents, Subarticle 3. Sustainable Management Criteria				
354.24		Sustainability Goal	• Description of the sustainability goal	Chapter 3, *Undesirable Results* in Section 3.1, *Sustainability Goal*
354.26		Undesirable Results	• Description of undesirable results • Cause of groundwater conditions that would lead to undesirable results • Criteria used to define undesirable results for each sustainability indicator • Potential effects of undesirable results on beneficial uses and users of groundwater	Chapter 3, *Undesirable Results*
354.28	10727.2(d)(1) 10727.2(d)(2)	Minimum Thresholds	• Description of each minimum threshold and how they were established for each sustainability indicator • Relationship for each sustainability indicator • Description of how selection of the minimum threshold may affect beneficial uses and users of groundwater • Standards related to sustainability indicators • How each minimum threshold will be quantitatively measured	Chapter 5, *Minimum Thresholds, Measurable Objectives, and Interim Milestones*
354.30	10727.2(b)(1) 10727.2(b)(2) 10727.2(d)(1) 10727.2(d)(2)	Measurable Objectives	• Description of establishment of the measureable objectives for each sustainability indicator • Description of how a reasonable margin of safety was established for each measureable objective • Description of a reasonable path to achieve and maintain the sustainability goal, including a description of interim milestones	Chapter 5, *Minimum Thresholds, Measurable Objectives, and Interim Milestones*

SGMA Regulations Section	Water Code Section	Requirement	Description	Relevant GSP Section
Article 5. Plan Contents, Subarticle 4. Monitoring Networks				
354.34	10727.2(d)(1) 10727.2(d)(2) 10727.2(e) 10727.2(f)	Monitoring Networks	• Description of monitoring network • Description of monitoring network objectives • Description of how the monitoring network is designed to: demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features; estimate the change in annual groundwater in storage; monitor seawater intrusion; determine groundwater quality trends; identify the rate and extent of land subsidence; and calculate depletions of surface water caused by groundwater extractions • Description of how the monitoring network provides adequate coverage of Sustainability Indicators • Density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends • Scientific rational (or reason) for site selection • Consistency with data and reporting standards • Corresponding sustainability indicator, minimum threshold, measurable objective, and interim milestone • Location and type of each monitoring site within the basin displayed on a map, and reported in tabular format, including information regarding the monitoring site type, frequency of measurement, and the purposes for which the monitoring site is being used • Description of technical standards, data collection methods, and other procedures or protocols to ensure comparable data and methodologies	Chapter 4, *Monitoring Networks*
354.36		Representative Monitoring	• Description of representative sites • Demonstration of adequacy of using groundwater elevations as proxy for other sustainability indicators • Adequate evidence demonstrating site reflects general conditions in the area	Chapter 4, *Monitoring Networks*
354.38		Assessment and Improvement of Monitoring Network	• Review and evaluation of the monitoring network • Identification and description of data gaps • Description of steps to fill data gaps • Description of monitoring frequency and density of sites	Chapter 4, *Monitoring Networks*
Article 5. Plan Contents, Subarticle 5. Projects and Management Actions				
354.44		Projects and Management Actions	• Description of projects and management actions that will help achieve the basin's sustainability goal • Measurable objective that is expected to benefit from each project and management action • Circumstances for implementation • Public noticing • Permitting and regulatory process • Time-table for initiation and completion, and the accrual of expected benefits • Expected benefits and how they will be evaluated • How the project or management action will be accomplished. If the projects or management actions rely on water from outside the jurisdiction of the Agency, an explanation of the source and reliability of that	Chapter 7, *Projects and Management Actions*

SGMA Regulations Section	Water Code Section	Requirement	Description	Relevant GSP Section
			water shall be included. • Legal authority required • Estimated costs and plans to meet those costs • Management of groundwater extractions and recharge	
354.44(b)(2)	10727.2(d)(3)		• Overdraft mitigation projects and management actions	Chapter 7, *Projects and Management Actions*
Article 8. Interagency Agreements				
357.4	10727.6	Coordination Agreements - Shall be submitted to the Department together with the GSPs for the basin and, if approved, shall become part of the GSP for each participating Agency.	**Coordination Agreements shall describe the following:** • A point of contact • Responsibilities of each Agency • Procedures for the timely exchange of information between Agencies • Procedures for resolving conflicts between Agencies • How the Agencies have used the same data and methodologies to coordinate GSPs • How the GSPs implemented together satisfy the requirements of SGMA • Process for submitting all Plans, Plan amendments, supporting information, all monitoring data and other pertinent information, along with annual reports and periodic evaluations • A coordinated data management system for the basin • Coordination agreements shall identify adjudicated areas within the basin, and any local agencies that have adopted an Alternative that has been accepted by the Department	The Cuyama Valley Groundwater Basin does not need a coordination agreement because the basin is using a single GSP.

Chapter 1
Appendix B

Notification of Intent to Develop a Groundwater Sustainability Plan

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CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY

1901 Royal Oaks Drive, Suite 200 Sacramento, California 95815
December 1, 2017

Trevor Joseph, GGM Section Chief
STATE OF CALIFORNIA
Department of Water Resources
P.O. Box 94236
Sacramento, CA 94236

Subject: Notification of Intent to Develop a Groundwater Sustainable Plan (GSP)

Dear Mr. Joseph:

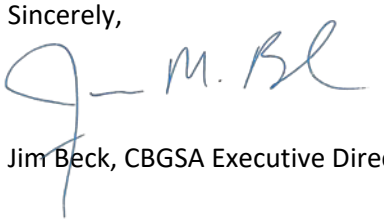
Pursuant to California Water Code Section 10727.8 and California Code of Regulations Section 353.6, the Department of Water Resources (DWR) is hereby given notice that the Cuyama Basin Groundwater Sustainability Agency (CBGSA) intends to commence with the development of a Groundwater Sustainability Plan (GSP). The CBGSA will have a single coordination agreement compliant with Section 10727.6.

The CBGSA Board of Directors (BOD) meetings are held regularly the first Wednesday of every month at the Family Resource Center, 4689 CA-166, New Cuyama, CA 93254. Special Board meetings will be held as needed and noticed through the website and local posting. The public is encouraged to attend and participate in the GSP development and implementation process.

Additionally, the CBGSA has formed a Standing Advisory Committee (SAC) comprised of members falling within the categories of interested persons or representatives of interested entities as described in the Sustainable Groundwater Management Act (SGMA). The SAC will specifically engage on issues related to GSP preparation and implementation. The SAC may also be involved in other outreach efforts to encourage participation from diverse social, cultural, and economic elements of the population in development and implementation of a GSP. The SAC is a public meeting and interested parties are encouraged to attend. The SAC meetings are held the Thursday immediately before the Board of Directors monthly session.

Meeting notices and materials are posted online on the Santa Barbara County website at http://www.countyofsb.org/pwd/gsa.sbc and at the Family Resource Center, 4689 CA-166, New Cuyama, CA 93254.

The CBGSA looks forward to working collaboratively with DWR on developing and implementing a GSP. Should DWR have any questions about this notice, please contact Jim Beck by email at jbeck@hgcpm.com or by phone at (661) 333-7091.
Sincerely,



Jim Beck, CBGSA Executive Director

Chapter 1
Appendix C

Notice of Decision to Form a Groundwater Sustainability Agency

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RESOLUTION OF THE
BOARD OF DIRECTORS OF
THE CUYAMA BASIN WATER DISTRICT

RESOLUTION TO PARTICIPATE IN THE FORMATION OF A GROUNDWATER SUSTAINABILITY AGENCY PURSUANT TO THE SUSTAINABLE GROUNDWATER MANAGEMENT ACT FOR THE CUYAMA VALLEY GROUNDWATER BASIN

RESOLUTION NO. 2017-003

WHEREAS, the California legislature passed a statewide framework for sustainable groundwater management, known as the Sustainable Groundwater Management Act (California Water Code § 10720 *et seq.)* as amended, which became effective January 1, 2015; and

WHEREAS, pursuant to the Sustainable Groundwater Management Act (SGMA), sustainable groundwater management is intended to occur pursuant to Groundwater Sustainability Plans (GSP) that are created and adopted by local Groundwater Sustainability Agencies (GSA); and

WHEREAS, pursuant to Water Code §10723(a), a Local Agency or combination of Local Agencies, as defined in Water Code §10721(n), may decide to become or form a Groundwater Sustainably Agency; and

WHEREAS, the Cuyama Basin Water District, Santa Barbara County Water Agency, the County of San Luis Obispo, the County of Ventura, the County of Kern, and Cuyama Community Services District are "Local Agencies" as defined in Water Code §10721(n), and collectively include all of the lands within the Basin; and

WHEREAS, the Cuyama Basin Water District was formed in part to provide a vehicle for landowners in the Cuyama Valley Groundwater Basin to directly participate in the SGMA process; and

WHEREAS, the District desires to form a Groundwater Sustainability Agency in conjunction with the Cuyama Basin Water District, the County of San Luis Obispo, the County of Ventura, the County of Kern, and Cuyama Community Services District, and which may include at a later time other Local Agencies and other legally authorized entities; and

WHEREAS, a notice of a public hearing to consider whether the District should elect to become a GSA for the basin in conjunction with the Local Agencies listed above was timely published in the Santa Barbara News Press, San Luis Obispo Star and Ventura County Star pursuant to California Government Code §6066; and

WHEREAS, the District held a public hearing on May 22, 2017, in Ventura, San Luis

Obispo and Santa Barbara Counties, to consider election to become a GSA for a portion of the Basin; and

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS: that the Board of Directors of the Cuyama Basin Water District declares and directs as follows:

1. That the Board of Directors of the District herein decides to form a Groundwater Sustainability Agency in conjunction with the County of Santa Barbara, the County of San Luis Obispo, the County of Ventura, the County of Kern and Cuyama Community Services District known as the Cuyama Basin Groundwater Sustainability Agency (Agency), and which shall have all the powers granted to a groundwater sustainability agency pursuant to the Sustainable Groundwater Management Act.

2. That the Agency hereby created shall consider the interests of all beneficial uses and users of groundwater, as well as those responsible for implementing groundwater sustainability plans, as required by California Water Code §10723.2.

3. That the Agency hereby created shall establish and maintain a list of persons interested in receiving notices regarding plan preparation, meeting announcements, and availability of draft plans, maps,. and other relevant documents, as required by California Water Code
§10723.4.

4. That the President of the Board of Directors of the District shall be authorized to execute a Joint Exercise of Powers Agreement with the County of Santa Barbara, the County of San Luis Obispo, the County of Ventura, the County of Kern, and Cuyama Community Services District, and cause notice to be given to the California Department of Water Resources of the decision of the Board of Directors of the District in conjunction with the County of Santa Barbara, County of San Luis Obispo, the County of Ventura, the County of Kern, and Cuyama Community Services District to create the above referenced Groundwater Sustainability Agency.

5. As provided by said Joint Exercise of Powers Agreement, each of the Directors of the District are designated as a Director of the Agency, and General Manager, Matt Klinchuch is hereby appointed as an alternate, if any Director is absent from a meeting of the Agency, and Board Secretary, Brad DeBranch is appointed as a second alternate, if any Director is absent from a meeting of the Agency, subject to modification by the Board of Directors from time to time.

PASSED, APPROVED, AND ADOPTED by the Board of Directors of the Cuyama Basin Water District, on this 22nd day of May, 2017, by the following vote:

AYES: Directors Albano, Bracken, Cappello, Wooster & Yurosek

NAYS: None

ABSENT: None

ABSTAIN: None

SECRETARY'S CERTIFICATE

I, BRAD DEBRANCH, Secretary of the Cuyama Basin Water District, do hereby certify that the foregoing is a full, true and correct copy of the Resolution of the Board of Directors of the Cuyama Basin Water District, duly and regularly adopted by the Board of Directors of the Cuyama Basin Water District in all respects as required by law and the Bylaws of the Cuyama Basin Water District, on this 22nd day of May, 2017, by the consent in writing of all members of the Board of Directors of the Cuyama Basin Water District to the adoption of said resolution.

BRAD DEBRANCH, Secretary

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE CUYAMA COMMUNITY SERVICES DISTRICT TOWN SITE OF NEW CUYAMA STATE OF CALIFORNIA

RESOLUTION TO PARTICIPATE IN THE FORMATION OF A GROUNDWATER SUSTAINABILITY AGENCY PURSUANT TO THE SUSTAINABLE GROUNDWATER MANAGEMENT ACT FOR THE CUYAMA COMMUNITY SERVICES DISTRICT AREA OF THE CUYAMA VALLEY GROUNDWATER BASIN	**RESOLUTION NO. 17-2**

WHEREAS, the California legislature passed a statewide framework for sustainable groundwater management, known as the Sustainable Groundwater Management Act (California Water Code § 10720 *et seq.*) as amended, which became effective January 1, 2015; and

WHEREAS, pursuant to the Sustainable Groundwater Management Act (SGMA), sustainable groundwater management is intended to occur pursuant to Groundwater Sustainability Plans (GSP) that are created and adopted by local Groundwater Sustainability Agencies (GSA); and

WHEREAS, pursuant to Water Code §10723(a), a Local Agency or combination of Local Agencies, as defined in Water Code §10721(n), may decide to become or form a Groundwater Sustainability Agency; and

WHEREAS, the Santa Barbara County Water Agency, the Cuyama Basin Water District, the Cuyama Community Services District, the County of San Luis Obispo, the County of Ventura, and the County of Kern are "Local Agencies" as defined in Water Code §10721(n), and collectively include all of the lands within the Basin; and

WHEREAS, the Cuyama Community Services District desires to form a Groundwater Sustainability Agency in conjunction with the Cuyama Basin Water District, the Santa Barbara County Water Agency, the County of San Luis Obispo, the County of Ventura, and the County of Kern, and which may include at a later time other Local Agencies and other legally authorized entities; and

WHEREAS, a notice of a public hearing to consider whether the District should elect to become a GSA for a portion of the basin was published in the Santa Maria Times and Bakersfield Californian press pursuant to California Government Code §6066; and

WHEREAS, the Cuyama Community Services District held a public hearing on May 23, 2017 to consider election to become a GSA for a portion of the basin; and

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS: that the Board of Directors of the Cuyama Community Services District declares and directs as follows:

1. That the Board of Directors of the Cuyama Community Services District herein decides to form a Groundwater Sustainability Agency in conjunction with the Cuyama Basin Water District, the Santa Barbara County Water Agency, the County of San Luis Obispo, the County of Ventura, and the County of Kern, known as the Cuyama Basin Groundwater Sustainability Agency (Agency), and which shall have all the powers granted to a groundwater sustainability agency pursuant to the Sustainable Groundwater Management Act.

2. That the Agency hereby created shall consider the interests of all beneficial uses and users of groundwater, as well as those responsible for implementing groundwater sustainability plans, as required by California Water Code §10723.2.

3. That the Agency hereby created shall establish and maintain a list of persons interested in receiving notices regarding plan preparation, meeting announcements, and availability of draft plans, maps, and other relevant documents, as required by California Water Code §10723.4.

4. That the Chair of the Board of Directors of the Cuyama Community Services District shall be authorized to execute a Joint Exercise of Powers Agreement with the Cuyama Basin Water District, the Santa Barbara County Water Agency, the County of San Luis Obispo, the County of Ventura, and the County of Kern, and cause notice to be given to the California Department of Water Resources of the decision of the Board of Directors of the Cuyama Community Services District in conjunction with the Cuyama Basin Water District, Santa Barbara County Water Agency, the County of San Luis Obispo, the County of Ventura, and the County of Kern to create the above referenced Groundwater Sustainability Agency.

PASSED, APPROVED, AND ADOPTED by the Board of Directors of the Cuyama Community Services District, Town Site of New Cuyama, State of California, on this 23rd day of May, 2017 by the following vote:

AYES:	F. Paul Chounet John Coats Malcolm Ricci Deborah Williams
NAYS:	None
ABSENT:	Linda Proeber

ABSTAIN: None

ACCEPTED AND AGREED:
CUYAMA COMMUNITY SERVICES DISTRICT

By: _____
Malcolm Ricci, Chair, Board of Directors

By: _____
F. Paul Chounet, Vice Chair, Board of Directors

ATTEST:
VIVIAN VICKERY,
OFFICE ADMINISTRATOR/BOARD SECRETARY
Cuyama Community Services District

CUYAMA COMMUNITY SERVICES DISTRICT ESTABLISHED DECEMBER 8, 1977 CCSD

By: Vivian Vickery
Board Secretary

County of Santa Barbara
BOARD OF SUPERVISORS
Minute Order

May 9, 2017

Present: 5 - Supervisor Williams, Supervisor Wolf, Supervisor Hartmann, Supervisor Adam, and Supervisor Lavagnino

PUBLIC WORKS, BOARD OF DIRECTORS, WATER AGENCY File Reference No. 17-00341

RE: HEARING - Consider recommendations regarding Cuyama Valley Groundwater Basin Groundwater Sustainability Agency Formation, First and Fifth Districts, as follows:
(EST. TIME: 1 HR.)

Acting as the Board of Directors, Water Agency:

a) Approve and authorize the Chair to execute the "Joint Exercise of Powers Agreement, Cuyama Basin Groundwater Sustainability Agency" to form a Groundwater Sustainability Agency in the Cuyama Valley Groundwater Basin;

b) Adopt the Resolution entitled "Resolution to Participate in the Formation of a Groundwater Sustainability Agency Pursuant to the Sustainable Groundwater Management Act for the Cuyama Valley Groundwater Basin";

c) Appoint by Resolution Supervisor Das Williams as a Director of the Groundwater Sustainability Agency, with Chief of Staff Darcel Elliot as an alternate;

d) Appoint by Resolution Fifth District Chief of Staff Cory Bantilan as a Director of the Groundwater Sustainability Agency, with an alternate to be designated by Mr. Bantilan; and

e) Determine that the proposed actions are not a project under the California Environmental Quality Act, pursuant to Guidelines Section 15378(b) (5), organization or administrative activities that will not result in a direct or indirect physical change in the environment.

COUNTY EXECUTIVE OFFICER'S RECOMMENDATION: APPROVE

County of Santa Barbara
BOARD OF SUPERVISORS
Minute Order

May 9, 2017

Received and filed staff presentation and conducted public hearing.

A motion was made by Supervisor Williams, seconded by Supervisor Lavagnino, that this matter be acted on as follows:

a) Approved; Chair to execute;

b) Adopted;

RESOLUTION NO. 17-97

c) and d) Adopted, amended as follows:

Appoint by Resolution Fifth District Chief of Staff Cory Bantilan as a Director of the Groundwater Sustainability Agency, with Supervisor Lavagnino as an alternate.

RESOLUTION NO. 17-98

e) Approved.

The motion carried by the following vote:

Ayes: 4 - Supervisor Williams, Supervisor Wolf, Supervisor Hartmann, and Supervisor Lavagnino

Recused: 1 - Supervisor Adam

RESOLUTION OF THE
BOARD OF DIRECTORS OF THE SANTA BARBARA COUNTY WATER AGENCY
STATE OF CALIFORNIA

RESOLUTION TO PARTICIPATE IN THE FORMATION OF A GROUNDWATER SUSTAINABILITY AGENCY PURSUANT TO THE SUSTAINABLE GROUNDWATER MANAGEMENT ACT FOR THE CUYAMA VALLEY GROUNDWATER BASIN	)	**RESOLUTION NO.** 17-97

WHEREAS, the California legislature passed a statewide framework for sustainable groundwater management, known as the Sustainable Groundwater Management Act (California Water Code § 10720 *et seq.*) as amended, which became effective January 1, 2015; and

WHEREAS, pursuant to the Sustainable Groundwater Management Act (SGMA), sustainable groundwater management is intended to occur pursuant to Groundwater Sustainability Plans (GSP) that are created and adopted by local Groundwater Sustainability Agencies (GSA); and

WHEREAS, pursuant to Water Code §10723(a), a Local Agency or combination of Local Agencies, as defined in Water Code §10721(n), may decide to become or form a Groundwater Sustainably Agency; and

WHEREAS, the Santa Barbara County Water Agency, the Cuyama Basin Water District, Cuyama Community Services District, the County of San Luis Obispo, the County of Ventura, and the County of Kern are "Local Agencies" as defined in Water Code §10721(n), and collectively include all of the lands within the Basin; and

WHEREAS, the Santa Barbara County Water Agency desires to form a Groundwater Sustainability Agency in conjunction with the Cuyama Basin Water District, Cuyama Community Services District, the County of San Luis Obispo, the County of Ventura, and the County of Kern, and which may include at a later time other Local Agencies and other legally authorized entities; and

WHEREAS, a notice of a public hearing to consider whether the County should elect to become a GSA for the basin in conjunction with the Local Agencies listed above was published in the Santa Maria Times and Santa Barbara News Press pursuant to California Government Code §6066; and

WHEREAS, the County Water Agency held a public hearing on May 9, 2017 to consider election to become a GSA for a portion of the basin; and

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS: that the Board of Directors of the Santa Barbara County Water Agency declares and directs as follows:

1. That the Board of Directors of the Santa Barbara County Water Agency herein decides to form a Groundwater Sustainability Agency in conjunction with the Cuyama Basin Water District, Cuyama Community Services District, the County of San Luis Obispo, the County of Ventura, and the County of Kern, known as the Cuyama Basin Groundwater Sustainability Agency (Agency), and which shall have all the powers granted to a groundwater sustainability agency pursuant to the Sustainable Groundwater Management Act.

2. That the Agency hereby created shall consider the interests of all beneficial uses and users of groundwater, as well as those responsible for implementing groundwater sustainability plans, as required by California Water Code §10723.2.

3. That the Agency hereby created shall establish and maintain a list of persons interested in receiving notices regarding plan preparation, meeting announcements, and availability of draft plans, maps, and other relevant documents, as required by California Water Code §10723.4.

4. That the Chair of the Board of Directors of the Santa Barbara County Water Agency shall be authorized to execute a Joint Exercise of Powers Agreement with the Cuyama Basin Water District, Cuyama Community Services District, the County of San Luis Obispo, the County of Ventura, and the County of Kern, and cause notice to be given to the California Department of Water Resources of the decision of the Board of Directors of the Santa Barbara County Water Agency in conjunction with the Cuyama Basin Water District, Cuyama Community Services District, the County of San Luis Obispo, the County of Ventura, and the County of Kern to create the above referenced Groundwater Sustainability Agency.

PASSED, APPROVED, AND ADOPTED by the Board of Directors of the Santa Barbara County Water Agency, State of California, on this 9th day of May, 2017 by the following vote:

AYES: Supervisors Williams, Wolf, Hartmann, and Lavagnino

NAYS: None

ABSENT: None

ABSTAIN: None

RECUSED: Supervisor Adam

ATTEST:
MONA MIYASATO,
COUNTY EXECUTIVE OFFICER
Ex Officio Clerk of the Board Directors
of the Santa Barbara County Water Agency

By: _____
Deputy

ACCEPTED AND AGREED:
SANTA BARBARA COUNTY WATER AGENCY

By: _____
Joan Hartmann, Chair, Board of Directors

APPROVED AS TO FORM:
MICHAEL C. GHIZZONI
COUNTY COUNSEL

By: _____
Deputy

#1

RESOLUTION OF THE
BOARD OF DIRECTORS OF THE SANTA BARBARA COUNTY WATER AGENCY
STATE OF CALIFORNIA

RESOLUTION TO APPOINT DIRECTORS AND ALTERNATES TO THE CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY BOARD OF DIRECTORS PURSUANT TO THE SUSTAINABLE GROUNDWATER MANAGEMENT ACT FOR THE CUYAMA VALLEY GROUNDWATER BASIN	)	**RESOLUTION NO.** 17-98

WHEREAS, the California legislature passed a statewide framework for sustainable groundwater management, known as the Sustainable Groundwater Management Act (California Water Code § 10720 *et seq.*) as amended, which became effective January 1, 2015; and

WHEREAS, the Santa Barbara County Water Agency (County Water Agency) is entering into a Joint Powers Agreement to form the Cuyama Basin Groundwater Sustainability Agency in conjunction with the Cuyama Basin Water District, Cuyama Community Services District, the County of San Luis Obispo, the County of Ventura, and the County of Kern, and which may include at a later time other Local Agencies and other legally authorized entities; and

WHEREAS, the Joint Powers Agreement for the Cuyama Basin Groundwater Sustainability Agency specifies that the County Water Agency shall appoint two Directors and their two alternates, each of whom shall be an elected official or member of management; and

WHEREAS, the Cuyama Valley Groundwater Basin lies within the County of Santa Barbara's First and Fifth Supervisorial Districts; and

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS: that the Board of Directors of the Santa Barbara County Water Agency declares and directs as follows:

1. That the Board of Directors of the Santa Barbara County Water Agency hereby appoints First District Supervisor Das Williams as a Director of the Cuyama Basin Groundwater Sustainability Agency, and appoints First District Chief of Staff Darcel Elliot as an Alternate Director.

2. That the Board of Directors of the Santa Barbara County Water Agency hereby appoints Fifth District Chief of Staff Cory Bantilan as a Director of the Cuyama Basin Groundwater Sustainability Agency, and appoints Fifth District Supervisor Steve Lavagnino as an Alternate Director of the Cuyama Basin Groundwater Sustainability Agency.

PASSED, APPROVED, AND ADOPTED by the Board of Directors of the Santa Barbara County Water Agency, State of California, on this 9th day of May, 2017 by the following vote:

AYES: Supervisors Williams, Wolf, Hartmann, and Lavagnino

NAYS: None

ABSENT: None

ABSTAIN: None

RECUSED: None

ATTEST:
MONA MIYASATO,
COUNTY EXECUTIVE OFFICER
Ex Officio Clerk of the Board Directors
of the Santa Barbara County Water Agency

By: _____
Deputy

ACCEPTED AND AGREED:
SANTA BARBARA COUNTY WATER AGENCY

By: _____
Joan Hartmann, Chair, Board of Directors

APPROVED AS TO FORM:
MICHAEL C. GHIZZONI
COUNTY COUNSEL

By: _____
Deputy

IN THE BOARD OF SUPERVISORS

County of San Luis Obispo, State of California

Tuesday, May 23, 2017

PRESENT: Supervisors Bruce S. Gibson, Adam Hill, Lynn Compton, Debbie Arnold, and Chairperson John Peschong

ABSENT: None

RESOLUTION NO. 2017-145

RESOLUTION APPROVING THE JOINT EXERCISE OF POWERS AGREEMENT CREATING A JOINT POWERS AGENCY (JPA) TO SERVE AS THE CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY, APPOINTING THE DIRECTOR AND ALTERNATE DIRECTOR REPRESENTING THE COUNTY OF SAN LUIS OBISPO TO THE JPA BOARD OF DIRECTORS, AND FINDING THAT THE PROJECT IS EXEMPT FROM SECTION 21000 *ET SEQ.* OF THE CALIFORNIA PUBLIC RESOURCES CODE (CEQA)

The following Resolution is hereby offered and read:

WHEREAS, in 2014, the California Legislature adopted, and the Governor signed into law, three bills (SB 1168, AB 1739, and SB 1319) collectively referred to as the Sustainable Groundwater Management Act (SGMA) (Water Code §§ 10720 *et seq.*), that became effective on January 1, 2015, and that have been subsequently amended; and

WHEREAS, the intent of SGMA, as set forth in Water Code Section 10720.1, is to provide for the sustainable management of groundwater basins at a local level by providing local groundwater agencies with the authority, and technical and financial assistance necessary, to sustainably manage groundwater; and

WHEREAS, SGMA requires the formation of Groundwater Sustainability Agencies (GSAs) for the purpose of achieving groundwater sustainability through the adoption and implementation of Groundwater Sustainability Plans (GSPs) for all medium and high priority basins as designated by the California Department of Water Resources (DWR); and

WHEREAS, SGMA requires that a local agency or a collection of agencies through a joint powers agreement or memorandum of agreement decide to become a single GSA or that multiple local agencies decide to each become a GSA for all medium and high priority basins on or before June 30, 2017 and that the GSA or GSAs for basins DWR has designated as "subject to critical conditions of overdraft" develop a GSP or coordinated GSPs on or before January 31, 2020; and

WHEREAS, the Cuyama Valley Groundwater Basin (Basin) has been designated by DWR as a medium priority basin subject to critical conditions of overdraft; and

WHEREAS, the County of San Luis Obispo, the Santa Barbara County Water Agency, the County of Ventura, the County of Kern, the Cuyama Basin Water District, and the Cuyama Community Services District are each a "local agency" within the Basin as defined in Water Code Section 10721(n), and thus are eligible to collectively form a GSA for the Basin through a joint powers agreement under the authority of Water Code Section 10723.6(a) (collectively, Local Agencies or Members); and

WHEREAS, the Local Agencies have determined that management of the Basin will best be achieved through the creation of a joint powers agency (JPA) to serve as the GSA for the Basin pursuant to the terms and conditions set forth in the Joint Exercise of Powers Agreement attached hereto as Exhibit A and incorporated herein (Joint Powers Agreement); and

WHEREAS, Article 3.1 of the Joint Powers Agreement provides that the JPA is a public entity separate from the Members and shall be known as the Cuyama Basin Groundwater Sustainability Agency; and

WHEREAS, Article 7.1 of the Joint Powers Agreement provides that the JPA shall be governed by a board of eleven (11) directors (JPA Board) comprised of representatives from each of the six (6) Members; and

WHEREAS, Article 7.2 of the Joint Powers Agreement provides that the directors and alternate directors representing each Member shall be appointed by the governing body of the Member with the exception that all five (5) Cuyama Basin Water District Board members shall serve as directors on the JPA Board; and

WHEREAS, the Members are committed to the sustainable management of groundwater within the Basin and intend to consider the interests of all beneficial users and uses of groundwater within the Basin through establishment of an advisory committee as more specifically set forth in Article 8 of the Joint Powers Agreement; and

WHEREAS, Article 5.2 of the Joint Powers Agreement acknowledges that SGMA expressly reserves certain powers and authorities to and preserves certain powers and authorities of cities and counties, including, without limitation, the issuance of permits for the construction, modification or abandonment of groundwater wells, land use planning and groundwater management pursuant to city and county police powers in a manner that is not in conflict with the GSP; and

WHEREAS, the County of San Luis Obispo published a notice of public hearing consistent with the requirements contained within Water Code Section 10723(b); and

WHEREAS, the Board of Supervisors conducted such a public hearing on May 23, 2017.

NOW, THEREFORE, BE IT RESOLVED AND ORDERED by the Board of Supervisors of the County of San Luis Obispo, State of California, that:

Section 1: The foregoing recitals are true and correct and are incorporated herein by reference.

Section 2: The County of San Luis Obispo hereby decides to participate in and jointly form the JPA known as the Cuyama Basin Groundwater Sustainability Agency, the boundaries of which are depicted in Exhibit B attached hereto and incorporated herein, to serve as the GSA for the Basin by approving and authorizing the Chairperson of the Board of Supervisors to execute the Joint Powers Agreement.

Section 3: The Director of Public Works of the County of San Luis Obispo, or designee, is hereby authorized and directed to submit notice of adoption of this Resolution in addition to all other information required by SGMA, including but not limited to, all information required by Water Code Section 10723.8, to the Santa Barbara County Water Agency in accordance with Article 3.2 of the Joint Powers Agreement and/or to DWR, and to support the JPA's development and maintenance of an interested persons list as described in Water Code Section 10723.4 and a list of interested parties as described in Water Code Section 10723.8(a)(4).

Section 4: The Director of Public Works of the County of San Luis Obispo, or designee, is hereby authorized to take such other and further actions as may be necessary to administer the County of San Luis Obispo's participation in the Joint Powers Agreement as set forth therein.

Section 5: The Board of Supervisors finds that the adoption of this Resolution is exempt from the requirements of the California Environmental Quality Act (Public Resources Code §§ 21000 et seq.) (CEQA) pursuant to Section 15061(b)(3) of the CEQA Guidelines.

Section 6: The Environmental Coordinator of the County of San Luis Obispo is hereby directed to file a Notice of Exemption in accordance with the provisions of CEQA.

Section 7: The Board of Supervisors hereby appoints the District 4 Supervisor, Lynn Compton, as the director and the District 5 Supervisor, Debbie Arnold, as the alternate director to represent the County on the JPA Board.

Upon motion of Supervisor Compton, seconded by Supervisor Arnold, and on the following roll call vote, to wit:

AYES: Supervisor Compton, Arnold, Gibson, Hill and Chairperson Peschong
NOES: None
ABSENT: None
ABSTAINING: None

the foregoing Resolution is hereby adopted on the 23rd day of May, 2017.

John Peschong
Chairperson of the Board of Supervisors

ATTEST:

TOMMY GONG
Clerk of the Board of Supervisors

By: Annette Ramirez
Deputy Clerk

[SEAL]

APPROVED AS TO FORM AND LEGAL EFFECT:

RITA L. NEAL
County Counsel

By: /s/ Erica Stuckey
Deputy County Counsel

Dated: May 10, 2017

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STATE OF CALIFORNIA,)
) **ss.**
COUNTY OF SAN LUIS OBISPO)

I, Tommy Gong, County Clerk and ex-officio Clerk of the Board of Supervisors, in and for the County of San Luis Obispo, State of California, do hereby certify the foregoing to be a full, true and correct copy of an order made by the Board of Supervisors, as the same appears spread upon their minute book.

WITNESS my hand and the seal of said Board of Supervisors, affixed this 23rd day of May, 2017.

Tommy Gong
County Clerk and Ex-Officio Clerk
of the Board of Supervisors

(SEAL)

By: _____
Deputy Clerk

JOINT EXERCISE OF POWERS AGREEMENT
CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY

This Joint Exercise of Powers Agreement ("Agreement") is made and entered into as of May 23, 2017 ("Effective Date"), by and between the Cuyama Basin Water District ("CBWD"), the Cuyama Community Services District ("CCSD"), the County of Kern ("Kern"), the County of San Luis Obispo ("San Luis Obispo"), the Santa Barbara County Water Agency ("Santa Barbara"), and the County of Ventura ("Ventura"), also each referred to individually as "Member" and collectively as "Members," for the purposes of forming a joint powers agency to serve as the groundwater sustainability agency for the Cuyama Valley Groundwater Basin. This joint powers agency shall hereinafter be known as the Cuyama Basin Groundwater Sustainability Agency ("CBGSA" or "GSA").

RECITALS

A. WHEREAS, the Sustainable Groundwater Management Act of 2014 ("SGMA"), Water Code §§ 10720 *et seq.*, requires the formation of groundwater sustainability agencies to manage medium and high priority basins by June 30, 2017, and the adoption of groundwater sustainability plans ("GSP") by January 31, 2020 for high and medium priority basins that are subject to conditions of critical overdraft; and

B. WHEREAS, the Cuyama Valley Groundwater Basin (also referred to as the "Cuyama Groundwater Basin"), as identified and defined by the California Department of Water Resources (DWR) in Bulletin 118 (as Basin 3-13), has been designated by DWR as a medium priority basin subject to conditions of critical overdraft; and

C. WHEREAS, all Members to this Agreement are local agencies, as defined in SGMA, located within the Cuyama Groundwater Basin and duly organized and existing under the laws of the State of California; and

D. WHEREAS, pursuant to SGMA, specifically Water Code § 10723.6, and the Joint Exercise of Powers Act, Government Code §§ 6500 *et seq.*, the Members are authorized to create a joint powers agency to jointly exercise any power common to the Members together with such powers as are expressly set forth in the Joint Exercise of Powers Act and in SGMA upon successfully becoming a GSA for the Cuyama Groundwater Basin; and

E. WHEREAS, in accordance with Water Code § 10723(b), all members have held a public hearing regarding entering into this Agreement and complied with the noticing provisions in SGMA; and

F. WHEREAS, the Members desire to create a joint powers authority to sustainably manage the Cuyama Groundwater Basin as required by SGMA.

NOW, THEREFORE, in consideration of the terms, conditions, and covenants

contained herein, the Members hereby agree as follows:

ARTICLE 1
INCORPORATION OF RECITALS

1.1 The foregoing recitals are true and correct and are incorporated herein by reference.

ARTICLE 2
DEFINITIONS

The following terms shall have the following meanings for purposes of this Agreement:

2.1 "Agreement" means this Joint Exercise of Powers Agreement forming the Cuyama Basin Groundwater Sustainability Agency over the Cuyama Valley Groundwater Basin.

2.2 "Basin" means the Cuyama Valley Groundwater Basin, also referred to as the Cuyama Groundwater Basin, as identified and defined by DWR in Bulletin 118 (as Basin 3-13) as of the Effective Date or as modified pursuant to Water Code Section 10722.2.

2.3 "Bulletin 118" means DWR's report entitled "California Groundwater: Bulletin 118" updated in 2016, and as it may be subsequently updated or revised in accordance with Water Code § 12924.

2.4 "Board of Directors" or "Board" means the governing body of the GSA as established by Article 7 (Board of Directors) of this Agreement.

2.5 "CBGSA" or "GSA" means the Cuyama Basin Groundwater Sustainability Agency formed as a separate entity through this Agreement.

2.6 "Director(s)" and "Alternate Director(s)" means a director or alternate director appointed by a Member pursuant to Articles 7.2 (Appointment of Directors) and 7.3 (Alternate Directors) of this Agreement.

2.7 "DWR" means the California Department of Water Resources.

2.8 "GSP" means a Groundwater Sustainability Plan, as defined by SGMA in Water Code §§ 10727 *et seq.*

2.9 "Joint Exercise of Powers Act" means Government Code §§ 6500, *et seq.*, as may be amended from time to time.

2.10 "Member(s)" means a local agency eligible under SGMA to be a groundwater sustainability agency and included in Article 6.1 (Members) of this Agreement or any local agency that becomes a new member pursuant to Article 6.2 (New Members) of this Agreement.

2.11 "Officer(s)" means the Chair, Vice Chair, Secretary, Auditor or Treasurer of the GSA to be appointed by the Board of Directors pursuant to Article 9.2 (Appointment of Officers) of this Agreement.

2.12 "SGMA" means the Sustainable Groundwater Management Act, Water Code §§ 10720 *et seq.*, as may be amended from time to time.

2.13 "State" means the State of California.

ARTICLE 3
CREATION OF THE GSA

3.1 Creation of a Joint Powers Agency. There is hereby created pursuant to the Joint Exercise of Powers Act, Government Code §§ 6500 *et seq.*, and SGMA, Water Code §§ 10720 *et seq.*, a joint powers agency, which will be a public entity separate from the Members to this Agreement, and shall be known as the Cuyama Basin Groundwater Sustainability Agency ("CBGSA" or "GSA"). The boundaries of the CBGSA shall be coterminous with the boundaries of the Basin as determined by DWR in Bulletin 118 or as modified by DWR pursuant to Water Code Section 10722.2.

3.2 Notices. Within 30 days after the Effective Date of this Agreement, and after any amendment hereto, Santa Barbara, on behalf of the GSA, or the GSA, shall cause a notice of this Agreement or amendment to be prepared and filed with the office of the California Secretary of State containing the information required by Government Code § 6503.5. Within 30 days after the Effective Date of this Agreement, Santa Barbara, on behalf of the GSA, shall cause a statement of the information concerning the GSA, required by Government Code § 53051, to be filed with the office of the California Secretary of State and with the County Clerk for the County of Santa Barbara, and any other County in which the GSA maintains an office, setting forth the facts required to be stated pursuant to Government Code § 53051(a). Within 30 days after the Effective Date of this Agreement, Santa Barbara, on behalf of the GSA, shall inform DWR of each Parties' decision and intent to undertake sustainable groundwater management within the Basin through the GSA in accordance with Water Code § 10723.8.

3.3 Purpose of the CBGSA. The purpose of the CBGSA is to implement and comply with SGMA in the Cuyama Valley Groundwater Basin by serving as the Basin's groundwater sustainability agency, developing, adopting, and implementing a GSP for the Basin, and sustainably managing the Basin pursuant to SGMA.

ARTICLE 4
TERM

4.1 This Agreement shall become effective on the date on which the last Member listed in Article 6.1 (Members) signs this Agreement ("Effective Date"), after which notices shall be filed in accordance with Article 3.2 (Notices). This Agreement shall remain in effect until terminated pursuant to the provisions of Article 17 (Withdrawal of Members) of this Agreement.

ARTICLE 5
POWERS

5.1 The GSA shall possess the power in its own name to exercise any and all common powers of its Members reasonably necessary for the GSA to implement the purposes of SGMA and for no other purpose, together with such other powers as are expressly set forth in the Joint Exercise of Powers Act and in SGMA subject to the limitations set forth therein.

5.2 SGMA expressly reserves certain powers and authorities to and preserves certain powers and authorities of cities and counties, including, without limitation, the issuance of permits for the construction, modification or abandonment of groundwater wells, land use planning and groundwater management pursuant to city and county police powers in a manner that is not in conflict with the GSP. The Directors representing the counties of San Luis Obispo, Kern and Ventura do not have the ability to authorize the GSA to exercise or infringe upon any such reserved powers and authorities, without the GSA first seeking and receiving authorization by formal action of the Boards of Supervisors. Furthermore, this Agreement shall not be interpreted as limiting or ceding any such reserved or preserved powers and authorities. In addition, to the extent that a Member other than a county independently possesses any of the powers or authorities expressly preserved by SGMA, the GSA does not have the ability or authority to exercise or infringe on such preserved powers and/or authorities of such Member without the GSA first seeking and receiving authorization from such Member's governing board, unless specifically enumerated in this Agreement.

5.3 For purposes of Government Code § 6509, the powers of the GSA shall be exercised subject to the restrictions upon the manner of exercising such powers as are imposed on the Cuyama Basin Water District, and in the event of the withdrawal of the Cuyama Basin Water District as a Member under this Agreement, then the manner of exercising the GSA's powers shall be exercised subject to those restrictions imposed on the Cuyama Community Services District.

5.4 As required by Water Code § 10723.2, the GSA shall consider the interests of all beneficial uses and users of groundwater in the Basin, as well as those responsible for implementing the GSP. Additionally, as set forth in Water Code § 10720.5(a), any GSP adopted pursuant to this Agreement shall be consistent with

Section 2 of Article X of the California Constitution. Nothing in this Agreement modifies the rights or priorities to use or store groundwater consistent with Section 2 of Article X of the California Constitution, with the exception that no extraction of groundwater between January 1, 2015 and the date the GSP is adopted may be used as evidence of, or to establish or defend against, any claim of prescription. Likewise, as set forth in Water Code § 10720.5(b), nothing in this Agreement or any GSP adopted pursuant to this Agreement determines or alters surface water rights or groundwater rights under common law or any provision of law that determines or grants surface water rights.

5.5 The GSA may define within the GSP one or more management areas within the Basin in accordance with 23 CCR § 354.20.

ARTICLE 6
MEMBERSHIP

6.1 Members. The Members of the GSA shall be:

(a) Cuyama Basin Water District;

(b) Cuyama Community Services District;

(c) County of Kern;

(d) County of San Luis Obispo;

(e) Santa Barbara County Water Agency; and

(f) County of Ventura

as long as they have not, pursuant to the provisions hereof, withdrawn from this Agreement.

6.2 New Members. Any local agency, as defined by SGMA, that is not a Member on the Effective Date of this Agreement may become a Member upon all of the following:

(a) The approval of the Board of Directors as specified in Article 12.3 (Decisions of the Board);

(b) Amendment of the Agreement in accordance with Article 18.2 (Amendments to Agreement); and

(c) Payment of a pro rata share of all previously incurred costs that the Board of Directors determines have resulted in benefit to the local agency, and are appropriate for assessment on the local agency.

ARTICLE 7
BOARD OF DIRECTORS

7.1 Formation of the Board of Directors. The GSA shall be governed by a Board of Directors ("Board"). The Board shall consist of eleven (11) Directors consisting of representatives from each of the Members identified in Article 6.1 (Members) as follows:

(a) Five (5) Directors representing CBWD;

(b) One (1) Director representing CCSD;

(c) One (1) Director representing Kern;

(d) One (1) Director representing San Luis Obispo;

(e) Two (2) Directors representing Santa Barbara; and

(f) One (1) Director representing Ventura.

7.2 Appointment of Directors. The Directors shall be appointed by the governing body of the Members as follows:

(a) The Directors representing CBWD shall be the Directors of CBWD's Board of Directors, provided if the CBWD Board is ever expanded, then CBWD's Board will appoint the five Directors from CBWD's Board representing CBWD by resolution of CBWD's Board.

(b) The Director representing CCSD shall be appointed by resolution of the CCSD's Board of Directors.

(c) The Director representing Kern shall be appointed by resolution of Kern's Board of Supervisors.

(d) The Director representing San Luis Obispo shall be appointed by resolution of San Luis Obispo's Board of Supervisors.

(e) The Directors representing Santa Barbara shall be appointed by resolution of Santa Barbara's Board of Directors.

(f) The Director representing Ventura shall be appointed by resolution of Ventura's Board of Supervisors.

Subject to Article 7.2 each Director shall be an elected official or member of management of the Member.

7.3 Alternate Directors. Each Director shall have one Alternate to act as a substitute Director for that Director. All Alternates shall be appointed in the same manner as set forth in Article 7.2 (Appointment of Directors). Alternate Directors shall

not vote or participate in any deliberations of the Board unless appearing as a substitute for a Director due to absence or conflict of interest. If the Director is not present, or if the Director has a conflict of interest which precludes participation by the Director in any decision-making process of the Board, the Alternate Director appointed to act in his/her place shall assume all rights of the Director, and shall have the authority to act in his/her absence, including casting votes on matters before the Board. An Alternate Director shall be an elected official or member of management of the Member.

7.4 Requirements. Each Director and Alternate Director shall be appointed by resolution as noted in Article 7.2 (Appointment of Directors). Directors and Alternate Directors shall serve at the pleasure of the governing body of the Member that appointed him/her. No individual Director may be removed except by the vote of the governing body of the Member that appointed him/her.

7.5 Vacancies. Upon the vacancy of a Director, the Alternate Director shall serve as Director until a new Director is appointed as set forth in Article 7.2 (Appointment of Directors). Members shall submit any changes in Director or Alternate Director positions to the Board or Executive Director by providing a copy of the executed resolution.

7.6 Duties of the Board of Directors. The business and affairs of the GSA, and all of its powers, including without limitation all powers set forth in Article 5 (Powers), are reserved to and shall be exercised by and through the Board of Directors, except as may be expressly delegated to the Executive Director or others pursuant to this Agreement, Bylaws, GSP, or by specific action of the Board of Directors.

7.7 Director Compensation. No Director shall be compensated by the GSA for preparation for or attendance at meetings of the Board or meetings of any committee created by the Board. Nothing in this Article is intended to prohibit a Member from compensating its representatives on the Board or on a committee for attending such meetings.

ARTICLE 8
ADVISORY COMMITTEES

8.1 Standing Advisory Committee. A Standing Advisory Committee is hereby established as a group of representatives to advise the GSA, and shall be appointed by the Board.

(a) Purpose. The Standing Advisory Committee shall advise the Board concerning, where legally appropriate, implementation of SGMA in the Basin and review the GSP before it is approved by the Board.

(b) Membership. The composition of and appointments to the Standing Advisory Committee shall be determined by the Board.

(c) Brown Act. All Meetings of the Standing Advisory Committee, including

special meetings, shall be noticed, held, and conducted in accordance with the Ralph M. Brown Act (Government Code §§ 54950 *et seq.*).

(d) Compensation. No Advisory Committee member shall be compensated by the GSA for preparation for or attendance at meetings of the Board or at any committee created by the Board.

8.2 Additional Advisory Committees. The Board may from time to time appoint one or more additional advisory committees or establish standing or ad hoc committees to assist in carrying out the purposes and objectives of the GSA. The Board shall determine the purpose and need for such committees and the necessary qualifications for individuals appointed to them. No committee member shall be compensated by the GSA for preparation for or attendance at meetings of the Board or at any committee created by the Board.

ARTICLE 9
OFFICERS

9.1 Officers. Officers of the GSA shall be a Chair, Vice Chair, Secretary, Auditor and Treasurer. Additional officers may be appointed by the Board as it deems necessary.

(a) Chair. The Chair shall preside at all meetings of the Board of Directors.

(b) Vice Chair. The Vice Chair shall exercise all powers of the Chair in the Chair's absence or inability to act.

(c) Secretary. The Secretary shall keep minutes of the Board of Director meetings.

(d) Auditor and Treasurer. The Treasurer and Auditor shall perform such duties and responsibilities specified in Government Code §§ 6505.5 and 6505.6.

9.2 Appointment of Officers. Officers shall be elected annually by, and serve at the pleasure of, the Board of Directors. Officers shall be elected at the first Board meeting, and thereafter at the first Board meeting following January 1st of each year. A Director appointed by Santa Barbara shall be designated as the Chair Pro Tem to preside at the initial meeting of the Board until a Chair is elected by the Board. An Officer may serve for multiple consecutive terms, with no term limit. Any Officer may resign at any time upon written notice to the Board, and may be removed and replaced by the Board. Notwithstanding the foregoing, the Treasurer and Auditor shall be appointed in the manner specified in Government Code §§ 6505.5 and 6505.6. Until such time as the Board determines otherwise, the GSA's Treasurer shall be the Treasurer of Santa Barbara.

9.3 Principal Office. The principal office of the GSA shall be established by the Board of Directors, and may thereafter be changed by the Board.

ARTICLE 10
EXECUTIVE DIRECTOR

10.1 Appointment. The Board may appoint an Executive Director or other designated manager ("Executive Director") of the GSA, who may, but need not be, an officer, employee, or representative of one of the Members.

10.2 Compensation. The Executive Director's compensation shall be determined by the Board.

10.3 Duties. The Executive Director shall serve at the pleasure of the Board and shall be responsible to the Board for the property and efficient administration of the GSA. The Executive Director shall have the powers designated by the Board, or otherwise as set forth in the Bylaws.

10.4 Termination. The Executive Director shall serve until he/she resigns or the Board terminates his/her appointment.

ARTICLE 11
GSA DIRECTOR MEETINGS

11.1 Initial Meeting. The initial meeting of the GSA Board of Directors shall be called by Santa Barbara and held within the boundaries of the Basin, within sixty (60) days of the Effective Date of this Agreement.

11.2 Time and Place. The Board of Directors shall meet at least quarterly, at a date, time and place set by the Board within the Basin, and at such other times as may be determined by the Board. Meetings may be held via teleconferencing to the extent allowed by law and teleconferenced meetings shall be conducted in accordance with the Ralph M. Brown Act (Government Code §§ 54950 *et seq.*).

11.3 Special Meetings. Special meetings of the Board of Directors may be called by the Chair or by a simple majority of Directors, in accordance with the Ralph M. Brown Act (Government Code §§ 54950 *et seq.*).

11.4 Conduct. All meetings of the Board of Directors, including special meetings, shall be noticed, held, and conducted in accordance with the Ralph M. Brown Act (Government Code §§ 54950 *et seq.*).

11.5 Local Conflict of Interest Code. The Board of Directors shall adopt a local conflict of interest code pursuant to the provisions of the Political Reform Act of 1974 (Government Code §§ 81000 *et seq.*).

ARTICLE 12
VOTING

12.1 Quorum. A quorum of any meeting of the Board of Directors shall consist of a majority of the Directors. In the absence of a quorum, any meeting of the Directors may be adjourned by a vote of the simple majority of Directors present, but no other business may be transacted.

12.2 Director Votes. Voting by the Board of Directors shall be made on the basis of one vote for each Director weighted as follows:

(a) Directors representing CBWD- each Director's vote shall be weighted by 6.667%;

(b) Director representing CCSD- Director's vote shall be weighted by 11.111%;

(c) Director representing Kern- Director's vote shall be weighted by 11.111%;

(d) Director representing San Luis Obispo- Director's vote shall be weighted by 11.111%;

(e) Directors representing Santa Barbara- each Director's vote shall be weighted by 11.111%; and

(f) Director representing Ventura- Director's vote shall be weighted by 11.111%.

A Director, or an Alternate Director when acting in the absence of his/her Director, may vote on all matters of GSA business unless disqualified.

12.3 Decisions of the Board.

(a) Majority Approval. Except as otherwise specified in this Agreement, all decisions of the Board of Directors shall require the affirmative vote of more than 50% of the weighted vote total in accordance with Article 12.2, provided that if a Director is disqualified from voting on a matter before the Board because of a conflict of interest and no Alternate Director is present in the Director's place or if the Alternate Director is also disqualified because of a conflict of interest, that Director shall be excluded from the calculation of the total number of Directors that constitute a majority.

(b) Supermajority Approval. Notwithstanding the foregoing, 75% of the weighted vote total in accordance with Article 12.2 shall be required

to approve any of the following: (i) the annual budget; (ii) the GSP for the Basin and any substantive amendment thereto; (iii) any stipulation to resolve litigation; (iv) addition of new Members pursuant to Article 6.2 (New Members); (v) establishment and levying any fee, charge or assessment; (vi) adoption or amendment of Bylaws; or (vii) selection of consultant to prepare the GSP.

ARTICLE 13
BYLAWS

13.1 The Board of Directors may approve and amend, as needed, bylaws for the GSA.

ARTICLE 14
ACCOUNTING PRACTICES

14.1 General. The Board of Directors shall establish and maintain such funds and accounts as may be required by generally accepted public agency accounting practices. The GSA shall maintain strict accountability of all funds and a report of all receipts and disbursements of the GSA. The GSA shall hire an independent auditor to audit its funds and accounts as required by law.

14.2 Fiscal Year. Unless the Board of Directors decides otherwise, the fiscal year for the GSA shall run from July 1st to June 30th.

14.3 Records. The books and records of the GSA shall be open to inspection by the Members.

ARTICLE 15
BUDGET AND EXPENSES

15.1 Budget. The Board of Directors shall adopt an annual budget for the GSA.

15.2 GSA Funding and Contributions.

(a) For the purpose of funding the expenses and ongoing operations of the GSA, the Board of Directors shall maintain a funding account in connection with the annual budget process.

(b) The GSA shall pursue and apply for grants and/or loans to fund a portion of the cost of developing and implementing the GSP as the Board shall direct.

(c) The Board of Directors may fund the GSA and the GSP as provided

in SGMA at Water Code § 10730 *et seq.*, from voluntary Member contributions, and/or from any other means allowable by law.

15.3 Return of Contributions. In accordance with Government Code § 6512.1, repayment or return to the Members of all or any part of any contributions made by Members and any revenues by the GSA may be directed by the Board of Directors at such time and upon such terms as the Board of Directors may decide; provided that (1) any return of contributions shall be made in proportion to the contributions paid by each Member to the GSA, and (2) any capital contribution paid by a Member voluntarily, and without obligation to make such capital contribution pursuant to Article 15.2 (GSA Funding and Contributions), shall be returned to the contributing Member, together with accrued interest at the annual rate published as the yield of the Local Agency Investment Fund administered by the California State Treasurer, before any other return of contributions to the Members is made. The GSA shall hold title to all funds and property acquired by the GSA during the term of this Agreement.

15.4 Issuance of Indebtedness. The GSA may issue bonds, notes or other forms of indebtedness, provided such issuance is approved at a meeting of the Board of Directors by 100% of the weighted vote total in accordance with Article 12.2.

ARTICLE 16
LIABILITIES

16.1 Liability. In accordance with Government Code § 6507, the debts, liabilities and obligations of the GSA shall be the debts, liabilities and obligations of the GSA alone, and not the Members.

16.2 Indemnity. The GSA, and those persons, agencies and instrumentalities used by it to perform the function authorized herein, whether by contract, employment or otherwise shall be exclusively liable for any injuries, costs, claims, liabilities, damages or whatever kind arising from or related to activities of the GSA. The GSA agrees to indemnify, defend and hold harmless each Member, their respective governing boards, officers, officials, representatives, agents and employees from and against any and all claims, suits, actions, arbitration proceedings, administrative proceedings, regulatory proceedings, losses, damages, judgments, expenses or costs, including but not limited to attorney's fees, and/or liabilities arising out of or attributable to the GSA or this Agreement ("Claims").

Funds of the GSA may be used to defend, indemnify, and hold harmless the GSA, each Member, each Director and Alternate Director, and any officers, officials, agents or employees of the GSA for their actions taken within the course and scope of their duties while acting on behalf of the GSA against any such Claims.

The Members do not intend hereby to be obligated either jointly or severally for the debts, liabilities, obligations or Claims of the GSA, except as may be specifically provided for in Government Code § 895.2. Provided, however, if any Member(s) of the GSA are, under such applicable law, held liable for the acts or omissions of the GSA, such parties shall be entitled to contribution from the other Members so that after said contributions each Member shall bear an equal share of such liability.

16.3 Insurance. The GSA shall procure appropriate policies of insurance providing coverage to the GSA and its Directors, officers and employees for general liability, errors and omissions, property, workers compensation, and any other coverage the Board deems appropriate. Such policies shall name the Members as additional insureds.

ARTICLE 17
WITHDRAWAL OF MEMBERS

17.1 Unilateral Withdrawal. Any Member may unilaterally withdraw from this Agreement without causing or requiring termination of this Agreement, effective upon sixty (60) days written notice to the Executive Director and all other Members.

17.2 Rescission or Termination of GSA. This Agreement may be rescinded and the GSA terminated by unanimous written consent of all Members, except during the outstanding term of any GSA indebtedness.

17.3 Effect of Withdrawal or Termination. Upon termination of this Agreement or unilateral withdrawal, a Member shall remain obligated to pay its share of all liabilities and obligations of the GSA required of the Member pursuant to terms of this Agreement, but only to the extent that the liabilities and obligations were incurred or accrued prior to the effective date of such termination or withdrawal and are the individual Member's liabilities and obligations as opposed to the GSA's obligation and liabilities in accordance with Article 16. Any Member who withdraws from the GSA shall have no right to participate in the business and affairs of the GSA or to exercise any rights of a Member under this Agreement or the Joint Exercise of Powers Act, and shall not share in distributions from the GSA. Notwithstanding the foregoing, nothing contained in this Article 17.3 shall be construed as prohibiting a Member that has withdrawn from the GSA to become a separate groundwater sustainability agency within its jurisdiction.

17.4 Return of Contribution. Upon termination of this Agreement, where there will be a successor public entity which will carry on the functions of the GSA and assume its assets, the assets of the GSA shall be transferred to the successor public entity. If there is no successor public entity which will carry on the functions of the GSA, then any surplus money on-hand shall be returned to the Members in proportion to their contributions made. The Board of Directors shall first offer any property, works, rights and interests of the GSA for sale to the Members on terms and conditions determined by the Board of Directors. If no such sale to Members is consummated, the Board of

Directors shall offer the property, works, rights, and interest of the GSA for sale to any non-member for good and adequate consideration. The net proceeds from any sale shall be distributed among the Members in proportion to their contributions made.

ARTICLE 18
MISCELLANEOUS PROVISIONS

18.1 Notices. Notices to a Member shall be sufficient if delivered to the clerk or secretary of the respective Member's governing board or at such other address or to such other person that the Member may designate in accordance with this Article. Delivery may be accomplished by personal delivery or with postage prepaid by first class mail, registered or certified mail or express courier.

18.2 Amendments to Agreement. This Agreement may be amended or modified at any time only by subsequent written agreement approved and executed by all of the Members.

18.3 Agreement Complete. The foregoing constitutes the full and complete Agreement of the Members. This Agreement supersedes all prior agreements and understandings, whether in writing or oral, related to the subject matter of this Agreement that are not set forth in writing herein.

18.4 Severability. Should any part, term or provision of this Agreement be decided by a court of competent jurisdiction to be illegal or in conflict with any applicable federal law or any law of the State of California, or otherwise be rendered unenforceable or ineffectual, the validity of the remaining parts, terms, or provisions hereof shall not be affected thereby, provided however, that if the remaining parts, terms, or provisions do not comply with the Joint Exercise of Powers Act, this Agreement shall terminate.

18.5 Withdrawal by Operation of Law. Should the participation of any Member to this Agreement be decided by the courts to be illegal or in excess of that Member's authority or in conflict with any law, the validity of the Agreement as to the remaining Members shall not be affected thereby.

18.6 Assignment. The rights and duties of the Members may not be assigned or delegated without the written consent of all other Members. Any attempt to assign or delegate such rights or duties in contravention of this Agreement shall be null and void.

18.7 Binding on Successors. This Agreement shall inure to the benefit of, and be binding upon, the successors of the Members.

18.8 Dispute Resolution. In the event that any dispute arises among the Members relating to this Agreement, the Members shall attempt in good faith to resolve the controversy through informal means. If the Members cannot agree upon a resolution of the controversy, the dispute may be submitted to mediation prior to commencement of any legal action, if agreed to by all Members. The mediation shall be no more than a

full day (unless agreed otherwise among the Members) and the cost of mediation shall be paid in equal proportion among the Members.

18.9 Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original and together shall constitute one and the same instrument.

18.10 Singular Includes Plural. Whenever used in this Agreement, the singular form of any term includes the plural form and the plural form includes the singular form.

18.11 Member Authorization. The governing bodies of the Members have each authorized execution of this Agreement and all signatories to this Agreement warrant and represent that they have the power and authority to enter into this Agreement in the names, titles and capacities stated herein and on behalf of the Members.

18.12 No Third Party Beneficiary. Except as expressly set forth herein, this Agreement is not intended to benefit any person or entity not a party hereto.

IN WITNESS WHEREOF, the Members have executed this Agreement to be effective on the date executed by the last Member as noted on Page 1.

ATTEST:
Clerk of the District

By: _____
Deputy Clerk

Address:

CUYAMA BASIN WATER DISTRICT:

By: _____
Chair, Board of Directors

Date: _____

ATTEST:
Clerk of the Board

By: _____
Deputy Clerk

Address:

CUYAMA COMMUNITY SERVICE DISTRICT:

By: _____
Chair, Board of Directors

Date: _____

ATTEST:
Clerk of the Board

By: _____
Secretary

Address:

COUNTY OF KERN:

By: _____
Chair, Board of Supervisors

Date: _____

ATTEST:
Clerk of the Board

By: _____
Deputy Clerk

Address:

COUNTY OF SAN LUIS OBISPO:

By: _____
Chair, Board of Supervisors

Date: _____

APPROVED AS TO LEGAL FORM AND EFFECT
Rita L. Neal
County Counsel

By: _____ 5-2-2017
Deputy County Counsel

ATTEST:
Mona Miyasato
County Executive Officer
Clerk of the Board, Ex Officio Clerk of
the Santa Barbara County Water Agency

By: _____
Deputy Clerk

Address:

SANTA BARBARA COUNTY WATER AGENCY:

By: _____
Joan Hartmann, Chair
Board of Directors

Date: _____

RECOMMENDED FOR APPROVAL:
Santa Barbara County Water Agency

By: _____
Scott D. McGolpin
Public Works Director

APPROVED AS TO FORM:
Risk Management
Ray Aromatorio, ARM, AIC

By: _____
Risk Management

APPROVED AS TO FORM:

Michael C. Ghizzoni
County Counsel

By: _____
Deputy County Counsel

APPROVED AS TO ACCOUNTING FORM:
Theodore A. Fallati, CPA
Auditor-Controller

By: _____
Deputy

ATTEST:
Clerk of the Board

By: _____
Secretary

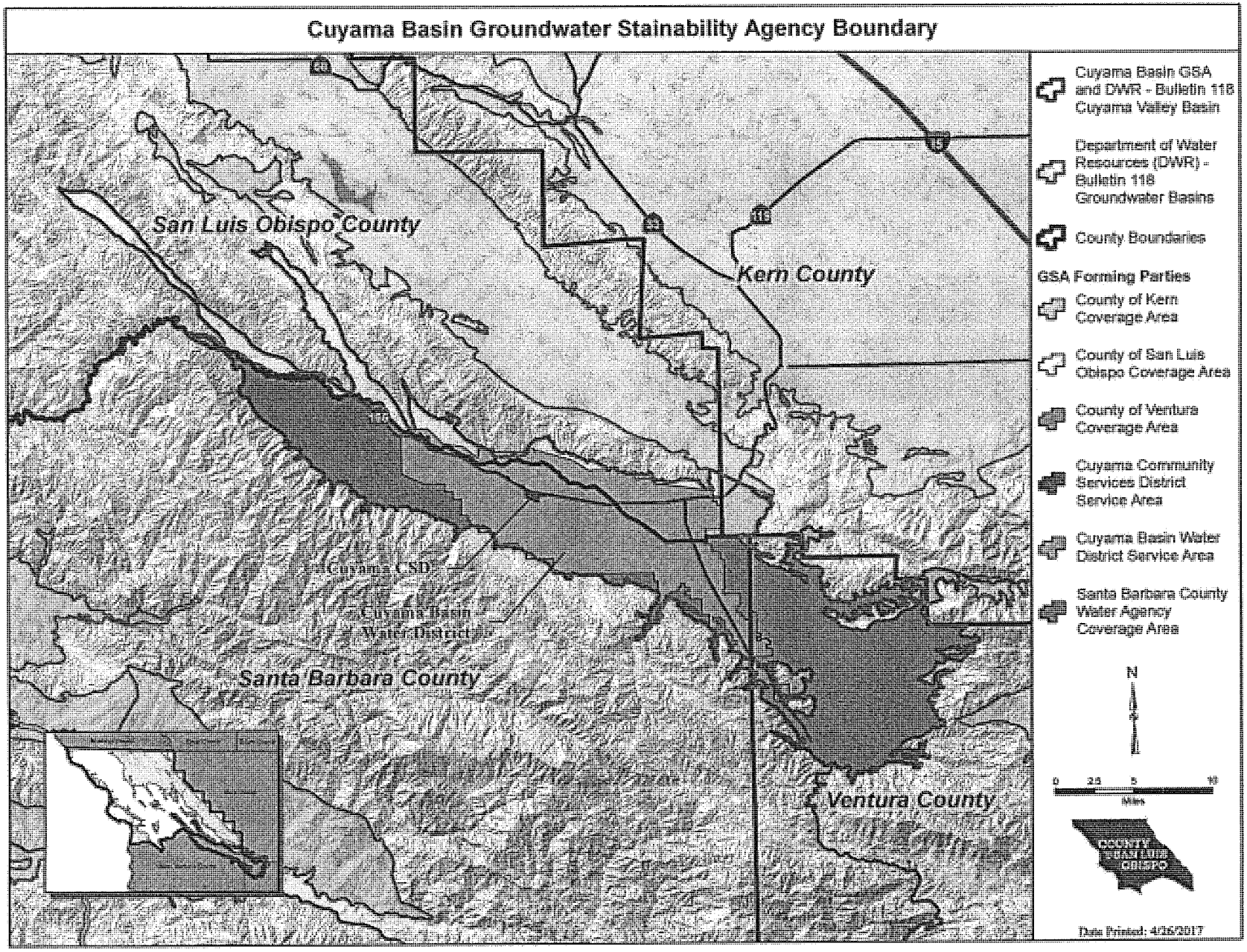
Address:

COUNTY OF VENTURA:

By: _____
Chair, Board of Supervisors

Date: _____

EXHIBIT B


Cuyama Basin Groundwater Stainability Agency Boundary
San Luis Obispo County
Kern County
Cuyama CSD
Cuyama Basin Water District
Santa Barbara County
Ventura County
Cuyama Basin GSA and DWR - Bulletin 118 Cuyama Valley Basin
Department of Water Resources (DWR) - Bulletin 118 Groundwater Basins
County Boundaries
GSA Forming Parties
County of Kern Coverage Area
County of San Luis Obispo Coverage Area
County of Ventura Coverage Area
Cuyama Community Services District Service Area
Cuyama Basin Water District Service Area
Santa Barbara County Water Agency Coverage Area
N
0 2.5 5 10
Miles
Date Printed: 4/16/2017

BOARD MINUTES
BOARD OF SUPERVISORS, COUNTY OF VENTURA, STATE OF CALIFORNIA

SUPERVISORS STEVE BENNETT, LINDA PARKS,
KELLY LONG, PETER C. FOY AND JOHN C. ZARAGOZA
June 6, 2017 at 2:30 p.m.

Public Hearing Regarding a Joint Powers Agreement to Form a Groundwater Sustainability Agency to Manage the Cuyama Valley Groundwater Basin; Adoption of the Resolution Authorizing the County to Enter a Joint Powers Agreement Creating the Cuyama Basin Groundwater Sustainability Agency and Appointment of a Director and Alternate Director of the Cuyama Basin Groundwater Sustainability Agency. (Public Works Agency)

(X) All Board members are present.

(X) The Board holds a public hearing.

(X) The following persons are heard: Glenn Shephard, Byron Albano, and Jeff Pratt.

(X) The following document is submitted to the Board for consideration:
(X) Exhibit 2 - Cuyama Valley Basin Maps

(X) Upon motion of Supervisor Bennett, seconded by Supervisor Parks, and duly carried, the Board hereby approves recommendations and appoints Glenn Shephard as the Director and Arne Anselm as the Alternate Director.

I hereby certify that the annexed instrument is a true and correct copy of the document which is on file in this office.
Dated: 6/7/17
MICHAEL POWERS
Clerk of the Board of Supervisors
County of Ventura, State of California
By: Lori Harris
Deputy Clerk of the Board

By: _____
Brian Palmer
Chief Deputy Clerk of the Board

RESOLUTION NO. 17-060

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF VENTURA AUTHORIZING EXECUTION OF JOINT POWERS AGREEMENT TO CREATE THE CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY AND APPOINTING DIRECTOR(S) TO CBGSA BOARD

WHEREAS, California enacted the Sustainable Groundwater Management Act of 2014 (California Water Code § 10720 et seq., SGMA), which authorizes local agencies to manage groundwater in a sustainable fashion; and

WHEREAS, pursuant to the SGMA, sustainable groundwater management is intended to occur pursuant to Groundwater Sustainability Plans (GSP) that are created and adopted by local Groundwater Sustainability Agencies (GSA); and

WHEREAS, pursuant to Water Code §10723(a), a Local Agency or combination of Local Agencies, as defined in Water Code §10721(n), may decide to become or form a Groundwater Sustainably Agency; and

WHEREAS, the Cuyama Basin Water District, the Cuyama Community Services District, the County of Kern, the County of San Luis Obispo, the Santa Barbara County Water Agency, and the County of Ventura (Member Agencies) are Local Agencies as defined by the Water Code and wish to enter into the attached proposed Joint Exercise of P owers Agreement (JPA) to create the Cuyama Basin Groundwater Sustainability Agency (CBGSA or GSA) to manage all of the Cuyama Valley Groundwater Basin (basin number 4-3-13 in the California Department of Water Resources CASGEM groundwater basin system (Basin);

WHEREAS, the JPA requires the governing board of the County of Ventura to appoint a Director to the CBGSA Board of Directors;

WHEREAS, a notice of a public hearing to consider whether the County should enter into this JPA Agreement to form the Cuyama Basin Groundwater Sustainability Agency to manage this Basin was duly published pursuant to the requirements of California Government Code §6066; and

WHEREAS, the County held a public hearing on June 6, 2017 to consider whether to enter into the JPA to form the Cuyama Basin GSA to manage all of this Basin;

NOW, THEREFORE, BE IT RESOLVED that the Ventura County Board of Supervisors hereby:

1. Approves the attached JPA to form the Cuyama Basin GSA (Exhibit 1) and authorizes the Chair to execute the JPA on behalf of the County of Ventura;

2. Declares the County's commitment, as a Member Agency to the GSA, to assist the GSA in considering the interests of all beneficial uses and users

of groundwater, as well as those responsible for implementing groundwater sustainability plans, as required by California Water Code §10723.2.

3. Declares the County's commitment, as a Member Agency to the GSA, to assist the GSA in establishing and maintaining a list of persons interested in receiving notices regarding plan preparation, meeting announcements, and availability of draft plans, maps, and other relevant documents, as required by California Water Code §10723.4; and

4. Hereby appoints Glenn Shephard as a Director, and appoints Arne Anselm as an Alternate Director, to the Cuyama Groundwater Sustainability Agency Board of Directors to represent the interests of the County of Ventura on the CBGSA Board.

Upon motion of Supervisor Bennett, seconded by Supervisor Parks, and duly carried, the Board hereby approves and adopts this resolution on the 6th day of June, 2017.

Chair, Board of Supervisors
County of Ventura

ATTEST:

Michael Powers,
Clerk of the Board of Supervisors
County of Ventura, State of California.

By: _____
Deputy Clerk of the Board

BEFORE THE BOARD OF SUPERVISORS
COUNTY OF KERN, STATE OF CALIFORNIA

In the matter of: Resolution No. 2017-108

RESOLUTION ELECTING TO BECOME A GROUNDWATER SUSTAINABILITY AGENCY FOR A PORTION OF THE CUYAMA GROUNDWATER BASIN

I, KATHLEEN KRAUSE, Clerk of the Board of Supervisors of the County of Kern, do certify that the following resolution, on motion of Supervisor Couch, seconded by Supervisor Gleason, was duly passed and adopted by the Board of Supervisors at an official meeting this 23rd day of May, 2017, by the following vote:

AYES: Gleason, Scrivner, Maggard, Couch, Perez

NOES: None

ABSENT: None

BOARD OF SUPERVISORS KERN COUNTY, CA

KATHLEEN KRAUSE
Clerk of the Board of Supervisors
County of Kern, State of California

Deputy Clerk

RESOLUTION

Section 1. WHEREAS:

(a) The comprehensive groundwater legislation referred to as the "Sustainable Groundwater Management Act" (SGMA) was signed into law on September 16, 2014 with an effective date of January 1, 2015, and codified at California Water Code sections 10720 *et seq.*; and

(b) The stated purpose of SGMA, as set forth in California Water Code Section 10720.1, is to provide for the sustainable management of groundwater basins, and subbasins, as defined by the California Department of Water Resources at a local level by providing local water supply, water management and land use agencies with the authority and technical and financial assistance necessary to sustainably manage groundwater; and

(c) SGMA further provides for and anticipates that eligible local agencies overlying basins that are designated by California Department of Water Resources (DWR) as "high or medium priority" will form Groundwater Sustainable Agencies ("GSAs") for the purpose of achieving groundwater sustainability through the adoption and implementation of Groundwater Sustainability Plans ("GSPs"); and

(d) Water Code section 10723(a) authorizes local agencies with water supply, water management or local land use responsibilities, or a combination of those local agencies, overlying a groundwater basin to elect to become a GSA; and

(e) The County of Kern falls within the SGMA definition of local agency and it overlies the entirety of the unadjudicated groundwater subbasin known as Cuyama Groundwater Basin (Basin).

(f) The Basin, which is defined in DWR Bulletin 118 as Basin No. 3-13, has been designated as a high priority basin in critical overdraft; and

(g) Many of the express powers set forth in SGMA were previously held exclusively by the County through its constitutionally granted policy power over groundwater and as such the ability of a local water purveyor to now also exercise these powers through the formation of a GSA is a significant expansion of the authorities granted to local water purveyors. Prior to SGMA, the powers and authorities afforded to a of a local water purveyor were expressly set forth, and limited by, the purveyor's enabling act; and

(h) SGMA anticipates and expressly provides the statutory authorities for GSAs to operate as enterprise funds through the imposition of fees on those that are benefited by the GSA's operations. As such, any initial outlay of general funds by the County may be recouped once the GSA is formed; and

(i) SGMA does not allow a local agency to impose fees or regulatory requirements on activities that are outside of the boundaries of the local agency and therefore in order to ensure uniformity in the implementation of SGMA and its effects on all lands within the Basin the County of Kern should elect to become a GSA or be a member of all GSA's in the Basin; and

(j) Water Code section 10735.2(a) provides that the State Board may designate the Basin as probationary if any portion of the Basin is not covered by a GSA before June 30, 2017; and

(k) Staff has reviewed this matter and determined that this matter is exempt from further CEQA review pursuant CEQA Guideline section 15061(b)(3) because it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment and CEQA Guideline section 15378(b)(5) because the matter is an organizational activity that will not result in a direct or indirect physical change in the environment; and

(l) As required by Water Code section 10723(b), the notice of public hearing to consider this election to become a GSA for the Basin was published pursuant to Government Code section 6066 in the Bakersfield Californian; and

(m) On May 9, 2017, the Board of Supervisors approved a Joint Powers Authority (JPA) Agreement with the Cuyama Basin Groundwater Sustainability Agency; and

(n) All members to the JPA Agreement are local agencies, as defined in SMGA, located within the Basin and duly organized and existing under the laws of the State of California; and

(o) On May 23, 2017, the Board of Supervisors properly held the noticed public hearing required by Water Code section 10723(b) at 2:00 p.m. in the Board of Supervisors Chambers.

Section 2. IT IS RESOLVED by the Board of Supervisors of the County of Kern, State of California, as follows:

1. This Board finds that the recited facts are true and that it has the jurisdiction to consider, approve, and adopt this Resolution.

2. This Board incorporates and makes all the findings recommended by staff, whether verbally or in their written reports.

3. This Board finds and determines that the applicable provisions of the California Environmental Quality Act of 1970 ("CEQA"), the State CEQA Guidelines, and the Kern County Guidelines have been observed in conjunction with the hearing and the considerations of this matter and it is exempt from further CEQA review pursuant Sections 15061(b)(3) and 15378(b)(5).

4. As set forth in the DWR's Groundwater Sustainability Agency Frequently Asked Questions dated January 7, 2016, the GSA formed by the County of Kern shall consider the desires of other eligible agencies to join this GSA or form other GSA's with the participation and membership of the County of Kern.

5. As required by Water Code section 10723.2, the GSA formed by the County of Kern shall consider the interests of all beneficial uses and users of groundwater, as well as those that are responsible for implementing groundwater sustainability plans.

6. As required by Water Code section 10723.4, the GSA shall establish and maintain a list of all persons interested in receiving notices regarding the GSP preparation, meetings, announcements, and the availability of draft plans, maps and other relevant documents.

7. Staff is directed to ensure that the notice of GSA formation, and all supporting documentation, is submitted to California Department of Water Resources by no later than June 30, 2017.

8. Staff is further authorized and directed to engage in discussions with other qualified local agencies that wish to be a part of the GSA established herein.

9. The Clerk of this Board shall cause a Notice of Exemption to be filed with the County Clerk.

10. The Clerk of this Board shall transmit copies of this Resolution to the following:

Planning and Natural Resources
County Counsel

Cuyama Basin Water District
c/o Cuyama Valley Family Resources Center
4689 Hwy 166
New Cuyama, CA 93254

COPIES FURNISHED:
See above
6/2/2017 (TL)

Chapter 1
Appendix D

Groundwater Sustainability Plan
Summary of Public Comments and Responses

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APPENDIX D
GROUNDWATER SUSTAINABILITY PLAN COMMENTS AND RESPONSES

This appendix documents public input about the Cuyama Basin Groundwater Sustainability Agency's (CBGSA's) Groundwater Sustainability Plan (GSP) and their responses. Input was received in the following ways:

- At CBGSA Board and Standing Advisory Committee (SAC) meetings
- At community workshops
- Comments sent directly to the CBGSA
- Comments made on the draft GSP chapters or sections that were provided for public comment prior to release of the final draft GSP. These are shown in Attachment 1.
- Comments made by technical staff and consultants on Technical Forum conference calls. These are shown in Attachment 2.

Public Comments and Responses at CBGSA and SAC Meetings

Questions and responses noted below are from the minutes of the CBGSA Board meetings, joint meetings of the CBGSA Board and SAC meetings. Complete minutes for these meetings are available online at www.cuyamabasin.org.

CBGSA Board Meetings

Questions and answers recorded in the minutes for CBGSA Board meetings are listed below in chronological order, from oldest to newest.

April 4, 2018

Question: How recent is the collected data? Why do we not go back to the USGS sites for data?

Answer: Woodard & Curran have all of the data that the Santa Barbara County Water Resources Agency and USGS had.

Question: Has someone been hired to go out and collect that data proactively?

Answer: The more data received, the better.

Question: What about data consistency? How will it be vetted for accuracy?

Answer: A request for data was sent out to the four counties, CBWD, and CCSD. Wells on different sides of a geological fault will be looked at to determine if that data is valid.

Question: Will Woodard & Curran report the data that is not used?

Answer: Woodard & Curran plan on doing that.

May 2, 2018

The minutes for this meeting included no questions from the public.

July 11, 2018

Question: Clarify the review period of the GSA plans by DWR?

Answer: DWR will begin reviewing the plans in 2020, and it may take up to two years to complete the review period.

Question: What will the GSAs be doing while the GPSs are being reviewed?

Answer: The GSAs may begin implementing GSP programs.

Question: Can Woodard & Curran identify who is making comments from the technical forum?

Answer: Woodard & Curran can do this.

August 1, 2018

Question: How do the groundwater level maps correlate to the USGS studies since they do not show the same drops (in groundwater levels).

Answer: The graph represents a different time frame.

Question: How well does the USGS data compare?

Answer: It compares very well and is represented in the model. The current integrated water flow model (IWFM) that Woodard & Curran are using is very good.

Question: Will the stakeholders be informed of the Board and SACs definition of sustainability?

Answer: This information is coming. The sustainability goals and criteria will be developed and available in the September to November time period. The CBGSA Board has not been presented with the criteria for drafting their definition of sustainability, and this composition will be drafted in the fall.

September 5, 2018

Question: Will the public comments made on parts of the draft GSP sections be seen by the SAC.

Answer: All of the comments received by Woodard & Curran will be compiled so the SAC will see everyone's comments.

October 3, 2018

Question: When will the Groundwater Dependent Ecosystems (GDE) be developed?

Answer: In a month or two.

Question: If the CBGSA chose not to have management areas, would they still need boundaries for thresholds?

Answer: Boundaries would still be required.

November 7, 2018

Question: If some wells exceed their thresholds in the same area but are less than the required percentage triggering State intervention, will this trigger anything.

Answer: No.

Question: Are there enough monitoring wells in each area to set thresholds?

Answer: We are working with the data we have. Splitting up the western area will reduce the amount of data and will result in dubious results.

January 9, 2019

The minutes for this meeting included no questions from the public.

February 6, 2019

The minutes for this meeting included no questions from the public.

Joint Meetings of the CBGSA Board and SAC

Questions and answers recorded in the minutes at joint meetings of the CBGSA Board and SAC are listed below in chronological order, from oldest to newest.

February 7, 2018

The minutes for this meeting included no questions from the public.

March 7, 2018

The minutes for this meeting included no questions from the public.

June 6, 2018

The minutes for this meeting included no questions from the public.

February 13, 2018

Question: How can you set minimum thresholds and measurable objectives without the water budget as you would have to go back and redo those numbers if they do not match with the water budget.

Answer: You do not have to resubmit the GSP but update the annual report.

March 6, 2018

Minutes for this meeting were not available as of this writing.

SAC Meetings

Questions and answers recorded in the minutes for SAC meetings are listed below in chronological order, from oldest to newest.

March 1, 2018

Question: Will the GSP team stay until the conclusion of the Spanish workshop at 8:30 pm?

Answer: The GSP consultants will remain for both the English and Spanish language workshops.

Question: Why is an efficient surface interface option a benefit with the IWFM model when Cuyama Valley does not have surface water.

Answer: The Cuyama Valley does have surface water in different forms. The groundwater basin is recharged through surface streams (and upstream fingerlings), as well as irrigation percolation.

March 29, 2018

Question: Is the data going into the model going to be shared publicly?

Answer: Yes, either on the CBGSA website or through DWR's SGMA portal website.

Question: When are the minimum thresholds and measurable objectives determined.

Answer: They will be determined after the conceptual model is developed.

April 26, 2018

Question: Is ground truthing is being done on the data.

Answer: The technical team confirmed that they are spending significant time to do this.

May 31, 2018

Question: Is the GSA aware of the IRWM grant to the Cuyama Community Services District (CCSD)?

Answer: The GSA is aware of the grant.

Question: Will reports be available on the GSA website for public review?

Answer: Yes.

Question: Why is the baseline shown as January 1, 2015?

Answer: The baseline is the ending point for data collection that was provided by DWR.

Question: What is the timeframe for deciding WMAs?

Answer: By the end of summer. The modeling results will assist in determining if WMAs exist.

Question: Who will determine the financial component of achieving measurable objectives.

Answer: The SAC will determine the financial component, and Woodard & Curran will develop a portfolio of options to achieve the measurable objectives the group decides on. Potential projects and management actions for meeting measurable objectives will be discussed in the near future.

Question: Why doesn't the SAC have data for pumping levels?

Answer: Landowners do not always like to provide pumping levels. Woodard & Curran will estimate pumping levels. The lack of pumping data could be a data gap that is identified in the GSP and that the GSA should formulate ways to improve this data going forward.

Question: Will climate change be factored into the GSP?

Answer: Yes, DWR will provide climate data for this variable.

June 28, 2018

Question: Aren't groundwater pumping numbers a critical component of verifying the model?

Answer: The GSA can decide pumping limits, but DWR does not require any pumping data.

Question: If groundwater dependent vegetation is negatively impacted by water diversions, these areas should be monitored. Can the SAC put a caveat in the GSP to add monitoring areas that are not currently monitored if changes in the water use occur?

Answer: This is something that can be updated during the 5-year update cycle or during the annual review of the monitoring data.

Question: Can the next CBGSA newsletter explain the difference between monitoring wells and the monitoring network.

Answer: Yes.

Question: Are community members unaware of their current pumping rates, how will they know if they go over their limit?

Answer: It will be determined how landowners will report on their data.

Question: How will the definition of sustainability be decided?

Answer: The CBGSA Board will develop the definition with stakeholder input.

July 26, 2018

Question: Where will the water budgets for the ten recent years be coming from and when will they be available?

Answer: The water budgets will be developed by the numerical model, and the initial results are anticipated to be available at the September 5, 2018 meeting.

Question: Under SGMA, does the water budget take climate change into account?

Answer: Yes, it will.

Question: How big of an area will be reported on?

Answer: Woodard & Curran will report potentially on four areas. The CBGSA Board will determine this number.

Question: What is the typical range that the regional scale is based on? Is there a standard range?

Answer: It is based on irrigation efficiency. It is a general range, but the number will be updated in the model to be specific for Cuyama.

Question: Will there ever be a number on all the wells detailing what is being pumped or will it be estimated?

Answer: That decision will be made as the implementation plan is developed. There are several ways to calculate future use, one way being satellite imagery like evapotranspiration. The California DWR will accept pump meters and satellite imagery that can calibrate appropriately. If pumping meters are used, they will need to be installed during the implementation period starting in 2020.

Question: If in five years from now, if the GSP is not being achieved, how precise is the data to point out where we are missing the mark, and can it be pinpointed to the 40-acre grid.

Answer: The actual evapotranspiration modeling is on a 30 meter by 30-meter pixel; therefore, the cropping pattern should be fairly visible and accurate.

Question: Will the urban demand estimate factors in the efficiency and age of the system?

Answer: It will.

Question: Will the data from the 12 wells provided by Grapevine Capital be included?

Answer: Woodard & Curran will confirm this.

Question: Will Woodard & Curran study storage loss based on subsidence? Do11 inches equate to lost storage? Does the model does not incorporate subsidence?

Answer: Not sure. We need to get further information.

August 30, 2018

Question: For domestic water use, how would the model be used for areas not in the Cuyama Community Services District.

Answer: The model will be based on estimated using recent census information that is being developed.

Question: Can you clarify the1967-2017 date range for the model, is the model going to go back that far?

Answer: The model is looking at 50 years of data for precipitation and resulting runoff and recharge.

Question: Has Woodard & Curran looked into moving groundwater from plentiful areas to areas that are lacking?

Answer: We will investigate this.

Question: Are some of the wells are drilled below the groundwater basin as Grapevine Capital said they have drilled their wells to bedrock.

Answer: This question will need to be answered by Grapevine Capital.

September 27, 2018

Question: Why is the Cuyama Community Services District (CCSD) was listed as a management area?

Answer: It is shown for jurisdictional reasons.

Question: Who makes the final decision on management areas. Will the interests of New Cuyama be impacted?

Answer: The CBGSA Board.

Question: Can subsidence can affect storage differently in areas that are a mixture of sand and clay?

Answer: There is not a lot of space being lost in those areas.

November 1, 2018

Question: Does Woodard & Curran think Tritium and the age of water is an issue?

Answer: No, since the Sustainable Groundwater Management Act (SGMA) is about regional water management and the Tritium study focuses on a few localized wells. The presence of Tritium does not mean deep well percolation is not occurring.

Question: Is the Vadose zone being tracked?

Answer: Woodard & Curran has not tracked the Vadose zone because it is very expensive, and those costs could be avoided by tracking groundwater levels.

Question: Why was five years of storage was chosen for the Margin of Operational Flexibility?

Answer: Five years is the approximate length of a drought period; however, this is a

subjective value that can be changed.

Question: Is the same rationale is needed for every representative well?

Answer: No and that is why they are looking at suggesting the use of management areas.

Question: Can the minimum threshold be set based on how much water is in each well?

Answer: That is possible. Using the "shallowest well method" for setting minimum thresholds does not work as well in canyons or areas with elevation changes.

Question: Is there a potential that the GSP can be produced by 2020 without management actions?

Answer: Management actions will be addressed in the GSP.

Question: What minimum thresholds will be applied to each representative well?

Answer: Woodard & Curran will present recommended thresholds for the SAC to review, which will ultimately go to the CBGSA Board for approval.

November 29, 2018

Question: When discussing minimum threshold numbers, how was the 20 percent number was decided on for the range? Is it an industry standard?

Answer: It is a value based on professional experience.

Question: Would the California DWR approve a minimum threshold of 100 percent of range.

Answer: Yes, because it does not cause undesirable results and it would not dewater wells in that area.

Question: Was this (rational options for the central region of the basin) applied to some wells that have a steeper drop.

Answer: The example (Opti Well 421) is actually a fairly steep drop but does not appear that way due to the hydrograph scaling.

Question: How does setting thresholds in the Cuyama Basin affect overdraft?

Answer: Regardless of where the minimum thresholds are set, they must not go down and need to flatten out. In explaining the differences between the threshold options, if you believe there are no undesirable results in the central region, you likely want to keep the minimum threshold low, however, if you think there have been, you likely want to keep it higher.

Question: When can minimum thresholds be changed?

Answer: DWR requires updates every five years, but the GSA can update yearly.

January 8, 2019

No questions from the public were noted in the minutes for this meeting.

January 31, 2019

Question: Has Woodard & Curran discussed implementing mini rainfall models in the different regions (of the Cuyama Basin)?

Answer: Woodard & Curran are using 30-40 sub-watersheds, and each one simulates the inflows and outflows for each section of the Cuyama Basin.

Question: Did the average annual precipitation come from a database or the model?

Answer: It came from the PRISM database which is actual data that is extrapolated.

Question: How did the applied water value change from the December 3, 2018 community workshop?

Answer: The December 3 value was a very rough first cut and improvements have been made to the model since them.

Question: What do the terms appropriative and correlative rights relate to?

Answer: They apply to surface water and groundwater rights. Appropriative rights are based on historic use, and correlative rights determine rights in groundwater based on ownership of land. Prescriptive rights are obtained through the adverse possession of someone else's water rights.

Question: Has the option to only allocate pumping in the problem areas been considered?

Answer: This can be done, but it can be difficult to determine the fringe of impacts. More than one allocation can be created.

Public Input and Response Received at Community Workshop

From March 2018 through May 2019, six community workshops were held in both English and Spanish. At the request of the Spanish-speaking community, the Spanish language workshops were held in a separate room at the same time and location as the English language workshops. The following summarizes the questions asked and the responses provided at each workshop.

March 7, 2018, Community Workshops

Two community workshops, one in English and one in Spanish, were held on March 7, 2018, in New Cuyama, CA. Questions received, and the responses provided are grouped below by workshop topic.

Topic 1 – Sustainable Groundwater Management Act and Groundwater Sustainability Plan

Question: Aren't the solutions for the Cuyama Basin groundwater problem simply more rain and less use? What other options do we have?

Answer: The GSP will include projects and management actions to assist the Cuyama Basin in reaching sustainability by 2040. The projects and management actions will potentially include actions to reduce pumping and projects to increase water supplies.

Question: How many aquifers are there in the Cuyama Basin?

Answer: The available data from the USGS indicated that the Basin included three aquifers.

Question: What do the concepts of Measurable Objectives, Minimum Thresholds, and Interim Milestones mean?

Answer: Each of these SGMA-related terms were further clarified in accordance with SGMA definitions.

Question: What is the difference between Minimum Threshold and Measurable Objective?

Answer: The minimum threshold is the value below which undesirable results occur. The Measurable objective is a specific, quantifiable goal for Basin conditions.

Question: Under SGMA, is there a timetable requirement for meeting the Minimum Threshold?

Answer: By 2040.

Question: If we create a reasonable GSP that is accepted by DWR, what happens if there are droughts that result in failure to meet the objective?

Answer: The GSP includes an implementation plan that will drive the monitoring program. Every five years update to the GSP is required. The monitoring for undesirable results will allow the GSA to know if the GSP is on track or not and can work with the GSA Board and DWR to make adjustments to the GSP as needed. The intent is to look at long-term sustainability and set minimum thresholds that allow for fluctuations that may occur as a result of droughts.

Question: There are naturally occurring calcium and magnesium levels in the water; how are these addressed under SGMA?

Answer: The GSP address constituents that are shown to have a causal nexus between potential GSP actions and constituent concentrations.

Question: Who evaluates the GSP and who reports to DWR?

Answer: DWR will evaluate the GSP. The GSA staff will respond to inquiries about the GSP from DWR.

Question: If the GSP is a "living" document, with interim reporting milestones, then can the plan be adjusted or changed?

Answer: Yes. The GSP will be updated every five years. Adjustments will be proposed as needed.

Question: SGMA requires the identification of projects and management actions; most of the examples shown won't work; what options will be available for the Cuyama Basin?

Answer: In a few months, the GSP team will have more information to present workable projects and management actions for consideration for inclusion in the GSP.

Topic 2 – Data for Use in the Hydrologic Model

Question: What public data are being used to develop the plan?

Answer: Public data is being accessed from the four counties with jurisdiction in the Cuyama Basin, U.S. Geological Survey, California Data Exchange Center, National Oceanic and Atmospheric Administration, California Statewide Groundwater Elevation Monitoring, and others.

Question: What data will the team use from private wells?

Answer: Well construction information and historical groundwater levels

Question: How will the team be filling in the data gaps?

Answer: The team is collecting any available data from wells in the basin and developing a proposed plan for establishing a robust monitoring network to fill data gaps.

Question: How will the team validate the data?

Answer: A comparison will be made between private landowner data and publicly available data.

Question: How will the team address discrepancies?

Answer: Data that appears to be anomalous when compared to the overall dataset will be removed for purposes of the technical analysis.

Question: What does relevant timeframe mean (referring to a statement that the team is collecting data for the relevant timeframe)?

Answer: The team is using the period from 1995 to 2015 to validate the groundwater model.

Question: What will future pumping allocations be based on, a 20- to 30-year historical amount?

Answer: There are several approaches for allocating groundwater pumping, which will be discussed as part of projects and management actions.

Question: What is the difference, for the effectiveness of the model, if the team receives generic water data versus specific data from basin growers/farmers/ranchers (referring to a prior statement about the availability of data from private sources)?

Answer: Specific numeral data is more useful for model development.

Question: Will the team accept water data from growers/farmers/ranchers that USGS did not include in their study?

Answer: Yes.

Question: Will the team use the monitoring data that USGS is still gathering?

Answer: Yes. All data that is provided by June 2018 will be used in development of the GSP.

Question: Does the team know the pumping capacity for the production wells identified?

Answer: No. Groundwater pumping is estimated based on crop types and water demand for those crops, rather than on pumping capacity.

Topic 3 – Cuyama Basin Plan Area Description Elements

Question: For the geology, will the team use core samples to validate the geology?

Answer: No, that would be costly. The team is using available published geologic reports.

Question: Can the team get the changes in land use from satellite imagery? For land use changes since 2014, Sunrise Olive Ranch, on the road to Ventucopa, should be included. Since 2014, more than the normal amount of land has been fallowed due to drought conditions.

Answer: Yes. Data that was provided on current land uses will be incorporated into modeling analyses for current and projected conditions.

Question: Will the team refer to the same geographic zones as USGS did: Ventucopa Uplands Zone, Main Basin Zone, and Foothill Zone?

Answer: Geographic regions will be developed for relevancy to the GSP.

Question: Has there been subsidence from oil pumping? USGS says there has been no subsidence at Russell Ranch.

Answer: There is no evidence of subsidence in that area.

Question: Is there a different evapotranspiration rate for the valley portion of the basin?

Answer: The model calculates the evapotranspiration based on the data provided by the Irrigation Training & Research Center at Cal Poly San Luis Obispo.

Question: Who is paying for this?

Answer: Funds from the four counties that have jurisdiction in the Cuyama Basin along with state grant funds.

Question: On the CBGSA Board of Directors, there are five representatives from the Cuyama Basin Water District (CBWD) and only one from the Cuyama Community Services District. Does CBWD pay more?

Answer: Yes, the CBGSA Board has developed a cost allocation formula for the participating entities.

Question: What can New Cuyama residents do to stop the decline in groundwater use? Water consumption is minimal now with people using bottled water; irrigation is limited. People are doing their part. What else could the community do?

Answer: Continue to provide input to the development and implementation of a balanced GSP for the Cuyama Basin.

Question: Water bills are very high; how will this project affect the water bills?

Answer: The GSP does not address the cost of water for the community. The GSP will consider projects, such as a new well for New Cuyama.

Question: What will be the economic impact on agriculture and jobs in the community? What are the impacts of potential changes in water use?

Answer: The economic impacts on agriculture are not yet known. As the GSP development progresses, more information about the pumping allocations will better inform options for sustainability.

Discussion about Existing Basin Conditions

The workshop included an interactive discussion that focused on individual ranchers/farmers talking about their observations and experiences with water in different geographic areas in the Cuyama Basin. Attendees discussed their experience with water in distinct geographic areas of the Cuyama Basin including Upper Ventucopa (Apache Canyon), Lower Ventucopa, the foothills of the central portion of the basin, the valley floor, and Cottonwood Canyon/northwest basin. The information provided a better understanding of the changes in water levels and pumping capacities over time as well as the importance of understanding the influence of fault lines on the aquifer.

June 6, 2018, Community Workshops

Two community workshops, one in English and one in Spanish, were held on June 6, 2018, in New Cuyama, CA. Questions received, and the responses provided are grouped below by workshop topic.

Topic 1 – Overview of Physical Conditions of the Cuyama Basin

Question: What happens if the Cuyama Basin does not reach the minimum threshold by 2040?

Answer: The Cuyama Basin GSP is reviewed every five years, from 2020 to 2040, and adjustments to the GSP would be made if progress toward the minimum threshold is not occurring.

Question: How will the existing water quality contamination, specifically from salinity and arsenic, be addressed in the GSP?

Answer: These are described in the groundwater conditions section of the GSP.

Question: How can water quality help understand the flows and barriers of groundwater and help with the geologic modeling?

Answer: Water quality can be significantly different on one side or another of a groundwater barrier that impedes or diverts groundwater flows, so water quality analyses can help identify barriers and how groundwater flows. However, water quality testing can be expensive, so it should be considered carefully.

Question: Can you define groundwater plumes?

Answer: Plumes are areas of contamination that can move through and spread in groundwater. Plume fronts determine the direction and speed of spreading contamination.

Question: What is the depth to groundwater levels on the three Cuyama Basin hydrogeology layers?

Answer: In the center of the Cuyama Basin, the deepest groundwater level is at 1,000 feet; followed by the middle layer at 800 feet; followed by the top layer at 600 feet.

Question: Regarding the two faults (Russell Fault and Rehoboth Fault), why are they of such interest?

Answer: The two faults are of interest because there is less recorded data regarding the faults and how these faults generally affect groundwater flows. The published studies are not consistent regarding the impact of faults on water flow.

Question: Is more research going to be done on Santa Barbara Canyon fault and its effect on the aquifer?

Answer: The existing published data is consistent for Santa Barbara Canyon fault, so it is a low priority for further research at this time.

Question: What is the significance of “basement” rock?

Answer: Basement rock is a catch-all term for rock formations that generally do not hold water and are a barrier to water movement. If you consider the basin a bathtub filled with sand and water, the basement rock is the porcelain bathtub. In some cases, the rock can be fractured, which allows some movement of water through basement rock.

Question: Do we know if the “bathtub” or basement rock leaks?

Answer: Most basement rock in most basins does leak, but that cannot be measured. The model includes this as an estimate.

Question: On the ground surface and groundwater elevation profile, does it consider the sides of the river as opposed to just the river end-to-end? Have you done anything to look at the sides of the Cuyama Valley? Are you identifying water-bearing layers of wells?

Answer: The groundwater conditions section of the GSP considers the sides of the river, i.e., how the groundwater levels change from the edges of the Cuyama Basin to the Cuyama River. The next phase of work looks at the data to estimate the elevation contours and use existing reports to understand groundwater movement. USGS looked at groundwater layers. They found them

not to be consistent from well to well. Over time, the Cuyama River has deposited fine sand and coarse rocks in varied ways in the Cuyama Valley.

Question: Have you given thought to water management areas based on the hydrology and geology?

Answer: Water management areas are a possible consideration, based on the hydrology and geology. However, there is no decision at this time; there is more work to be done. Management areas are going to be discussed at future meetings.

Question: Are you looking at well logs to identify geologic layers?

Answer: Yes, if provided.

Question: When was the last USGS study done?

Answer: The latest data from the USGS study was 2014. More recent data is being used to understand current conditions.

Question: How and when will data gaps be addressed? Before and after the draft plan?

Answer: While developing the GSP, the unknowns are documented. Moving forward, data gaps are addressed as more data is gathered. Activities to address data gaps and reduce uncertainty will be included in the GSP and used to refine the GSP at the 5-year updates.

Topic 2 – Sustainability and Role of Water in the Future of Cuyama Basin

Following a general introduction about sustainability and what it means in SGMA, the following question asked of participants *What does sustainability of the Cuyama Valley mean for you?* The responses are summarized below:

Balanced Water Use: Balance water use among all water users to allow everyone (farms and residential) to remain in the Cuyama Basin. Water needs to be balanced, and water needs to be used wisely by all users. The water table is replenished and fills to levels that do not fall to dangerous levels even in drought.

Economic Productivity and Stability: Current Perspectives: Without water, how can we survive and maintain our livelihood? The community is already subject to greater impacts now with the high cost of water ($160 to $200 per household per month) and the water contamination (salinity and arsenic) that has come as a result of the increase in farming. The farmers/ranchers can pack up and leave the area if they want to, leaving the community with no jobs and no community; the people in the community can't just pick up and leave.

Future Perspectives: Water and jobs are directly connected. The Cuyama economy should continue to grow. Economic productivity and quality of life are necessary. Solutions to water issues have to be economical. Cuyama needs an economy that keeps people employed. Water use by homes is negligible compared to agriculture. Access to affordable quality water is the only thing that can support people and the economy in the Cuyama Valley.

Water Equality: Need to fix the current water inequality in the future. (people have bad water with salinity and arsenic, and farmers pump all day). Regulate the amount of farming and irrigating so that residents can have clean water, affordable water. Water needs to be used wisely by all users. All water users must evaluate their use and determine where they can cut back – individuals must have enough water to maintain good health, and large and small farms must evaluate their use and change their practices to be more conservation oriented.

Local Ecology: We would like to see more plant growth along the riverbed and improvement to local ecology (e.g., trees). Utilize trees for windbreaks. Restore habitats for migratory birds as well as insects and wild animals.

Farming Management Practices: Farms have to change how they do business. Consider crop shift and value-added processing. Grow crops that are more permanent to reduce tilling and soil drying. Maintain the dry rangeland that is sustainable in parts of the valley. Farmers need to change what they are growing to use water more wisely. Use hedge-rows around fields. Rebuilding soil for moisture retention (no-till and cover crop).

Water Delivery Infrastructure: The Community Services District pumps break, the wells go down now; this didn't happen 5 to 10 years ago.

Water Quality: The water has not been drinkable for at least 28 years (number of years the speaker has lived near the intersection of 166 and 33). The water is better at Maricopa, so they go there to get water. Three to four times per year the water is brown. The salinity has gotten worse. The people need better water sources in the future, with no salinity. Better drinking water, some wells not drinkable, total dissolved solids. Increased salinity from overdrafting on large farms leads to more overdrafting to remediate the problem which leads to dust and poor air quality.

Groundwater Depth: 10 years ago, when there were fewer farms, the depth to water was okay. Now with more farms, the water depths are worse – have to drill deeper now to find water. Depth to water was bad during the drought, but it is even worse now since even more farming (North Fork Vineyard) has come into the Valley. Need to stop wells from going dry.

Additional Comments: Sustainability means the return of environmental and groundwater conditions to rates that were previous to the adverse effects taking place. Sustainability means improving water quality, the reverse of land subsidence, and decreasing well depths. Sustainability is maximizing resources and increasing quality of life for members of the community. Sustainability is not just water, rebuild soils in the area. Sustainability means survival of the community and wildlife through drought periods, that mega-farming is not expanded beyond current levels, and no additional residential development. Sustainability means that people, animals, and crops must be able to survive without using more water than is replenished in an average year; this requires re-evaluation of current practices. The water connection to the natural and human environment is essential – e.g., water retention can support natural and human communities. The future has to be different – we are at a change point. Consider that there are longer cycles of wet and dry in the future. Re-establish reservoirs. Use a 60-year cycle to accommodate for a full wet and dry cycle of the Pacific Decadal Oscillation (we entered a wet cycle in 2014).

The next question asked of participants was, Water is important for the future of the Cuyama Valley. What do you see as important challenges or undesirable effects for the future of water in the Cuyama Valley for the following:

- Water and jobs
- Water and community/households
- Water and small farms
- Water and large farms
- Water and natural resources
- Water and the economy

Water and Jobs: The water used for farming is okay, but the water for the community is still bad. Jobs go if the water goes. We want water for all – a balanced approach. We want to keep jobs in the Valley for people that live here. For homeowners, the value of the homes will drop drastically if there is no water and no jobs. With most farms, worker housing has been removed causing families with children to move away, which has impacted the schools. Family housing needs to be addressed. Affordable, quality water supports jobs. The only jobs are farming jobs, so some people live here, but don't work here. Need increased population to work at both small and large farms – keep the money in the Valley.

Water and Community: Water of good quality must be available for people and animals at an affordable price. Cuyama Community Services District (CCSD) needs to provide safe and affordable water. Are the problems with the town water (low pressure, salinity, brown color at times, arsenic, unreliable delivery system) because of the nearby over-pumping? Can there be a way not to pump at all within a certain proximity to the town? We want water for the community pool, for community recreation. Grimmway should pay the CCSD water bills, which are between $160 and $200 a month. Increasing arsenic, salinity, and carcinogens. The town well is drying, need functioning wells in town. Don’t want to have to decide between washing clothes or taking a shower like it is now in New Cuyama. Need to educate children now about how to use water wisely, how to conserve water. With most farms, worker housing has been removed causing families with children to move away which has impacted the schools. Family housing needs to be addressed. Groundwater pumping could turn the Cuyama Basin into a desert, making homes impossible to sell, making it impossible to move elsewhere.

Water and Small Farms: Many small farms are gone now. Generational farming is phasing out. Small farms have been and continue to be affected because as the water is deeper; farmers can't afford to drill deeper while the big farms can. Deeper wells to reach water makes more expense for the small farmer; this is not sustainable. A bad impact would be that the community and small farms are unfairly punished for the negligence of the responsible parties of the negative effects. Small farms need to be protected from wells going dry and crops going dry.

Water and Big Farms: No Water = No Jobs. Bad water quality impacts crops negatively – the crops will not be as good. Big farms should operate sustainably with the amount of water to keep water use balanced for everyone. Farming needs to reevaluate water use and crop choice. Can farmers grow crops that use

less water? Regulate the water, so farmers change what they are growing. Big farms don't care about how much water they use, and they don't care about the community. They have the money to drill new wells. They have the money to pick up and leave; the people don't. Large farms operated by industrial ag-corporations appear to be blind to the damage that they do to the environment and the community. Shrink industrial agriculture by at least 50 percent. Wells are going dry, crops going dry. Agriculture must pay for water based on the actual amount that they use.

Water and Natural Resources: Chemicals are being sprayed onto the crops and then going into the groundwater. If there is no water, big agriculture leaves, and they leave a polluted dustbowl full of the sprayed chemicals. Air quality is bad because of big agriculture operations. Animals like deer and rabbits will be left with no water. There are fewer deer and rabbits now probably because they've been eating and drinking the sprayed chemicals. If there is no clean water for animals, then there will be no animals. Need diversity of species. Build organic matter into the soil. Forty-five years ago, streams ran year-round, not just as torrents after rains. With a sustainable water table, the streams could run again. Over pumping has already destroyed much of the natural environment that drew people here years ago. Sustaining riparian areas, supporting wildlife habitat.

Water and Economy: Cost of water needs to be affordable. Economic stability through boom and bust. We want affordable water. Affordability of well drilling to depth. Economic impact: agriculture and urban – need to connect with uses. It is undesirable for long-term management if the whole valley is treated the same. We need a diversified economy; we are over-reliant on certain industries. Changes in farming practices are important to the economy. If the GSP fails, there will be no economic stability.

General Undesirable Results: Everyone will get less water. It is a closed system. What if the Groundwater Sustainability Plan doesn't get the outcomes we want? Well infrastructure is old and falling apart, which contributes to poor water quality. Groundwater pumping could limit access to water for the community. Land subsidence could be a problem that leads to infrastructure issues, less recharge for children to take on business and have a positive experience in Cuyama.

September 5, 2018, Community Workshops

Two community workshops (English and Spanish), were held on September 5, 2018, in New Cuyama, CA. Questions received, and the responses provided are grouped below by workshop topic.

Topic 1 – Modeling Cuyama Basin Groundwater Conditions

Question: Explain primary and secondary axes and what are the Average Annual Volume numbers on slide 26, Groundwater Budget: Basin-Wide.

Answer: The left axis shows the groundwater gains (e.g., recharge) and losses (e.g., pumping) each year. The right axis depicts the cumulative change in groundwater storage, as shown with the black line on the graph. The average annual volumes are the estimated average annual gains or losses from the groundwater basin, as calculated by the model.

Question: The numbers shown as model results today are not calibrated, right? The community should not assume the numbers fully depict the historical conditions or trends.

Answer: Yes, the model is not yet fully calibrated; the numbers are preliminary and are likely to change.

Question: When mentioning domestic use, the population you used was in the thousands?

Answer: No, the estimated population for the Community Services District is approximately 800. This estimate will be updated with new information when available.

Question: The point is there is a downward trend in groundwater storage, and the point is to figure out how to get it not to go down? It looks like we are down 200 feet, but the water budget graph makes it look like there is the same amount of water coming in as is going out.

Answer: The annual water budget is balanced on the graph by the amount of change in water storage (purple). Most years, there is a decline in water storage.

Question: What is the definition of "developed land?"

Answer: Anything with agricultural and urban use on it.

Question: Why is evapotranspiration the only thing used to estimate pumping demand and not direct evaporation from spray irrigation or ponded water?

Answer: Evapotranspiration includes estimates for direct evaporation.

Question: Is there a way to measure/monitor deep percolation?

Answer: There is no easy way to measure that.

Question: On most of the graphs on slide 28, the actual groundwater levels look like they are deeper than what the model has estimated.

Answer: Yes, the model still needs to be calibrated to develop closer alignment between modeled results and actual measurements. The team is working in the next several months to understand local irrigation practices better and calibrate the model.

Question: There may be different depths of screens in wells that could affect the well depth monitoring that the model has not captured. How hard is it to go back in and add layers for well?

Answer: If we have data on it, then it can be added, but we do not want to break up existing layers into sublayers just to "brute force" the model.

Question: How is the pumping value calculated when the pumps do not have meters on them?

Answer: We estimate the pumping demand based on domestic and agricultural uses and calculate pumping amounts based on those needs.

Question: Plants need water in the ground, and there is water above ground, puddling, etc. How is this water considered in the model calculations?

Answer: We capture the total irrigation water demand through the evapotranspiration calculations, which included direct evaporation.

Question: How is climate change incorporated into this model?

Answer: The CBGSP team will include scenarios that estimate future changes resulting from climate change (e.g., changing rainfall patterns, increased irrigation demand).

Question: Does the model take into account the changes in the basin as it narrows? It may be more than the model currently covers.

Answer: We have implemented what the USGS implemented in their model for the shape of the basin, based on well logs (water and oil) and satellite data.

Question: Recently the Government proposed selling leases for oil drilling (federal land in the foothills). Oil operations could use additional groundwater, particularly if fracking is involved. How would that be considered?

Answer: Future water demands in the Cuyama Basin can be considered. We can look into how likely additional pumping from the Cuyama Basin would be.

Question: Is 90 percent irrigation efficiency realistic?

Answer: Irrigation efficiency is based on evapotranspiration and not on other irrigation practices. The CBGSP team will further clarify these calculations.

Question: How do subsidence and the loss of storage due to subsidence fit into the model?

Answer: There are no simple, cost-effective ways to model subsidence. Subsidence and the potential loss of storage are discussed and addressed in the GSP.

Question: How do you estimate and calibrate surface water flows if there are no good surface water gauges in the basin.

Answer: The land surface component of the model simulates surface water flows based on available precipitation, soil, and land use datasets. Then we compare the results with the available streamflow observations to make adjustments.

Question: Did the USGS study include surface flow in their model?

Answer: USGS has limited information about surface flows, which the team is reviewing and comparing.

Question: How are you looking at groundwater dependent ecosystems (GDEs) and all the wildlife that depends on that.

Answer: We have a biologist who is reviewing and checking available data regarding groundwater dependent ecosystems in the basin. A memo summarizing the findings will be prepared.

Question: How does the model take into consideration how some wells have declined, and others have remained relatively stable?

Answer: The model calculates water budget and elevation levels for each cell in the model based on the conditions in that cell. The calibration effort is getting the calculations to replicate real-world measurement.

Question: With so many factors calculated in the model, it is important to understand the level of certainty that underlies the factors and model results. Can that uncertainty be quantified?

Answer: The GSP includes a discussion of uncertainty and recommendations for reducing uncertainty in the future.

Question: The presenter asked for information about the causes for the Cuyama Community Services District groundwater levels to drop after 2011. The commenter noted that this was the year that Duncan Family Farms started farming irrigated land near the CCSD well – could there be a correlation?

Answer: There may be a connection. This will be investigated as part of numerical model calibration.

Question: I'd like to know the implications of water being removed from the older alluvium (beneath the aquitard) and being put into the newer alluvium (above the aquitard)? It is called "deep percolation" in the model but it different/distinct from that water not being pumped and remaining in the deep alluvium.

Answer: This is not likely to significantly affect the overall groundwater budget.

Question: How does the pumping in one area affect others (cone of depression)? Does the heavy agricultural pumping make domestic wells have to be deeper? Who should bear these consequences if this occurs?

Answer: If groundwater levels fall below minimum thresholds, the Board will determine the proper action to make in response.

Question: Cuyama Community Services District had two wells. One went out of service a couple of years ago. I am wondering if your model is using data from two different wells?

Answer: The numerical model assumes that pumping for the CCSD is taken from the remaining well.

Question: What sustainable options are you exploring? How can the options you are currently presenting be viable? Are you addressing a model for “sustainability” by proposing a pipeline? How does that make sense?

Answer: A pipeline is an example of a project that might be considered to help the Cuyama Basin become sustainable by 2040. Some projects and management actions will be presented later in the GSP development process for further consideration and evaluation.

Question: Are there underground river flows (data) available?

Answer: This type of data is not available. However, subsurface flows are estimated by the numerical model.

Topic 2 – Potential Management Actions and Projects for the Cuyama Basin

Question: Are cattle positive or negative in terms of water use? Can they be used to manage vegetation in rangeland?

Answer: This is not likely to have a significant effect on the overall Basin water budget.

Question: How do we evaluate the sustainability of whatever project(s) we consider when some options may draw water from other basins?

Answer: The options considered should help sustain the Cuyama Basin; the CBGSA Board and Standing Advisory Committee may consider many factors in evaluating options.

Question: Do the projects need to be suggested now? And implemented by 2020? Or do they get implemented later?

Answer: The GSP includes an evaluation of potential actions and an implementation plan for the most viable approaches. The projects and management actions do not have to be implemented by 2020.

Question: Are we trying to reach 2015 levels? Or are we leveling off whenever we level off in 2040?

Answer: There is no mandate to meet 2015 levels. The thresholds and objectives will define what the projects and management actions need to achieve.

Question: Given that we are in critical overdraft, have we been in contact with DWR? They implied that levels could not change from now.

Answer: The Cuyama Basin is not required to return to 2015 groundwater levels. The requirement is that the basin achieves sustainability, which the GSP will define for this basin.

Question: Explain the glide path. How is it used; is this to help predict the future?

Answer: The glide path is included to establish a predictable plan for how and when the basin might achieve more sustainable conditions.

Question: Is there a way, when considering purchasing water, to evaluate how demands and supplies and price may change over time? Can price changes be accounted for in a 20-year purchase plan?

Answer: Evaluation for the inclusion in the GSP includes estimated costs for the projects and management actions considered.

Question: How would funds would be raised to buy that water?

Answer: The GSP implementation plan will describe how management actions and projects could be funded.

Question: What can be learned from other GSAs?

Answer: The team is reviewing ideas being considered by other GSAs.

Question: What can we do as a community to counter these changes (climate change, loss of EPA regulations, changes in government and legislation) to allow ourselves to flourish?

Answer: The GSP will include modeling for climate change.

Question: The options (for management actions and projects) do not make sense in terms of what is sustainable. What options are you considering that are regenerative options for water supply?

Answer: Reuse options may be considered by local landowners in response to pumping allocations.

Topic 3 – Concepts for Management Areas

Question: Can we use a combination of those management areas?

Answer: Yes. The GSA could decide to combine concepts or use a different approach not developed yet.

Question: The blue areas shown (high groundwater levels) are traditionally grazing lands that use very little water, so why manage them?

Answer: The Board could decide to establish management areas only in areas where groundwater management is needed.

Question: Why do we have so much area that is outside of the main part of the basin? Why don't we change the basin boundary?

Answer: Boundary modifications could be considered, but the rules specify when DWR will consider changes.

Question: Do we need management areas? It's hard to set them if we don't know what they can and cannot do.

Answer: This presentation is a preliminary presentation of concepts. Having no management areas is also an option. The GSP team will provide additional information about what can and can’t be accomplished with management areas at a future workshop.

Question: Could the GSP set management areas based on data gaps, with the purpose of not necessarily setting thresholds and just trying to figure out what to do there?

Answer: It is possible, but generally, management areas are to help set thresholds and to organize and implement management actions and projects.

Question: Another data point would be rainfall in the foothills, can you establish management areas by rainfall patterns?

Answer: It is possible, but generally, management areas are to help set thresholds and to organize and implement management actions and projects.

Question: What standard are federal lands under in terms of water use? Are there regulations they must comply with?

Answer: The federal government is not bound by state law.

Question: If there have been grapes planted at the west end of the basin and the basin was in overdraft before that, who decides for final water cutbacks.

Answer: The GSA Board will decide on the management actions, projects, and implementation plan.

Question: Can you accomplish results without management areas?

Answer: Yes, management areas are not required. The GSA is the managing and implementing agency, with or without management areas.

December 3, 2018, Community Workshops

Two community workshops (English and Spanish), were held on December 3, 2018, in New Cuyama, CA. Questions received, and the responses provided are grouped below by workshop topic.

Topic 1 – Sustainability Thresholds

Question: How does the water budget relate to the minimum thresholds?

Answer: The water budget and minimum thresholds are not directly related. The water budget doesn't influence what is established as minimum thresholds. The water budget and numerical model are used to guide projects and management actions so that the Cuyama Basin will be sustainable within 20 years and be above the minimum thresholds.

Question: When in the water budget analysis are the topography of the Cuyama Basin and recharge areas considered?

Answer: The topography of the Cuyama Basin is considered in the water budget and numerical model, which considers the collection of surface water and infiltration to the groundwater. The identification of potential recharge areas is a part of the development of projects and management actions to increase water supplies in the basin.

Question: When setting minimum thresholds, why allow further decline of the groundwater levels? How is that sustainability? If minimum thresholds are set below 2015 levels and allow further decline, then how do we get balance? Don't we have to get the water budget in balance?

Answer: The setting of minimum thresholds is designed so that, as a whole, the Cuyama Basin avoids undesirable results. Undesirable results adversely affect beneficial uses of groundwater – in some portions of the basins, groundwater levels can decline without causing further undesirable results, and the minimum thresholds reflect this.

Question: Are there actual undesirable results that can be related to the proposed minimum thresholds in the different threshold regions? What are we trying to prevent the setting of the minimum thresholds? Have the undesirable results that are to be avoided been defined for each region?

Answer: Part of the rationale for setting minimum thresholds by regions within the basin is to indicate when a given threshold region might be approaching an undesirable result. Potential undesirable results have not been identified by region at this time. Five undesirable results apply in the Cuyama Basin as defined by SGMA: reduction of groundwater storage, land subsidence, chronic lowering of groundwater levels, depletion of interconnected surface water, degraded water quality).

Question: How connected is the groundwater between the threshold regions?

Answer: Groundwater flow varies among the threshold regions based on the geology, but generally, the groundwater is connected between the regions.

Question: Are additional monitoring wells planned?

Answer: Yes, a monitoring network is established that includes new monitoring wells in areas that require additional data.

Question: Explain what you mean by “establish range of operation in the groundwater basin.”

Answer: On slide #30, “Why Minimum Thresholds” three reasons were given: Required by SGMA, establish range of operation in the groundwater basin, and protect other groundwater pumpers. The second reason “establish range of operation in the groundwater basin” is referring to setting a range of groundwater levels to allow for groundwater pumping through wet and dry periods.

Question: Did the technical team working on the model consult with other agencies and surrounding counties for data?

Answer: Yes, data was collected from several agencies including DWR, U.S. Geological Survey, the counties of Kern, Santa Barbara, San Luis Obispo, and Ventura, and others.

Question: What do you mean when you say, “protect access to groundwater for the Cuyama Community Services District?”

Answer: This is a good example of how minimum thresholds can help identify when an undesirable result might occur, such as dewatering the CCSD well. The CCSD access to groundwater should be protected as it is an existing groundwater user.

Question: When will there be a new well for the Cuyama Community Services District (CCSD)?

Answer: A new CCSD well will be evaluated as a possible project in the GSP. It will be up to the CBGSA Board to decide on the actions that protect groundwater users.

Question: Does the CBGSA submit the GSP and then find funding for projects and management actions such as a new well for the CCSD?

Answer: Part of the evaluation of projects and management actions will be identifying potential funding sources for projects, including grants and/or local funding by the GSA and groundwater pumpers.

Question: Isn't it a contradiction to say that we can allow wells to be drilled deeper such a new CCSD well while working to achieve sustainability in the Cuyama Basin?

Answer: Interim period between 2020 to 2040, while projects and management actions are being implemented, it is possible that groundwater levels will continue to decline, which may warrant new wells to maintain access for groundwater pumpers.

Question: Do other GSPs have more or less monitoring wells than in the Cuyama Basin?

Answer: It varies. Each groundwater basin is developing monitoring wells and the right number to provide a basin-wide measurement of sustainability.

Question: How do you update the GSP every 5-years; what does that look like?

Answer: During the five years, everything is monitored and assessed. The update is a chance to relook at conditions with new and better information, refine and update sustainability thresholds, check-in on how project and management actions are doing, and determine if new projects or actions are justified or needed.

Question: What is an example of a management action that is implemented, and then needs to be changed or modified during the 5-year GSP update process?

Answer: For example, new monitoring wells will be installed around the faults. During the 5-year update, it may be learned that more monitoring wells are needed to further understand the conditions. Another example would be where a recharge project was implemented with good results, and a decision might be made to expand it.

Question: If a goal is to increase water supplies, how will that be done?

Answer: The team will be evaluating projects and management actions, which is a topic for future workshops.

Question: As the GSP is updated every 5-years, will the actions get stricter to achieve sustainability by 2040?

Answer: The GSP contemplates phased implementation of projects and management actions as well as water allocations. The 5-year updates may show that more projects and management actions are needed if progress toward sustainability by 2040 is not matching expectations.

Question: For the rationale that sets the minimum threshold at 2015, is the idea then that the well doesn't go below that level even without undesirable results?

Answer: This is still to be determined. The team will use rationales selected with input from the community, SAC, and the CBGSA Board to develop specific minimum thresholds for each threshold region and interim milestones. In some cases, the interim milestones may go below 2015 levels with the goal of recovering by 2040.

Question: How do threshold regions or rationales relate to the existing 30 percent overdraft?

Answer: The rationales are intended to develop the minimum thresholds to monitor against undesirable results. 30 percent represents the over-pumping across the entire basin. Projects and management actions are developed to address over-pumping.

Question: 20 thousand acre-feet (TAF) must be cut back, but how can that happen if we keep declining groundwater levels?

Answer: There will be a transition period between now and 2040, during this time there may be further lowering of groundwater levels, but the overall intent of the plan is to get the basin in balance by 2040 and beyond. Beyond 2040, inputs have to match the outputs.

Question: Groundwater levels must flatten completely to be sustainable; is that rationale correct?

Answer: Sustainability boils down to two things: inputs must match outputs, and undesirable results must be avoided. The inputs must match the outputs on a long-term average, not each year, so there may still be fluctuations in groundwater levels.

Topic 2 – Numerical Model Update and Initial Water Budgets

Question: What direction does groundwater flow?

Answer: Like surface water, groundwater movement in an unconfined aquifer is dictated by gravity – it flows downhill. Groundwater flows from areas of higher hydraulic head to areas of lower hydraulic head. In the Cuyama Basin, that is generally from the south to the north, and from the east to the west.

Question: How much water is an acre-foot?

Answer: An acre-foot of water is 43,560 cubic feet, or to 325,851 U.S. gallons, enough water to cover a football field with a foot of water.

Question: How does the model calculate deep percolation?

Answer: The model calculates deep percolation as the potential quantity of recharge to an aquifer. Recharge is the amount of water leaving the active root zone (deep percolation). Recharge is derived from precipitation, irrigation, evapotranspiration, and soil hydraulic properties.

Question: How does the water budget change in different parts of the Cuyama Basin?

Answer: The water budget is developed for the entire Cuyama Basin.

Question: What is the total groundwater depletion in the Cuyama Basin over the past 20 years?

Answer: Since 1995, the total decline in basin storage is approximately 400,000 acre-feet.

Question: Was the age of the wells recorded?

Answer: The monitoring well data that was collected had a wide variation in its level of detail. Some wells had an installation date, and some did not.

Question: How does the plugging of well screens affect groundwater level readings?

Answer: If monitoring well screens are plugged, it is less likely that measurements in the well will represent conditions near the well.

Question: Is the model developed enough to depict the size of storage or what is left in storage?

Answer: The total amount of storage in the basin is unknown because there is uncertainty about the depth of the groundwater basin throughout the whole area.

Question: How does the model calculate evapotranspiration?

Answer: The model calculates the evapotranspiration based on the data provided by the Irrigation Training & Research Center at Cal Poly San Luis Obispo.

Question: How much water is nature using?

Answer: Native vegetation consumptive use is approximately 182,000 acre-feet per year out of a basin-wide total of about 223,000 acre-feet.

Question: How much water is left after native plants and agriculture?

Answer: Deep percolation to the groundwater is approximately 32,000 acre-feet per year and 11,000 acre-feet per year is runoff.

Question: Have you forecasted full groundwater depletion?

Answer: No. The GSP is looking at how to get the basin back in balance, not how long it would take to use all the water in the basin.

Question: What about groundwater dependent ecosystems, are they taken into account in the model?

Answer: Groundwater dependent ecosystems are not represented directly in the model; instead their water consumption is lumped in with other native vegetation.

Question: What influences the groundwater ranges?

Answer: Location, geologic conditions, topography, precipitation, and several other factors.

Question: What about groundwater quality, is that addressed in the GSP?

Answer: Salinity is included in the GSP.

Question: Is climate change included in the model?

Answer: There will be projected hydrologic conditions under a climate change scenario provided by DWR.

Question: What does "reconstructed stream flows" mean? Isn't it an estimate?

Answer: Streamflows leaving the Cuyama Basin are estimated using the reconstructed historical precipitation data.

Question: When looking at earlier studies conducted in the Cuyama Basin, how do they compare with the model and the resulting water budgets?

Answer: The results are not directly comparable because no previous model covered the entire Cuyama Basin.

Question: If the model can calculate storage loss, how much is left, how close to empty are we?

Answer: The total amount of water stored in the basin is unknown due to uncertainties in the depth of the basin. The GSP is looking at how to get the basin back in balance, not how long it would take to use all the water in the basin.

Question: What science can show what happens to deep percolation when the vadose zone is 500 feet of empty, de-watered dry zone above the groundwater level but below the land use? Where in California has this ever been studied? What procedure can predict this? What certainty exists as to whether the deep percolation ever makes it back down to usable groundwater?

Answer: The lowering of groundwater levels at very high rates has a significant impact on the recharge of deeper aquifers when a thick clay layer exists. As a result of lower pressures, the pore space between the clay particles get smaller and slow the vertical flow. Without such thick clay layers, the most significant impact is the delay in time for the recharge occurrence to reach saturated groundwater level rather than the volume.

March 6, 2019 Community Workshops

Two community workshops, one in English and one in Spanish, were held on March 6, 2019, in New Cuyama, CA. Questions received, and the responses provided are grouped below by workshop topic.

Topic 1 – SGMA Background and GSP Development Overview

There were no questions.

Topic 2 – Cuyama Basin Water Budget

Question: What is the sustainable yield of the Cuyama Basin?

Answer: Total sustainable yield in the Basin is about 21 thousand-acre-feet (taf)

Question: The concept of regions is confusing because the conceptual model is detailed while the defined regions are fairly blocky. How defined will be boundaries of these regions be?

Answer: The CBGSA previously approved regions to be used for developing groundwater level thresholds; however, these regions will not be used as Management Areas. As determined by the CBGSA Board, management area boundaries will be estimated using numerical modeling results.

Question: Is the Ventucopa Management Area set in the town? What is the Ventucopa Area?

Answer: On March 6, 2019, the Board approved using preliminary Management Areas defined by groundwater level changes estimated by the Cuyama Basin numerical model of greater than 2 feet per year.

Question: When will the model runs that include Climate Change be available?

Answer: Modeling results that incorporate climate change will be shown at the April CBGSA Board meeting.

Question: Is climate change included in the model?

Answer: Not yet, but the model will be run with climate change assumptions provided by DWR.

Question: Why is the word "draft" on a number of the slides?

Answer: The analysis is not quite completed so the word draft was added where appropriate.

Question: What is the "Woodward & Curran technical team"?

Answer: This is the consultant team developing the GSP for the Cuyama Basin under contract with the CBGSA.

Question: In New Cuyama, how far down is the water?

Answer: The well is about 800 feet deep and the groundwater level is around 200 feet deep.

Question: Will the water quality improve if the aquifer is recharged?

Answer: We don't know.

Topic 3 – Projects and Management Actions

Question: The pumping reduction numbers seem high? I am not convinced by the pumping reductions-only scenario. There are roughly 16,000 irrigated acres, 3 feet = 8,000 acres. Half of those taken out = balanced.

Answer: The projected pumping reductions needed to reach sustainability reflect the best estimate of the numerical model given the current available information. The model is not perfect as there are data gaps. It should be noted that the required pumping reduction will be greater than the projected overdraft. Need to take into consideration the reduction from deep percolation.

Question: Will taking crops out of production (fallowing land) be a primary tool to become sustainable?

Answer: Yes.

Question: If the Department of Water Resources (DWR) will take 2 years to review the GSP, what happens in those 2 years?

Answer: The assumption is that the Cuyama Basin GSP will be implemented on the schedule submitted with the GSP. The DWR will have to review annual reports as well.

Question: Who is paying to implement projects?

Answer: The CBGSA Board will have to determine this and the funding strategy is likely to be reflective of a philosophy that the costs should be paid by the beneficiaries.

Question: Has cloud seeding been tried over the Cuyama Basin?

Answer: No, but it has been used in Santa Barbara County and other locations.

Question: Is there a risk of toxicity for fruits and nuts that are being grown?

Answer: There is no significant toxic effects as measured thus far.

Question: What is the history of cloud seeding? How long has this technique been used and monitored for toxicity? Has toxicity been measured?

Answer: Cloud seeding has been performed over many decades in many watersheds across California. For example, cloud seeding has been utilized in the Kern River area for over 30 years. These other basins have not experienced major issues with toxicity.

Question: How to test effectiveness (of cloud seeding)?

Answer: Once cloud seeding is implemented, it is difficult to estimate exactly how much additional precipitation results because there is no opportunity to test with and without conditions for the same year.

Question: Someone did a master's thesis on Cottonwood Canyon runoff potential. Did Woodward & Curran use information from canyons that run when there is over 1 inch of rain?

Answer: The model simulates water flows from the canyons. The Woodward and Curran team would be glad to look at the person's master's thesis.

Question: Do cost estimates include annual costs?

Answer: The cost estimates include both implementation and annual costs.

Question: Since the Central Region is so overdrafted, would those in the Central Region pay for potential projects?

Answer: Most likely project costs would be paid by those landowners who derive the greatest benefit.

Question: Silting has shutdown projects in Ventucopa, could this be a big issue here?

Answer: Yes.

Question: Have you considered streambed restoration to slow water? Sounds like the natural function of a stream is being described.

Answer: There is a component of natural recharge, but the concept of stormwater capture is to divert water than would otherwise be lost downstream due to high flows in the river.

Question: Can you increase seepage in the river bottom?

Answer: This would need to be studied to assess the benefits and whether there would be any negative environmental impacts.

Questions: Do you have to do projects?

Answer: SGMA requires that sustainability be reached, and projects can help bring the Cuyama Basin into balance by 2040. You don't have to do projects, but it is prudent because every acre of farming that you lose has an economic impact associated with it.

Question: If pumping increases outside of the Central Region and Ventucopa Area, could more management areas be created?

Answer: Yes.

Question: Currently, there is not much requirement to measure your water use, with the GSP will there be required metering?

Answer: Not for those with private wells using less than 2 acre-feet per year, but metering may be required in other locations—the exact mechanism for tracking water use still needs to be determined by the CBGSA Board.

Question: Why are the groundwater conditions in the Central region and the Ventucopa area so different.

Answer: The Central Region has more pumping and the Ventucopa area has more recharge; additionally, wells in Ventucopa are much shallower than those in the Central region.

Question: How will the new community wells be paid for?

Answer: We hope to get grant funds.

Question: With cloud seeding, how do you measure for toxicity?

Answer: Toxicity has not been a problem in other areas using cloud seeding.

Question: If the projects proposed do not work, then what happens?

Answer: Pumping would have to be further reduced.

Question: Which is implemented first, is it projects followed by pumping reductions?

Answer: Pumping reductions would be implemented first followed by projects.

Question: Is there information on every well in the Cuyama Basin? If not, why not?

Answer: No. Not every well was added to the State's database.

Question: How soon will monitoring start, is there a deadline for when it must begin?

Answer: There is not a specific schedule. Developing the detailed monitoring network and monitoring plan will be part of the initial work to be done.

Question: The Cuyama Community Services District (CCSD) well is not impacting the Cuyama Basin like agricultural pumping is, right?

Answer: Correct.

Topic 4 – GSP Implementation Plan

Question: Do less aggressive pumping reductions mean lower levels of groundwater?

Answer: Yes, less aggressive pumping reductions would result in lower groundwater levels initially; however, the CBGSA will need to bring levels above the minimum thresholds approved by the CBGSA Board by 2040.

Question: Are the monitoring wells new wells or converted ag production wells?

Answer: Both.

Question: What is an assessment?

Answer: SGMA gives GSA's the authority to implement assessments which will likely be property assessments based on acreage, or they could be based on something else. The CBGSA Board of Directors will decide the strategy. An assessment that includes pumping is a likely component of any future assessment.

Question: How are the socio-economic impacts being evaluated? With pumping reductions by the large ag growers, looking at the socio-economic impacts is crucial.

Answer: An economic assessment will be performed prior to any project or pumping allocation implementation.

Question: Can the CBGSA staff talk to the large employers in the Cuyama Basin and ask them to encourage their employees to be involved as this process continues to go forward over the coming years? The employees don't seem to know about what is needed to achieve sustainability in the Cuyama Basin. The employers and employees need to be encouraged to talk about what is coming.

Answer: The GSA has an active outreach process that is designed to try to include as many local residents in the process as possible.

Written Comments Received at March 6 Workshops

- It seems that an aggressive implementation of pumping reductions would be best for keeping the native ecological balance in the riparian areas with the least loss of the rich natural areas that provide quality of life for the inhabitants of the region.
- The pumping reductions might mean financial loss for some, but most of the financial gain from the use of the valley's water does not stay in the valley to provide benefits for the local population, but rather it goes to communities outside of the valley.
- Can a program to educate/provide more efficient irrigation systems like improved water delivery equipment or means to reduce evaporation be developed?
- Is there a way to use a little less technical language and simplify things by using more general terms with more diagrams? Some of the text slides need simplification.

May 1, 2019 Community Workshops

Two community workshops, one in English and one in Spanish, were held on May 1, 2019, in New Cuyama, California. The following is a summary of comments received at the workshops, and comments are grouped by topic. Responses to these comments are in Attachment D-1.

Summary of Comments Received Regarding the Draft GSP

Regarding **SGMA**, the GSP should include the following:

- Clarification that the development and implementation of the GSP is a government mandate under SGMA, but implementation will be paid for by landowners in the Cuyama Basin.
- Clarification that SGMA was not enacted to improve water quality or increase water flows.
- Explain what happens if the GSP fails -- what does state control look like?

Regarding **economic analysis and impacts**, the GSP should include the following:

- Economic impact analysis.
- Explanation of economic impacts from the groundwater cutbacks. The cutbacks could destroy the entire Valley's economy. The economic analysis needs to address the fact that the people who live in the Cuyama Basin work on the agricultural lands or support those that do.
- Explanation of how the economic impacts will be addressed as an offer on a ranch was withdrawn after the need for an 80 percent reduction in pumping was announced.
- Detailed plan for the cost for implementation taking into account that if the costs are put on the smaller landowners, they will go out of business. Protection for small landowners from unreasonable costs.

Regarding **implementation costs and funding**, the GSP should include the following:

- Define who is paying for what, what are the costs to residents.
- Explanation of how the disadvantaged communities in the Cuyama Basin can afford to continue this effort, year after year at $1 million plus per year.
- Consideration that when identifying funding for implementation, given that the Cuyama Basin is so severely overdrafted, decreasing water consumption will severely impact the finances of all those in the Basin whose livelihood depends on water use. Sacramento needs to find a way to pay for changes required by the GSP for the benefit all of California.
- Appropriate agencies should be seeking grant funding now for implementation.
- Information about how long grants will be available.
- Provide funding for houses that have to drill deeper for groundwater.

Regarding the **water model and data**, the GSP should include the following:

- Data gathering methods that are consistently updated so there is a consistent view provided.
- Explanation of why long-term economic decisions are being made on uncertain groundwater modeling.
- Explanation that decisions are being made based on model results without a clear understanding of how wrong the predictions might be. There are ways to quantitatively express the uncertainty in the model, and this should be included. Every model has uncertainty.
- Clarification of the quantitative sensitivity analysis (of the model) to identify parameters that have an outsized effect on hydraulic heads and overdraft/water balance.
- Clarification of uncertainty inputs (to the model) in terms of the range of probably outcomes.
- What the three biggest data gaps in the model are.
- More information that validates if new groundwater users are impacting Cuyama Basin groundwater or not.
- Account for domestic water use.

Regarding the **Russell Fault**, the GSP should include the following:

- Clarification of whether the Russell Fault restricts groundwater flow or if that is still “up in the air.”
- Additional studies to validate if the fault is in fact restricting groundwater movement.

Regarding **minimum thresholds/interim milestones**, the GSP should include the following:

- Explanation as to why minimum thresholds are set too low to achieve sustainability before the groundwater is further severely depleted.
- Improved explanation of the interim milestones. They should be set higher than the minimum thresholds.

- Clarification of the minimum thresholds and undesirable results in Chapter 3 – setting the percentage of wells that fall below minimum threshold at 30 percent is a problem if all wells in a management area go below the minimum threshold yet do not exceed the 30 percent measure for determining undesirable results.
- Explanation of why the minimum thresholds do not protect for continual overdraft.
- Explanation of why the interim milestones are set the same as the minimum thresholds. What happened to the margin of operational flexibility, this GSP is looking to do nothing better than the very worst that is acceptable.

Regarding the **glide path**, the GSP should include the following:

- Better clarification of the glide path.
- Setting reasonable undesirable results that reflect the glide path.
- Connection of undesirable results to the glide path.
- Consideration of starting the pumping allocations/reductions sooner than 2023.
- Implementation of the allocation plan by 2038.

Regarding the **monitoring network**, the GSP should include the following:

- Data gathering methods that are consistently updated so there is a consistent view provided.
- Agreement that the counties will play an active role in the monitoring network.
- Validation that the monitoring network is truly representative.
- Water quality monitoring so it can be dealt with, include water quality planning.
- Standardization of monitoring wells.
- Monitoring wells are not representative of local production.
- Better monitoring network and stream gauges.
- Who pays for the new groundwater monitoring wells?

Regarding **water quality monitoring**, the GSP should include the following:

- Monitoring of other water quality constituents that are of great concern for human and animal consumption, such as nitrates, arsenic, etc. Explain why total dissolved solids (TDS) are the only constituent considered. To avoid the consequences of water quality getting worse as pumping continues, more than just TDS should be monitored.
- Track groundwater quality with age date of multiple constituents.
- Water quality data from other agencies; it already exists.
- Explanation of why all wells cannot be monitored.

Regarding **environmental issues**, the GSP should include the following:

- Planning for potential for degradation of the environment (e.g., increased dust due to fallowing of land during implementation).
- Further analysis of the potential for destruction of native habitat, which is already occurring.
- Increased effort to protect groundwater-dependent ecosystems (GDEs).
- Protection for GDEs – The GSP does not recognize, quantify, or protect GDEs and it should. Basin overdraft has dried up most of the GDEs, the GSP must protect those that remain.

Regarding **water conservation**, the GSP should include the followng:

- Information about conservation by all groundwater users in the Cuyama Basin. All water users in the Cuyama Basin need to be encouraged to change their water use practices. Growers need to be encouraged to change to crops that use less groundwater, change watering systems to conserve more groundwater, let some fields remain unplanted. Private citizens should be encouraged to greatly reduce their water waste, i.e. showering, hand washing dishes, watering gardens.
- Clarification that if residents conserve water use, their bills do not go down.
- Clarification about the GSA's role in recommending growers grow a different crop that uses less water.

Regarding **pumping allocations**, the GSP should include the following:

- Allocation methodology that provides equity among all groundwater users.
- Allocation methodology that is basin-wide.
- Protections for residential groundwater users.
- Definition of and exclusion of de minimis groundwater users from being subject to GSP implementation.
- Information/determination of how the CBGSA will treat a well that is used for irrigation and residential use.
- Information/determination of how the CBGSA will treat new well water users.
- Address the vulnerability of areas to new wells and/or increased pumping where there is no allocation planned currently.

Regarding **projects**, the GSP should include the follwoing:

- What are the impacts and risks associated with cloud seeding?

Regarding **future well drilling**, the GSP should include:

- Explanation of how future well drilling will be addressed.
- Discussion of a possible moratorium on well drilling permits issued by the counties.
- Confirmation that it is a requirement for all new wells to be reported to the CBGSA.

Other comments received at the workshops are summarized below.

- Fees set by the CBGSA will go toward the five-year reporting requirements.
- "Analysis paralysis" could keep the CBGSA Board from taking action.
- There needs to be a commitment on the part of the CBGSA Board to implement the GSP instead of business as usual.
- We were told that the CBGSA Board members do not care – this is worrisome.
- During CBGSA Board meetings, the board members need to listen rather than being on their smartphones during the meetings.
- There needs to be transparency by all parties during GSP implementation.
- Long-term implementation should engage the upcoming generation.
- Ensure that the GSP works for (1) groundwater levels, (2) water quality, and (3) allows for an adequate environment in the Cuyama Basin.
- Better trust that the pumpers will cooperate, report and pay.
- This is the eighth groundwater report done in the Cuyama Basin. We have known about the overdraft problem for the last 50 years. This is nothing new. How are we going to change business as usual behavior? If this plan is not improved drastically, we will know SGMA to mean same old groundwater mining activities.

Comments Made Directly to the CBGSA

The following letter was received by the CBGSA via email on March 3, 2019, and is quoted below.

OPEN LETTER TO CBGSA

If any entity was to craft a responsible long term business plan which relied on one key input or commodity naturally present but limited, in the region of operation, common sense would stress the *fact*, if the key commodity, commonly called a resource, was limited and would maintain it at the highest possible level to insure a viable business. If responsibly envisioned, this would require, among other things, taking into account patterns and trends regarding the limitation, continual degradation, and increased extraction expense of that input. It would make less sense to argue over the fine points of the remaining commodity and one's allotment within a narrow speculative margin than to plan and do everything possible to use with greatest efficiency and to augment through whatever means possible that

key commodity. One must ask, to be blunt, what are the real objectives and contradictions behind CBGSP word play, and actual resource conservation and business as usual?

In the present example, there is a consortium of interests (Cuyama Basin Water District) determined to implement a probable short-to-medium-range plan that prefers to maximize output (capital) at the expense of adequate or perhaps even minimum maintenance of the commodity. This is at odds with the stated purpose of the GSP. This convoluted approach is justified by a perception of a-right-by-law of the dominant users, without acknowledgement of any responsibility to maintain the commodity and the fact that the depletion of it has had considerable adverse impacts on the region's character and potential long term availability for other users.

The science of and historical concern with the issue of water extraction in the Cuyama Valley Basin point to ongoing degradation by agricultural industry on a scale beyond the available water commodity in this basin. The patterns of verifiable depletion were just beginning to be noted in the 1951 USGS study. The basin had been essentially in equilibrium until 1946, a date that coincided with the arrival of electricity to the valley. By 1970, USGS reported that the estimated cumulative dewatering was in the range of 400,000 acre feet for the Basin.

The County of Santa Barbara's own studies at ten year intervals indicated by 1987 the total annual water demand in the basin was between 48,882 and 48,982 acre feet. Beyond a number of recommendations for grower conservation and a tax incentive proposal that never materialized, nothing more was done by agency action and the can was kicked further down the road. By the inception of the most recent USGS study in 2008, the county's water agency, taking all previous reports as more or less accurate, determined that the basin had already irrecoverably lost an estimated 1,500,000 acre feet in addition to the ongoing overdraft per year.

Pumping cost has motivated increased irrigation efficiency and production of less demanding crops since the late 1980's, and diminished the annual deficit to the 30,000 range that is currently being debated as the Groundwater “Sustainability” Plan is being formed. Still, and most importantly, every partisan in this issue does acknowledge a significant annual water deficit, yet among the consortium of major extractors there is no intention to diminish pumping to a level that would stabilize the water commodity in the basin. Instead the intention appears to be to drag out the maximum possible output (pursuing maximum capital return on basically “free” water). Thus the real preferred plan and expectation is to misrepresent the situation as much as the current legislation allows. This, at least in theory, is poor business practice from any perspective. In the short term, the major extractor beneficiaries seek to avoid full responsibility and continue production to the fullest possible extent while the irreversible desertification of the valley continues.

This myopic misuse of the groundwater of California is what SGMA intends to counter. Each of the groundwater basins in the State has unique conditions that require real and forthright solutions. In the Cuyama Basin, the excessive extraction of a sole source commodity is particularly irresponsible and damaging to the individuals and communities that call the valley's basin their home, to the future generations who will have to live with less of that much-needed commodity, and to the grace and modest

bounty of a natural landscape that has already suffered irreparable damage from agriculture. It is long past time for a groundwater recovery plan that runs counter to the normal business bottom line, and takes an honest look at a bigger reality.

Most Sincerely,

John Mackenzie

Former Vice-Chairman CCSD

Cuyama Basin Description of Plan Area - April Draft
Summary of Comments and Responses
June 22, 2018

Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "...	Comment	Proposed Response
1	1.1	2	1	This document will...	Comment: Would imagine this sentence isn't necessary in the final GSP?	This is correct, the sentence will be removed from final GSP
2	1.3	1	3	The Basin also encompasses...	Comment: Since referencing the creeks, it would be helpful to label creeks like Fig 1-14	Creek labels will be added to Figure 1-1
3	1.3	3	4	The San Joaquin Valley Basin...	Comment: Figure spells 'Potero'	Spelling will be corrected in the Figure
4	1.3	5	1	Figure 1-5 shows...	Comment: Why is [Figure 1-5] this map at a differentn scale than the others?	The scale of Figure 1-5 will be modified to show full basin.
5	1.3	5	1	The CBWD covers...	Insert: "...west of Wells Creek to # miles east of the intersection of...."	Comment accepted.
6	1.3	6	1	Figure 1-6 and 1-7...	Comment "Figure 1-6": If data in this figure is all from the Counties, why say DWR land survey?	The figure depicts land use resulting from surveys performed by DWR
7	1.3	6	1	Figure 1-6 and 1-7...	Comment "... 2014...": How is the Grapevine Capital land use going to be included in this effort?	These figures depict historical land use from before the Grapevine Capital development. For modeling purposes, assumptions about current and future land use will include the Grapevine Capital development as well as other recent changes in land use.
8	1.3	6	---	Crops are generally...	Text Edits ". Crops are generally rotated regularly, and some agricultural area is idle. ~~, but a~~Areas that are in active agricultural use produce are primarily miscellaneous truck crops, carrots, potatoes and sweet potatoes, miscellaneous grains and hay, and grapes. Various other crop types are produced in the Basin as well, such as fruit and nut trees, though at smaller production scales.	Comment accepted.
9	1.3	7	4	Much of the surface water...	Comment "figure.": Color scheme between the legend and map appear to be different. Some irrigated lands appear to not have a water use	The current background map shows land uses that were not present in 2014. The background map will be replaced to avoid color confusion.
10	1.3	8	1	Figure 1-9...	Comment "average depth": Would median be a better indicator per square mile?	DWR provides average values, and average is the common statistical representation of groundwater depths
11	1.3	9	1	Figure 1-10...	Comment "10": Is there potential for this figure to change if more data comes in by 5/31? Legend in figure still says 'Domestic' instead of Production	Applicable data provided on or before 5/31/2018 will be incorporated, if possible, in to the groundwater model. However, this data may not be incorporated into this Plan Area figure. The figure's legend will be updated to say "Domestic" in place of "Production".
12	1.3	9	1	Figure 1-10...	Comment "density": Suggest using a different color spectrum, i.e. 'cool to hot' as the density goes up	Comment accepted.
13	1.3	9	1	Figure 1-10...	Comment "average depth": Would median be a better metric?	DWR provides average values, and average is the common statistical representation of groundwater depths
14	1.3	10	2	The Basin contains...	Comment "three": Really only 3? CCSD only has 1 well?	The information represented in Figure 1-11 is what is included in DWR's well completion report database, which contains information on the majority of wells drilled after 1947. However, some wells may not have been reported to DWR (potentially up to 30%), and therefore are not included in the database or this summary.
15	1.3	11	3	The Los Padres National...	Insert: "... then runs outside the Basin's western and southern boundary...	Comment accepted
16	1.3	12	1	Figure 1-13...	Comment "13": Why is Santa Maria watershed more prominent than Cuyama?	The Figure will be modified to make the Cuyama watershed more prominent.
17	1.3	12	1	Figure 1-13...	Comment "part of the Cuyama Basin's northeastern arm located in the Estrella River Basin.": Should add some discussion/explanation why Cuyama Basin doesn't receive water from watersheds on the west side	A sentence will be added to the paragraph that explains why this area does not flow into the Cuyama Basin.
18	1.3	12	3	The figure also identifies...	Comment "... figure also identifies the various other groundwater basins...": Seval of these aren't shown in the map	This sentence will be removed as this figure is not intended to show groundwater basins.
19	1.4	1	4	The USGS has two active...	Comment "deactivated gages": Discuss history coverage of deactivated gages	The text will be modified to discuss the deactivated USGS gages
20	1.4	2	4	and another gage...	Comment "and another gage downstream of the watershed but above Twitchell reservoir on the Cuyama River.": What?	This sentence will be revised for clarity
21	1.5	1	2	Existing groundwater monitoring...	Comment "Existing groundwater monitoring programs in the Basin collect data on groundwater elevation, groundwater quality and subsidence at varying temporal frequencies": Should have a figure(s) to help with the discussion in this section and following sub-sections. Figures may also help identify data gaps	Figures depicting existing groundwater monitoring wells will be included in the Monitoring Network section of the GSP.
22	1.5.1	8	5	Full construction information...	Comment "Full construction information is not available for voluntary wells because SBCWA does not have permission to release available construction information.": Is this still valid? Thought there were on-going conversations on these.	W&C will follow up with Matt Young of Santa Barbara County to verify this information
23	1.5.1	8	6	This known data gap...	Comment "Monitoring Plan": SBCWA's monitorng plan?	This discussion of data gaps will be removed from this section of the GSP and added to the Monitoring Network section of the GSP
24	1.5.1	8	bullets	Spatial gaps...	Comment "• Spatial gaps in the northwestern and southeastern areas of the Santa Barbara County portion of the Basin. • Data gaps in the area north of Highway 166 and in the center of the Basin between Bell and Kirschenmann Roads. ": Figures would be helpful	This discussion of data gaps will be removed from this section of the GSP and added to the Monitoring Network section of the GSP
25	1.5.1	9	bullet	Horizontal spatial gap...	Comment "at least one well per 10 square miles": Should focus on this more and or earlier. Could help develop gaps and projects for monitoring wells going forward	This discussion of data gaps will be removed from this section of the GSP and added to the Monitoring Network section of the GSP
26	1.5.2	0	heading		Comment on heading 1.5.2: Figures showing the temporal and spatial availability of the data would help facilitate discussion and also highlight the gaps and needs moving forward	A figure showing this information will be inlcuded in the Monitoring Network section of the GSP

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27	1.5.2	5	3	In the Cuyama basin...	Comment ", six DDW": Are these not public? That would be more than three portrayed earlier	W&C will review the information and determine if any of these wells need to be categorized as public wells
28	1.5.3	1	2	There are no known...	Comment "no known extensometers": Are these different than the stations mentioned in the following paragraph?	Yes, all current subsidence monitoring stations within the basin use GPS.
29	1.5.7	0	heading		Comment on heading 1.7: Recommend discussing in same order from section to section. Previous section went SB, SLO, Ventura, Kern. This section goes Kern, SLO, SB, Ventura.	The order of the subsections in 1.7 will be reordered and corrected
30	1.8	1	bullet (g)	Well Construction policies	Comment: Will this cover how well permits are granted or denied for new or replacement wells going forward?	No, this section of the GSP documents current well permitting programs. Potential changes to these programs could be considered in the Project and Management Actions section of the GSP.
31	1.9	0	heading		Comment on heading: Are these all cited in text?	Yes
32	1.3	3	4	To the southwest...	Comment "To the southwest, and more distant from the Cuyama Basin, are the Santa Maria, San Antonio Creek Valley and Santa Ynez River Valley Basins, which are located about 10 to 15 miles southwest of the Cuyama Basin.": The distance to these other basins is not accurate. San Antonio Creek is at least 35 miles away as the crow flies, and much futher by highway. The Santa Ynez basin is even further.	Text will be modified for clarity
33	1.3	6	1	Figure 1-6 and 1-7...	Comment on whole paragraph: - These maps do not show range land which dominate the western area of the valley and should be included as an agricultural land use. - Recent agricultural land development is not included which are significant increases in relation to groundwater use in the Basin: specifically the 870 acres of vineyard planted in the western portion of the Basin; and the intensive olive cropping along Hwy 33 are not included. If the map cannot be updated to 2016, then these additions/changes should at least be mentioned in the narrative. - Potatoes and sweet potatoes are not grown at any scale any longer, making it pretty clear that the crop types the report refers to are based on old data. Hay, which is a rain-fed crop, is hardly farmed anymore. However, alfalfa, which is an intensively irrigated crop, and was a cause of the early overdrafting, is still grown along Highway 33. A drive across the Valley today shows large plantings of beets, broccoli, garlic and salad greens, along with carrots.	Land use for additional years, including 2016, is currently being processed and will be shown in the next revision of the Plan Area document. These land use datasets only show irrigated agricultural lands and therefore do not include non-irrigated range and pasture land. However, water use from these other land areas will be accounted for in the numerical model and water budget as part of the GSP.
34	1.3	11	3	The Los Padres National...	Comment "The Los Padres National Forest covers most of the Basin's northwestern arm, then runs outside the Basin's western boundary, where it enters the Basin again and covers most of the Basin east of Ventucopa": Los Padres National Forest also is the boudanry and part of the watershed for the entire southern component of the Basin. A watershed focus should be used since these arms, even though they are located outside the physical basin itself, are feeder streams into the basin.	Comment noted. Figure 1-13 shows the portions of the Los Padres National Forest that run off into the Cuyama Basin.
35	1.4	1-2	3	The Only CDEC gages...	Comment "The only CDEC gages in the Cuyama River watershed are at Lake Twitchell which is downstream of the Cuyama Basin. The USGS has two active gages that capture flows in the Cuyama River watershed upstream of Lake Twitchell... Although neither of these stream gages is located within the Cuyama Basin, they can be used to monitor the inflow and outflow of surface water through the Basin.": The gages located near Twitchell Reservoir are only partially fed by stream flow from the upper basin. Multiple tributaries flow into the Cuyama River to the west of the Basin. Some of these streams include: Miranda Pines Creek, Alamo Creek, and many other smaller creeks. A drive along Highway 166 from the western end of the Basin at Rock Creek to Twitchell Reservoir shows multiple cases of creeks or washes with riparian vegetation (Sycamore, Cottonwood, Willows, etc.) leading into the Cuyama River, all indications of significant groundwater movement. Thüs, we question how accurate a reading these gages would provide for stream flow exiting the Cuyama Basin as defined by Bulletin 118.	Comment noted. Figure 1-14 shows the portion of the watershed upstream of Twitchell Reservoir that flows into the Cuyama River within and downstream of the Cuyama Groundwater Basin, as well as the location of gage 1136800. As part of developing the water budget, W&C will estimate the portion of the gage 1136800 flow that originated from the Cuyama Basin area.
36	General Comment				Comment: Is this the section where past studies of groundwater in the Cuyama Basin would be mentioned? If so, we recommend including this summary chart of past studies prepared by Dennis Gibbs, Yulalona Hydrology, as part of a report for Santa Barbara Pistachio Company, December 7, 2017. We feel that the Plan Description should more clearly summarize the historic overdraft of the groundwater in the Basin that has been documented for many decades. This really should be the starting point for any future management plan. 	These will be discussed in the Water Budget section of the GSP

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37	General Comment				Comment: We also question if oil wells and pumping have been examined in terms of potential water use. It is known that water must be injected into some oils wells to aid in the oil extraction process. Is there any of this going on, have water wells been drilled to supply this water, and if so, how much water is being used?	This will be addressed in the Water Budget section of the GSP. No information has been provided for the water use for oil production.
38	General Comment				Comment: We also believe that the report should include a list of all the new water wells that have been drilled and put into operation in the Basin since the passage of SGMA, including where they are, how much water they can pump, and for what crops they will be used. A lot of water development and water use changes have occurred in the Basin in the past 3-4 years.	Recently installed groundwater wells will be included in the well database developed for the GSP if information is provided for them. However, these will not be identified separately.
39	1.2	1	2	It is beneath the Cuyama...	Comment "It is beneath the Cuyama Valley, which is bounded by the Caliente Range to the northwest and the Sierra Madre Mountains to the southeast": these 2 ranges should be shown on the figure.	Labels for these ranges will be added to Figure 1-1.
40	1.3	1	4	The Basin also encompasses...	Comment "Wells Creek": not labeled on figure	Creek labels will be added to Figure 1-1
41	1.3	1	4	The Basin also encompasses...	Comment "Quatal Canyon drainage": not labeled on figure	Creek labels will be added to Figure 1-1
42	1.3	1	4	The Basin also encompasses...	Comment "Cuyama Creek": not labeled on figure	Creek labels will be added to Figure 1-1
43	1.3	2	1	Figure 1-2...	Comment "CBGSA": not mentioned in legend	The legend will be updated to note the CBGSA boundary
44	1.3	4	7	Its jurisdictional coverage...	Edits "Ventura County ~~encompasses~~ has jurisdiction over the southeastern area of the Basin (covering 120 square miles), including the area east of Ventucopa."	Comment accepted
45	1.3	6	3	Crops are generally...	Edits "~~Crops are generally generally~~ there is regular rotation of crops ~~rotated regularly, and~~with some agricultural area ~~is~~ left idle~~, but~~. ~~areas~~ Areas that are in active agricultural use produce primarily miscellaneous truck crops, carrots, potatoes and sweet potatoes, miscellaneous grains and hay, and grapes. Various other crop types are produced in the Basin as well, though at smaller production scales.	Comment accepted
46	1.3	10	Figure 1-10		Comment on Figure: Legend has Township & Range with Domestic Wells but figure is production wells density	The legend will be updated to say "Domestic" in place of "Production"
47	1.3	10	1	Figure 1-10...	Comment: define production well	Definition will be added to the text for "Production", "Domestic" and "Public" wells
48	1.3	11	Figure 1-11		Comment on Figure: Legend has Township & Range with Domestic Wells but figure is production wells density	The legend will be updated to say "Domestic" in place of "Public"
49	1.3	11	2	The Basin contains...	Comment: Which well is this? Our database does not show a municpal well in Cuyama Basin	DWR's well completion database shows a public well at this location. Initial research suggests that this well is located at a fire station, but this has not been confirmed.
50	1.3	12	3	The Los Padres National...	Edits: The Los Padres National Forest covers most of the Basin's northwestern arm, then runs just outside the Basin's western boundary~~, where it enters the Basin again and covers most of the Basin~~ until the Forest boundary turns east at about~~east of~~ Ventucopa where it covers the southern part of the basin. A portion of the Basin north of Ventucopa, as well as an area nearby that is immediately outside the Basin, is designated as the Bitter Creek National Wildlife Refuge. The Bureau of Land Management (BLM) has jurisdiction over a large area ~~that runs~~ outside the Basin, and along the Basin's northern boundary~~, and covers~~including small parts of the Basin north of the Cuyama River. Most of the northeastern arm of the Basin is designated as State Lands.	Comment accepted
51	1.3	13	1	Figure 1-13...	Comment on figure: Where is the Cuyama Watershed on the figure? Needs to be more obvious. It would also be helpful if the areas of different colors were included in the legend	The Figure will be modified to make the Cuyama watershed more prominent.
52	1.3	13	after 2		Comment on last comment/insertion: Figure would be more helpful if it did not include all the extra basins. Also, are they basins or watersheds. Ventura is labeled at the bottom but that's not the county boundary or the Cuyama basin boundary)	This sentence will be removed as this figure is not intended to show groundwater basins.
53	1.4	1	1	Existing groundwater monitoring...	Edits: "Existing surface water monitoring in the Cuyama Basin is extremely limited. ~~Existing s~~Surface water monitoring in the basin is limited to DWR's California Data Exchange Center (CDEC) program, and monitoring performed by the United States Geological Survey (USGS). The only CDEC gage~~s~~ in the Cuyama River watershed ~~are~~ is at Lake Twitchell which is downstream of the Cuyama Basin . The USGS has two active gages that capture flows in the Cuyama River watershed upstream of Lake Twitchell, as well as four deactivated gages (Figure 1-14). "	Comment accepted
54	1.4	1			Comment on Figure showing Twitchell: Not clear where this is on the map	A label will be added for Twitchell Reservoir on Figure 1-14
55	1.4	1			Comment on Figure 1-14: Are the gages that are labeled on the figure only the USGS gages? What is the area with the diagonal lines?	Yes, the figure only shows USGS gages. There are no other surface flow gages within the basin. As described in the legend, the hatched area shows the portion of the Cuyama River Watershed that contributes to the Cuyama River downstream of the Cuyama Valley Groundwater Basin

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56	1.4	2			Edits: "The two active gages include one gage on the Cuyama River downstream of the Basin (ID #11136800), which is located just upstream of Lake Twitchell. This gage has 58 years ~~recorded years~~ of recorded streamflow measurements from 1959 to 2017. The other active gage is south of the city of Ventucopa along Santa Barbara Canyon Creek (ID #11136600) and has seven ~~recorded~~ years of recorded streamflow measurements ranging from 2010 to 2017. and another gage downstream of the watershed but above Twitchell reservoir on the Cuyama River. Although neither of these stream gages is located within the Cuyama Basin, they can be used to monitor the inflow and outflow of surface water through the Basin.	Comments accepted
57	1.4	2			Comment "The two active gages...": USGS?	Yes, the document will be clarified to be clear that these are USGS gages
58	1.4	2			Comment "The other active gage is south of the city of Ventucopa...": town not labeled on map. Also Ventucopa has been called a community, a town and not a city in this report	A label will be added for Ventucopa to Figure 1-14. The document will be update to consistently refer to Ventucopa as a "town"
59	1.4	2			Comment "and another gage downstream of the watershed but above Twitchell reservoir on the Cuyama River.": ???	Text will be modified for clarity
60	1.5.1	1	2	Data is submitted...	Comment: What is SBCWA?	SBCWA was previously spelled out in Section 1.3
61	1.5.1	3	4	Wells were montiored...	Edits "~~Wells were monitored in 2017, with most~~ Most of the wells that were monitored in ~~being~~ 2017 have been monitored since 2008, although a few have measurements dating back to 1983.	Comment accepted
62	1.5.1	7	6	Full Construction information...	Comment: construction information is no longer confidential	W&C will follow up with Matt Young of Santa Barbara County to verify this information
63	1.7			Addition, last paragraph of 1.7	Insertion "**Ventura County Plan's Update** The County of Ventura is working on a comprehensive update to its General Plan for the first time in almost 30 years. The County's current General Plan expires in 2020 and it has not been comprehensively updated since 1988. Since that time, there have been many important changes to state law that dictate what issues must be included in a general plan. As a part of the General Plan Update, the existing elements may be reorganized and the County will develop three additional elements to address issues related to agriculture, economic development, and water. The General Plan Update will also incorporate the topics of health and climate change. "	Insertion accepted
64				Figure 1-11	Comment: Figure 1-11 shows public wells with a public well at the south end of the basin. We don't have a municipal well in Cuyama Basin in our database.	DWR's well completion database shows a public well at this location. Initial research suggests that this well is located at a fire station, but this has not been confirmed.
65					Comment: • The two wells that are being reported to the CASGEM program are not the two described in section 1.5.1 Groundwater Elevation Monitoring, Ventura County Watershed Protection District CASGEM Monitoring Plan (page 20). The well Ventura reports are: o 07N24W13C03S has been monitored since at least April 1989, and we have a well completion report on it so we do have construction information. o 07N23W16R01S has been monitored since at least March 1972. We do not have a well completion report so no well construction information. Our database has the well depth as 73 feet but I don't know where the information came from. Casing diameter is 10 inches.	This section will be reviewed and clarified
66					Comment: There is not map that shows the wells they are using for water elevation or water quality data.	This information will be provided in the Monitoring Network section of the GSP
67					Comment on Figure 1-12, Fed and state lands: The state lands in the n/w should be labeled "Carrizo plain ecological reserve" as the wildlife sustainability issues will be important.	Carrizo Plains Ecological Reserve will be added to Figure 1-12 where the map label "State Lands" is currently located
68	1.6.2				Comment: The San Luis Obispo 2014 IRWM Plan presents a comprehensive water resources management approach to managing the region's water resources, focusing on strategies to improve the sustainability of current and future needs of San Luis Obispo County (County of San Luis Obispo, 2014), see note below. • Note that the IRWM Plan was heavily based on the 2012 Master Water Report -- https://slocountywater.org/site/Frequent%20Downloads/Master%20Water%20Plan/	A sentence will be added to Section 1.6.2 to note that the IRWM Plan Update was based on the 2012 Master Water Report.
69	1.2				Comment: Add labels on figure for Caliente Range and Sierra Madre Mountains	Labels for these ranges will ba added to Figure 1-1.
70	1.3				Comment: combine Figure 1-1 and 1-2?	Creek labels will be added to Figure 1-1
71	1.3				Label Wells Creek, Santa Barbara Creek, Quatal Canyon, and Cuyama Creek on Figure 1-1	Creek labels will be added to Figure 1-1
72	1.3	2	3	The CBGSA was created..	Edit: Remove "E" from "JEPA"	W&C will confirm the correct acryonym.

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73	1.3				Comment on Figure 1-2: Figure 1-4 shows County Boundaries? Figure 1-2 Not Needed Combined w/ Figure 1-1.	The Figures have been organized to clearly show compliance with SGMA requirements and therefore, the contents and numbering of each figure will not change.
74	1.3	3		Figure 1-3 shows...	Comment on entire paragraph: P. 3 coss draft 2018 SGMA Prioritization. High Priority	Figure 1-3 will be updated to reflect the new prioritization of the Cuyama Valley Groundwater Basin
75	1.3	4			Comment on Figure 1-4: Move to Figure 1-2A	The Figures have been organized to clearly show compliance with SGMA requirements and therefore, the contents and numbering of each figure will not change.
76	1.3	5			Comment on Figure 1-5: Figure 1-2b	The Figures have been organized to clearly show compliance with SGMA requirements and therefore, the contents and numbering of each figure will not change.
77	1.3	6			Comment on Figure 1-6 and 1-7: Show all Ag? Cattle Grazing, pastures, and federal and state land. From Landuse. New Figure?	These land use datasets only show irrigated agricultural lands and therefore do not include non-irrigated range and pasture land. However, water use from these other land areas will be accounted for in the numerical model and water budget as part of the GSP. Federal and State Lands are shown in Figure 1-12.
78	1.3	7		Figure 1-8 shows...	Comment on whole paragraph: Capture all ag? Any diminimis users?	These land use datasets only show irrigated agricultural lands and therefore do not include non-irrigated range and pasture land. However, water use from these other land areas will be accounted for in the numerical model and water budget as part of the GSP.
79	1.3	7		Figure 1-8 shows...	Comment "Pastureland, which may not be...": Can you add this infor? New figure?	These land use datasets only show irrigated agricultural lands and therefore do not include non-irrigated range and pasture land. However, water use from these other land areas will be accounted for in the numerical model and water budget as part of the GSP.
80	1.3	8		The number in each...	Comment at end of paragraph": Add table QAQC discuss. This data is the Figure 13 head to follow	A table is not necessary to represent this information
81	1.3	between 8 and 9			Comment: Geology and well screen level?	Geology information will be provided in the HCM section of the GSP. Screen interval data is not widely available.
82	1.3	9		Figure 1-10 shows...	Comment on paragraph: QAQC discuss	Language will be added to describe the reliablility and completeness of DWR well information.
83	1.3			Figure 1-1	Comments: - add "creeks" to make the label "streams/creeks" - label from page 1 - if showing parcels/ ag areas show the entire basin.	Creek labels will be added to Figure 1-1. Background imagery will be revised to provide more clarity.
84	1.3			Figure 1-2...	Comment: - Combine w/ Figure 1-1 - Too busy w/ all the roads	Background imagery will be revised to provide more clarity. The Figures have been organized to clearly show compliance with SGMA requirements and therefore, the contents and numbering of each figure will not change.
85	1.3			Figure 1-4	Comment: Figure 1-2?	The Figures have been organized to clearly show compliance with SGMA requirements and therefore, the contents and numbering of each figure will not change.
86	1.3			Figure 1-5	Comment: Suggest using entire Basin Scale? Instead of 200 median	The scale of Figure 1-5 will be modified to show full basin.
87	1.3			Figure 1-3	Comment on Medium or all Priorities: Still correct> Draft 2018 SGMA Plan is High	Figure 1-3 will be updated to reflect the new prioritization of the Cuyama Valley Groundwater Basin
88	1.3			Figure 1-6	Comment: Does this include Harvard? All ag?	Land use for additional years, including 2016, is currently being processed and will be shown in the next revision of the plan area document. These land use datasets only show irrigated agricultural lands and therefore do not include non-irrigated range and pasture land. However, water use from these other land areas will be accounted for in the numerical model and water budget as part of the GSP.
89	1.3			Figure 1-7	Comments: - Move state and federal land use figures to ag land use to another figure - show all ag?	Figure 1-12 does not show land use but rather the boundaries of State and Federal lands. Land use for additional years, including 2016, is currently being processed and will be shown in the next revision of the plan area document. These land use datasets only show irrigated agricultural lands and therefore do not include non-irrigated range and pasture land. However, water use from these other land areas will be accounted for in the numerical model and water budget as part of the GSP.

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90	1.3			Figure 1-8	Comments: - show all ag? - Any de minimis users?	Land use for additional years, including 2016, is currently being processed and will be shown in the next revision of the plan area document. These land use datasets only show irrigated agricultural lands and therefore do not include non-irrigated range and pasture land. However, water use from these other land areas will be accounted for in the numerical model and water budget as part of the GSP. De minimis user data is not availble.
91	1.3			Figure 1-9	Edit to legend: Remove "Township & Range with" to just make it "Domestic Wells"	"Number of Domestic Wells by Township and Range" will be used in Figure 1-9, and similar changes will be made to Figures 1-10 and 1-11.
92	1.3			Figure 1-10	Edit to legend: Remove "Township & Range with" and change to "Production" to just make it "Production Wells"	"Number of Domestic Wells by Township and Range" will be used in Figure 1-9, and similar changes will be made to Figures 1-10 and 1-11.
93	1.3			Figure 1-11	Comment: - Google show all ag? - Cicled well with "280" and called it "Strange"	Background imagery will be revised to provide more clarity. The Figures have been organized to clearly show compliance with SGMA requirements and therefore, the contents and numbering of each figure will not change.
94	1.3			Figure 1-11	Edit to legend: Remove "Township & Range with" to just make it "Domestic Wells"	"Number of Domestic Wells by Township and Range" will be used in Figure 1-9, and similar changes will be made to Figures 1-10 and 1-11.
95	1.3				General comment, might be for Figure 1-10 and 1-11?: Well Screen level? Geology?	Geology information will be provided in the HCM section of the GSP. Screen interval data is not widely availble. Screen interaval information is not currently availble for most wells. Text will be updated to reflecty why screen levels are not included
96	1.3			Figure 1-12 and 1-13	Comment: Suggest move up ahead or behind Ag land use on or before.	The Figures have been organized to clearly show compliance with SGMA requirements and therefore, the contents and numbering of each figure will not change.
97	1.4	1			Comment: Approximate amount?	This is described in the subsequent paragraph.
98	1.4	2			Comment: How is this data QA/QC?	The USGS performs QA/QC on their data prior to posting.
99	1.5	1			Comment: When was the CCSD and CBWD formed?	This information will be added to the paragraph that references Figure 1-5
100	1.5	1			Comment "There are 101 wells...: Approximate?	References to the numbers of wells will be removed from this seciton and discussed in the Monitoring Network section of the GSP along with appropriate figures
101	1.5	1			Comment: Figures?	Figures will be added to the Monitroing Network section of the GSP
102	1.5.1	2	1	SLOFC&WCD has...	Insertion: "has two CASGEM wells in the service area..."	Comment accepted
103	1.5.1	4	4	Wells were monitored in 2017...	Comment on "with most being monitored isnce 2008.": Revise, awkward.	Sentence will be revised for clarity
104	1.5.1	4			Comment: Tables/figures?	This section of the GSP describes the program in general terms. More details will be provided in the Monitoring Network section of the GSP
105	1.5.1	5			Comment: Table/figures.	This section of the GSP describes the program in general terms. More detailes will be provided in the Monitoring Network section of the GSP
106	1.5.1	6			Comment: SLO County so the well is mentioned previously and these wells are voluntary	Monitoring programs often overlap which is why the wells are mentioned multiple times
107	1.5.1	9			Comment on paragraph header: Volunteer Program for SLO	Comment noted. No change needed
108	1.5.1	9			Comment on "One well is screened in the Younger Alluvium....": Go over Geolog of Basin. Does not fit?	Geology references will be removed from this section of the GSP and will be included in the HCM section of the GSP
109	1.5.2	1	5 and 6	Constituents most frequently...	Comment: General minerals? Nitrates?	Comment noted. No change needed
110	1.5.2	5			Comment on whole paragraph: Add new requirement for ILRP order. Title I to Title III	Comment noted. This level of detail is not needed in the GSP document.
111	1.5.3				Comment on Placeholder for other USGS Subsidence Monitoring: CORS stations if in area?	This will be updated during the development of the Monitoring Network section of the GSP.
112	1.7				Comment on Section: Need to State GSA's goal then how each Plan Aligns w/ them.	The text will be modified so as to not state or imply that the GSA is adopting goals from the General Plan.
113	1.7.1	1			Comment: GSA Board should decide?	The text will be modified so as to not state or imply that the GSA is adopting goals from the General Plan.
114	1.7.1	3			Comment/edit: Remove last sentence starting with "Due to the complementary nature...." GSA decides. Should b a combo of all General Plans	The text will be modified so as to not state or imply that the GSA is adopting goals from the General Plan.
115	1.7.1	4	2	Given the small portion of the...	Comment/edit: Remove "...and the GSP's alignment wit hthe Genral Plan's goals" Goals need to be vbetted with GSA Board and Public.	The text will be modified so as to not state or imply that the GSA is adopting goals from the General Plan.
116	1.7.2.	3rd to last Paragraph			Comment on last sentence: Need to vett goasl w/ GSA Board and Public	The text will be modified so as to not state or imply that the GSA is adopting goals from the General Plan.

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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "...	Comment	Proposed Response
117	1.3				Comment: This section uses a variety of indexes to describe the Basin but misses others. Numerous secondary streams flow into the valley and contribute to the flow of the Cuyama River but only a couple are mentioned. What about Cottonwood, Aliso, Branch, Salisbury, Ballenger, Burgees, Apache and Reyes Creeks. And what can be done to monitor the sometimes significant contribution these creeks have to the basin. The lack of surface water flow monitoring on any of these secondary stream is a potentially problem for developing a water budget or model. Also no mention is made about the variety of surface water features other then streams and rivers. Cuyama is notorious for its Seeps, Springs, Wetland meadows and Cienegas. There are Federal and State agencies which have wetland tracking maps for these Groundwater Dependent Ecosystems and they characterize a significant portion of the valley. There should be a map representing these wetlands and a monitoring program to understand their conditions.	The streams and other surface water features shown on the figures will be revisited when the surface water modeling approach for the GSP is developed. A map will be developed that shows the wetlands contained in state and federal databases.
118	1.3			Figure 1-5	Comment: Figure 1-5 is at an unnecessarily odd scale and it would be helpful to see it combined with Figure 1-4 so as to see which county is responsible for the parts of the Basin which are outside of the Water District.	The scale of Figure 1-5 will be modified to show full basin. The Figures have been organized to clearly show compliance with SGMA requirements and therefore, the contents and numbering of each figure will not change.
119	1.3			Figures 1-6 and 1-7	Comment: Figures 1-6 & 1-7 regard land use changes up to 2014, however significant changes have happened across the valley with regards to land use and crop changes. How can the changes at Harvard Vineyard, Sunridge Nursery, Duncan Farm, Sunrise Olive, the Solar Farm and others be accounted for as they all are recent major land use changes on a large portion of the valley?	Land use for additional years, including 2016, is currently being processed and will be shown in the next revision of the Plan Area document. These land use datasets only show irrigated agricultural lands and therefore do not include non-irrigated range and pasture land. However, water use from these other land areas will be accounted for in the numerical model and water budget as part of the GSP.
120	1.3			Figure 1-8	Comment: Figure 1-8 is incorrect or miss-keyed. Some Irrigated lands are unmarked and no lands are irrigated by surface water as appear to be indicated on the map by the wrong color key.	The current background map shows land uses that were not present in 2014. The background map will be replaced to avoid color confusion.
121	1.5				Comment: The section on existing monitoring of surface water is telling in its brevity. There are not enough flow gauges to make real measurements. This will be a critical issue with the water budget and model development.	Comment noted. For the water budget development, flows will be estimated using precipitation records
122	General Comment				Comment: No mention is made of historic Groundwater use or of the many studies made of the Basin. It seems relevant to present the history of peer reviewed studies and the commonality of all their conclusions; mainly historic & chronic overdraft. Summary of all modern Hydrologic Analyses of the Cuyama Groundwater Basin Year Agency Overdraft Method 2014 USGS-SBCWA 34,500 AF/y Finite Difference Model 2009 UCSB Bren School 30,500 AF/y Mass Balance 1998 CDWR 14,600 AF/y Specific Yield 1992 SBCWA 28,000 AF/y Mass Balance 1988 CRCD 30,300 AF/y Mass Balance 1977 SBCWA 38,000 AF/y Mass Balance 1970 USGS 21,000 AF/y Mass Balance 1951 USGS "Steady State" Observations	These will be discussed in the Water Budget section of the GSP
123	1.4	2	4	and another gage...	Comment: Sentence structure issue	The text will be modified for clarity
124	1.4	2	5	Although neither of...	Comment: 11136600 is within the DWR GW Basin Boundary	The text will be modified for clarity
125	1.4	2	5	Although neither of...	Comment: May be misleading when considering the development of a GSP and monitoring inflow and outflow from Basin. 11136800 is 15 miles downstream with a fairly large contributing watershed above it and outside the basin. Then again, suppose it's better than nothing at all.	The usefulness of this gage for monitoring will be assessed when the surface water monitoring approach is developed. No change needed for this document.
126	1.5	1		There are 101 wells...	Comment: A general NWIS datapull has double this number of wells with historic data. Possible referring to active program?	Groundwater level data is currently being assessed and the records of wells with historical data will be confirmed. References to the numbers of wells will be removed from this seciton and discussed in the Monitoring Network section of the GSP.
127	1.5	1		There are 101 wells...	Comment: Monitored by whom? USGS and SBCWA and the water district?	The agencies that perform the monitoring are described in the sections below.
128	1.5.1	1	1	Data is submitted to the WDL from ... Santa Barba County Flood Contrl and Water Conservation District...	Comment: Not that I'm aware of. We (WA) do provide data to DWR for the CASGEM program only. Probably what they're referring to here.-although there's a CASGEM section below. I have a feeling that DWR may mine data from the NWIS webpage.	The discussion on the entities who perform monitoring will be reviewed and clarified
129	1.5.1	3	2	The USGS provides historical data for 48 wells from 1946 to 2009...	Comment: ????????????? Also what makes me think DWR pulled data out of NWIS. Discrete values in NWIS are coded CA042 for for Flood Control. The WA submits CASGEM and voluntary CASGEM data for wells to DWR. USGS has never directly provided data to DWR.	The discussion on the entities who perform monitoring will be reviewed and clarified

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130	1.5.1	4	2	In the Cuyama Basin, there are 23 wells...	Comment: ?? Historically there are 200+	Groundwater level data is currently being assessed and the records of wells with historical data will be confirmed. References to the numbers of wells will be removed from this seciton and discussed in the Monitoring Network section of the GSP.
131	1.5.1	4	3	Wells are monitored by the USGS in SBFC&WCD's...	Comment: Water Agency Program	The discussion on the entities who perform monitoring will be reviewed and clarified
132	1.5.1	4	3	...with most being monitored since 2008...	Comment: Ignoring historic data set	Groundwater level data is currently being assessed and the records of wells with historical data will be confirmed.
133	1.5.1	4	3	...back to 1983	Comment: And earlier	Groundwater level data is currently being assessed and the records of wells with historical data will be confirmed.
134	1.5.1	4	3	Groundwater level measurements at these wells are taken approximately once per quarter	Comment: Only during the study	Groundwater level data is currently being assessed and the records of wells with historical data will be confirmed.

Cuyama Basin Hydrogeologic Conceptual Model - June Draft
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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "...	Comment	Response to Comment
1	2.1	Global			I understand that this draft does not yet constitute the complete Basin Setting Description, but of the three requirements of an HCM by CDWR, I find this draft addresses only the first item comprehensively. 1. An understanding of the general physical characteristics related to regional hydrology, land use, geology and geologic structure, water quality, principal aquifers, and principal aquitards of the basin setting; 2. A context to develop water budgets, mathematical (analytical or numerical) models, and monitoring networks; 3. A tool for stakeholder outreach and communication.	The GSP will use the HCM for guiding water budget development and HCM components will be elaborated upon during outreach activities.
2	2.1	Global			In order to facilitate and serve as the basis for the development, construction, and application of a mathematical (analytical or numerical) model and water budget, more narrative would be needed regarding the sources of recharge, and the consumptive use by existing native rangeland and phreatophyte vegetation, as well as a better description of the complexity of the "cascading basin" that results from hydrogeologic barriers that separate the Ventucopa Uplands from the Main Zone, the Main Zone from the Cottonwood subarea and the Cottonwood subarea from the Santa Maria Groundwater Basin. The suggested base period does not span one or more of the major climatic cycles know as the Pacific Decadal Oscillation (PDO), nor does it include the major period of dewatering of the basin in the 1970's & 1980's when much of the groundwater storage was lost. (see USGS, Cuyama Valley, California Hydrologic Study: An Assessment of Water Availability)	This will be addressed in later chapters.
3	2.1	Global			In order to better serve as a tool for stakeholder outreach and communication it would be necessary to more adequately "provide often highly-technical information in a format more easily understood to aid in stakeholder outreach and communication of the basin characteristics to local water users" (DWR). This should include a graphic three dimensional interpretation of the Basin characteristics. "The breadth and level of detail of the basin conditions should be sufficient to capture long-term changes in groundwater behavior" (DWR). I find there to be a deficiency of detail in this regard. I will provide examples in the specific comments below.	3D graphic will be included in the Basin Model and Water Budget section. There is a general deficiency in detail about Cuyama geology.
4	2.1	Global			Data Gaps that are not mentioned include information about: - Santa Barbara Canyon Fault - pumpage data - Stream-flow gauge on the Cuyama River - Seasonal land use practices like frost protection and drench leaching for salinity, varieties of irrigation methods, multiple cropping's in the same year on the same field - Discrepancies between where water is extracted and where it is applied such as the well at Bell and Foothill roads that pumps groundwater for several miles eastward across the Rehoboth Fault	The Data Gaps section of the HCM has been updated. Some of these items will be addressed in the Groundwater Conditions section.
5	2.1	Global			Subsidence data is not mentioned	Subsidence will be discussed in the Groundwater Conditions Section
6	2.1	Global			There is no Groundwater Elevation Contour Map	Groundwater elevation contour maps will be presented in the Groundwater Conditions Section
7	2.1.10	Global			Not all of these citations are from published sources that are considered Peer Reviewed Journals. There should be a consistent citation format that could make that distinction. How will QC/QA be addressed? Some USGS citations are incorrect. The format is inconsistent and some citations are missing. Here are a few examples: Deeds, D.A., Kulongoski, J.T., Mühle, J., Weiss, R.F., 2015, Tectonic activity as a significant source of crustal tetrafluoromethane emissions to the atmosphere: Observations in groundwaters along the San Andreas Fault: Earth and Planetary Science Letters, Vol. 15, pp. 163-172. (https://doi.org/10.1016/j.epsl.2014.12.016) Everett. R.R., Hanson, R.T., and Sweetkind, D.S., 2011, Kirschenmann Road multi-well monitoring site, Cuyama Valley, California Hydrologic Study: An Assessment of Water Availability, Fact Sheet 2014-3075, 2014 Cuyama Valley, Santa Barbara County, California: U.S. Geological Survey Open-File Report 2011-1292, 4 p. (http://pubs.usgs.gov/of/2011/1292/) Everett, R.R., Gibbs, D.R., Hanson, R.T., Sweetkind, D.S., Brandt, J.T., Falk, S.E. and Harich, C.R., 2013, Geology, water-quality, hydrology, and geomechanics of the Cuyama Valley groundwater basin, California, 2008–12: U.S. Geological Survey Scientific Investigations Report 2013–5108, 62 p. Gibbs, D., 2010, Cuyama Groundwater Basin: Department of Public Works, Santa Barbara County, 8 p. Hanson, R.T., Flint, L.E., Faunt, C.C., Gibbs, D.R., and Schmid, W., 2014, Hydrologic models and analysis of water availability in Cuyama Valley, California: U.S Geological Survey Scientific Investigations Report 2014–5150, 150 p., http://dx.doi.org/10.3133/sir20145150. Hanson, R.T., and Sweetkind, D.S., 2014, Water Availability in Cuyama Valley, California: U.S. Geological Survey Fact Sheet FS2014-3075 4p. Hanson, R.T., Boyce, S.E., Schmid, Wolfgang, Hughes, J.D., Mehl, S.M., Leake, S.A., Maddock, Thomas, III, and Niswonger, R.G., 2014, MODFLOW-One-Water Hydrologic Flow Model (OWHM): U.S. Geological Survey Techniques and Methods 6-A51, 122 p. (http://pubs.usgs.gov/tm/tm6a51/) Parsons, M.C., Kulongoski, J.T., and Belitz, Kenneth 2014, Status and understanding of groundwater quality in the South Coast Interior groundwater basins, 2008—California GAMA Priority Basin Project: U.S. Geological Survey Scientific Investigations Report 2014–5023, 68 p., http://dx.doi.org/10.3133/sir20145023. Mathany, T.M., Kulongski, J.T., Ray, M.C., and Belitz, Kenneth, 2009, Groundwater-quality data in the South Coast Interior Basins study unit, 2008: Results from the California GAMA program: U.S. Geological Survey Data Series 463, 82 p. Available at http://pubs.usgs.gov/ds/463. Sweetkind, D.S., Faunt, C.C., and Hanson, R.T., 2013, Construction of 3-D geologic framework and textural models for Cuyama Valley groundwater basin, California: U.S. Geological Survey Scientific Investigations Report 2013–5127, 46 p.	The reference list was reviewed and updated.

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8	2.1.10				I understand the great pressure that the Woodard & Curran team is under to satisfy the statutory deadlines presented by SGMA. This is a complex and convoluted Basin a long way from Sacramento and under these circumstances information is hard to acquire and verify with ground truthing given the time constraints. For those of us living and working in Cuyama this is more than a little frustrating. However, this document is meant to provide a current and historical picture of groundwater dynamics in a conceptual framework that can be used to understand the issues as they relate to a sustainable future. As such it needs some additional data and narratives. A 3D graphic is missing. A description of the changes to GDEs, water quality & availability due to groundwater extraction in recent history is needed. How, why and for how long has Cuyama been considered a critically over-drafted basin?	Please note that this is only one section of many that is devoted to describing groundwater conditions in the Basin. The 3D graphic (and model) will be discussed in Section 4 (Basin Model and Water Budget) The Groundwater Conditions Section will discuss: GDEs Water quality Groundwater availability Historical groundwater storage & use
9	2.1.3	Global			It would be very helpful to maintain some consistent descriptive format. Some formation descriptions lack important information that is provided for the others. In particular their water bearing relevance to the Basin or its boundaries and to the model itself would be good to include in each formation description. Some do, some don't.	The inconsistency in description formats, particularly for the faults, is a result of the discrepancies in the amount of data and reports. Some faults are well studied and have numerous resources to cite while others (like the Morales fault) lack information.
10	2.1.4	3	6	The syncline has folded water and non-water bearing formations...	Descriptions of structural features (i.e. faults & synclines) should be more consistent in format with more reference to their relevance to the hydrology in general. For example if the Cuyama Syncline "is favorable to the transmission of water from the southeast end of the valley" why would it then have "no pronounced effect on the occurrence of groundwater in the basin"? The syncline near Santa Barbara Canyon Fault has little or no description of its relevance to groundwater movement. If its occurrence is significant but its relevance is unknown this should be noted as a data gap for further investigation.	Noted. Will discuss details of tectonic features in Data Gap section.
11	2.1.4	10	1	Due to the lack of a consensus as to	I appreciate the last paragraph of the Russell Fault description for its acknowledgment of the known-unknowns of this formation with respect to its permeability to groundwater flow. This honesty is refreshing and should be encouraged elsewhere. It is at least as important to identify what we don't know as to acknowledge what we do.	Noted.
12	2.1.4	18	5	The fault is considered a barrier to	What is the significance of the Santa Barbara Canyon Fault being a barrier to groundwater flow? "The SBCF was not represented as a barrier to flow in the younger alluvium in the model cells that represent the Cuyama River channel in the CUVHM"(D.Gibbs). How might this impact the Model or Budget? What more would we need to know about the fault to adequately address the management decisions to come? How can we discover what it is we need to know?	The USGS in 2013 also concluded that the SBCF was a barrier to groundwater flow: "Relatively small amount of vertical offset in the SBCF indicates changes in water levels across the fault documented in previous studies are perhaps the result of distinct fault-zone properties rather than juxtaposition of units of differing water-transmitting ability" (USGS, 2013a).
13	2.1.4	20	1	The Morales fault is a 30-mile....	The Morales Fault is used as the northern boundary of the Basin but very little is mentioned as to its type, or hydrologic permeability. Is its only relevance and justification for being a boundary that it was used as such in the bulletin 118?	Because the Morales Fault bounds the basin sediments and basement rocks. Basement rocks are impermeable. Impermeable rocks are a basin boundary.
14	2.1.4	last paragraph	4	The presence of these non-aquifer materials in this area....	As for the outcrops of bed rock in the western part of the Basin; how can we quantify that the outcrops "likely restricts groundwater movement by limiting the extent of permeable materials in this portion of the basin"? Again, how can we learn what we need to know to understand this impact on the model and water budget as a whole?	The characteristics of the formations in the outcrops indicate that they are non-water bearing. They could be further studied with well installation and pump testing to improve understanding of their permeability.
15	2.1.5	2			Not all of the faults being used to set the Basin's Lateral Boundaries have been described as impermeable to groundwater flow. Is it important to provide any supporting science behind the Bulletin 118 delineation? Might there be some issues here like the fingers that are in the Basin but outside of the watershed and boundary faults that may or may not constitute barriers to groundwater flow?	Because the faults bound the basin sediments and basement rocks. Basement rocks are impermeable. Impermeable rocks are a basin boundary.
16	2.1.5	5	1	The bottom of the Cuyama Basin...	Please cite the claim "the bottom of the Cuyama Basin is generally defined by the base of the upper member of the Morales Formation".	A citation has been added.
17	2.1.5	Global			Be consistent when referring to the aquifer. It is defined as ending at the upper member of the Morales Formation but throughout the section the entire Morales Formation is referenced as the aquifer	A sentence has been added at the beginning of the section clarifying that when referring to the aquifer, we are referring to alluvium layers through the top of the Morales Formation.
18	2.1.6	1	5	There are no major stratigraphic....	How can you claim "There are no major stratigraphic aquitards or barriers to groundwater movement, amongst the alluvium and the Morales Formation", and then describe those formations as "consisting of interbedded layers of sand and gravel and thick beds [of] clay ranging from 1 to 36 ft."? That 2nd description defines an aquitard and is evidenced by the many "exceptions of locally perched aquifers resulting from clays in the formations." These clays and aquitards have profound effects on the lateral and vertical movement of groundwater within the Aquifers. I cannot believe that "the aquifer is considered to be continuous and unconfined" in the presence of so many thick clay layers! How can this inconsistence be reconciled?	There are no continuous clay layers that cover a large area of the Basin in the reviewed literature. Individual clay lenses are not considered a regional aquitard. The extent and nature of clay lenses is not well understood in Cuyama and could be investigated as a data gap.
19	2.1.6	9	3	Using aquifer tests from 63 wells...	This is also evidenced by the "estimates of horizontal hydraulic conductivity ranging from 1.5 to 28 feet per day (ft/d)". That's quite a range to be considered unconfined, and would render the average and/or median values to be statistically irrelevant. The wide ranges in the estimates for all the Aquifer Properties show the great variability of groundwater movement within the aquifers due to these aquitards. How will the mathematical model and the budget handle this kind of spatial differentiation?	Discussion of model and water budget methodology will be discussed in the Water Budget & Basin Model Sections
20	2.1.6	Figure 2-12			This map shows that there are no Aquifer Test Wells anywhere in the Ventucopa Uplands south of the SBCF. This data gap contributes to a lack of understanding of the Ventucopa area, the region responsible for most of the groundwater recharge into the main basin. Similar data gaps exist for Cottonwood area west of the Russell Fault. How will these gaps be addressed before developing the Model and Budget?	How aquifer tests (or lack thereof) will be used in the groundwater model will be described in the Basin Model section. The limited amount of conductivity data will be identified as a data gap that can potentially filled by studies at the direction of the GSA in the future.
21	2.1.6	Figures 2-8 to 2-11			These cross sections need a legend and should trace the current & historic groundwater levels similar to the way the USGS did with their cross sections. The cross sections should also indicate where one intersects another and should show the locations of the major faults and synclines as they intersect these sections as shown in the USGS charts of the same cross sections. If these cross sections are from the USGS Study why are they redacted and without citations?	The cross sections have been updated.
22	2.1.7				No reference is made of the USGS GAMA reports and related sampling. No discussion of age dating, tritium isotopes, or trace metals. Can the historical data from Singer and Swarzenski (1970) be compared to the more current data by Hanson et al (2013) as part of the USGS Cuyama studies and the GAMA project to provide the relevant water quality trends? Why is the age dating data ignored as it relates to poor water quality and the lack of recent recharge?	Additional discussion of water quality (including historical water quality and age dating) is discussed in the Groundwater Conditions section.

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23	2.1.8	3			The USGS Geochemistry and isotope dating indicate little to no recharge in the Cuyama Main Basin. Deep percolation of artificial recharge from inefficient irrigation practices is additionally hampered by clay layers, distance to the zone of saturation and compaction due to dewatering and subsidence. Consequently looking at soil properties from the SAGBI database may not be representative of the subsurface properties that potentially control recharge and runoff. How can this potentially high margin of error be verified?	If a groundwater recharge program is selected by the GSA, further study will need to be conducted as part of the program.
24	2.1.8	3			No mention is made of the many Groundwater Dependent Ecosystems; springs, seeps and wetland meadows. Historical evidence should be presented and current conditions quantified for these groundwater discharge areas. How or where will they be presented?	GDEs will be discussed in the Groundwater Conditions section. Available spring reference material was presented in Figure 2-16.
25	2.1.8	3 & 4		Surface Water Bodies & Areas of Recharge	A more complete description of the surface water activities, with regards to runoff & recharge throughout the basin is needed.	Surface water (including runoff and recharge) will be discussed in further detail in the Water Budget section.
26	2.1.8	3 & 4		Surface Water Bodies & Areas of Recharge	How can we evaluate and determine the volume or rate of surface water depletion as it relates to groundwater extraction? An evaluation of the uncertainties and the margins of error within the data sets and HCM components will be needed before any assumptions can be made by using them in the Model or Budget.	Surface water will be discussed in further detail in the Water Budget section.
27	2.1.8	Figure 2-16			This map does not reflect the "approximately 25 miles of the eastern portion of the Cuyama River [that] is categorized as a wetland by the U.S. Fish & Wildlife Service's National Wetlands Inventory". Where is that data being presented? What about the remaining 75% of the valley including the river channel and rangelands? How will recharge be calculated for the majority of the Basin?	Recharge will be discussed in the Water Budget Section. Wetlands will be further discussed in Groundwater Conditions.
28	2.1.8	Figure 2-15			This map and the supporting text do not include many of the major contributing drainages that we have been talking about: Apache Canyon, Ballinger Canyon, Salisbury Creek, Branch Canyon, Alisos Canyon and Cottonwood Canyon. There are also many artificial standing bodies of water pumped from the groundwater that are used for irrigation, frost protection and salinity abatement. They should be adequately described as part of the HCM. How will these surface waters be routed into the groundwater Model and the Water Budget?	A location map will be developed, surface water is a part of the water budget.
29	2.1	Global			Does is meet the requirements for SGMA and help address the DWR BMP's: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_HCM_Final_2016-12-23.pdf	The GSP will be compliant with Regulations and will consider the BMPs, as appropriate.
30	2.1.1				Suggestion labeling all the faults mentioned or approximate location on a separate figure. Cuyama is complex and a visual map would help.	Please see Figure 2-6
31	2.1.2				Suggestion labeling all the faults mentioned or approximate location on a separate figure. Cuyama is complex and a visual map would help.	Please see Figure 2-6
32	2.1.2				Label ranges that are mentioned in the text.	Please see Figure 2-1
33	2.1.6	Figure 2-12			I suggested adding another figure and showing the location of the areas with Bulletin 118	The Basin boundary has been overlain over the USGS map
34	2.1.3	Figure 2-3			Add timeline scale under Epoch, such as Holocene approx. 11,700 years	A timeline scale has been added to Figure 2-3
35	2.1.6	Figures 2-9 to Figure 2-11			Figures 2-9 to 2-11: Add legend: formation type, location markers to help the public, fault names, etc.... Please discuss what these figures mean.	These cross sections have been removed. Revised versions will be included in a later draft.
36	2.1.3	4	4	The older alluvium is	Label on map (TTRF & GRF)	Please see Figure 2-6
37	2.1.3	6	8	The Morales Formation	Label on map - Cuyama Badlands	Please see Figure 2-2
38	2.1.3	8	2	Layers of volcanic ash	Label on map - Caliente	Follow-up. May consider labeling geologic units on the figure.
39	2.1.3	Figure 2-2			Label on map - La Panza and Sierra Madre ranges	No change made to map because these ranges are located outside of the Basin.
40	2.1.3	Figure 2-2			Label on map - Cuyama Badlands and La Panza Range	No change made to map because these ranges are located outside of the Basin.
41	2.1.4	22	3	Outcrops of basement	Suggest to add a footnote to help explain to the public what this is.	The text has been revised.
42	2.1.4	8	1	The highest yielding wells	Not sure if this is for the main basin or basin wide, I suggest clarifying it up front. If basin -wide add the methodology and/or assumptions of how this is projected to the entire basin, such as hydraulic conductivity is from 63 wells in one basin section, so how does this reflect the entire basin with all of the differing geology: faults, formations, and etc...	A description of conductivity that is available currently has been added.
43	2.1.4	12	2	Using aquifer tests from 63 wells...	How was this determine, maybe showing the formula to explain in a footnote?	This is referenced from USGS, 2013c who did not reference their calculations
44	2.1.4	12	6	Wells screened in both	Similar to older alluvium, I suggest adding an explanation for the similarity.	This is a USGS, 2013c interpretation and was made by them, based on their work.
45	2.1.4	12	7	Using groundwater level	values are highest in the central portion of the valley and decline to the west because (geology/faults, etc.....)	The text has been revised for clarification
46	2.1.7	4	2	In 2013, the USGS	Suggest adding a footnote to define the primary and secondary MCL's for the public.	The text has been revised for clarification
47	2.1.8	Figure 2-15			Add recharge and discharge map with labels, seeps, and etc.	Springs and seeps are mapped in Figure 2-16
48	2.1.8	5	Global	Areas of Recharge	Add water budget	This will be discussed in the Water Budget section
49	2.1.3	Figure 2-2			So, essentially the only map we have of the basin formations is from T. Dibblee?	No. Multiple maps were reviewed during HCM development. The Dibblee map was selected for the figure due to its robust detail.

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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "...	Comment	Response to Comment
50	2.1.4	8	3	Water bearing units on the western	What does this mean: "Water bearing units on the western (upthrown) side of the Russell fault are thinner than the water bearing units to the east of the Russell fault due to this uplift"?	The fault has offset deposits so that one side is thicker than the other.
51	2.1.4	14	6	Evidence of the faults and their no-flow boundaries	The Singer reported that water was slow to replenish along the faults - was based on what?	The Singer report did not state why.
52	2.1.4	Figure 2-6			Will consideration be given to minor faults?	Where data is available regarding the nature of faults, they are/will be considered in the GSP.
53	2.1.5	Figure 2-8			Yes, this map was released in June 2012 but some notation should be made of when it was drawn. So this is the best map you have? What do the colors represent? It is highly likely that this map was drawn even before the basin boundaries were established. So this is the best information and most recent info available?	Multiple maps were reviewed during HCM development. The Dibblee map was selected for figure use due to its robust detail. The legend from Figure 2-2 was added to Figure 2-8.
54	2.1.5	Figures 2-9 - 2-11			Are these maps a continuation of Figure 2-8? It is unclear how these maps relate.	These cross sections have been removed. Revised versions will be included in a later draft.
55	2.1.8	6	3	SAGBI provides an index for groundwater recharge for....	The info from the Soil Ag Groundwater Banking Index seem rather unnecessary in an area where an annual rainfall rarely is enough to reach past plant roots, unless you plan on collecting flood water which I thought had already been examined by Twitchell.	Aquifer recharge options will be considered as part of the Actions and Projects evaluation.
56	2.1.4	20	2	The Morales thrust fault *as* a dip of approximately	I know what a dip is - does this mean 30 degrees?	Text is revised to state "The Morales thrust fault has a dip of approximately 30 degrees."
57	Global				We already have subsidence, which means that certain areas will not recharge. So how is water getting below those compacted levels to recharge the aquifers the deep wells are drawing from? It would seem that the water that does not run off the surface or is absorbed by the plants would run downhill on top of the impermeable layers, i.e. in a generally westward pattern away from Cuyama Valley, NOT down into the aquifer.	Noted. No change needed to HCM.
58	Global				What is the definition of "successful implementation of the GSP." Population growth in the rest of the county has nothing to do with population growth in Cuyama Valley unless some small, non-polluting company decided to move here and create employment for local people. That appears to be unlikely unless the county has a plan to attract people who want to live here, rather than extractive Big Ag commuters. With 35 students in the high school this coming year, we're certainly not going to attract families any time soon.	Successful implementation of the GSP is determined by the GSA with input from the stakeholder advisory committee and local stakeholders.
59	pg. 5				pg. 5 - Does Old Cuyama no longer have a well?	Unknown.
60	2	2	1	Hydrogeologic Conceptual Model	The "Best Management Practices (BMP) for the Sustainable Management of Groundwater: Hydrological Conceptual Model" document fundamentals indicate that a HCM can be used for "stakeholder outreach and communication". Without clear explanations, a glossary, definitions, clear citations, the document in its current form has limited use in stakeholder outreach and communication. Further, the BMP document recommends that the HCM for a basin's GSP should include a 3-D model of the basin. The draft HCM for the Cuyama Basin does not include such a model.	The GSP will be compliant with Regulations and will consider the BMPs, as appropriate.
61	2.1	Global			All data submitted by non-public entities should be noted assuch and flaggedin the HCM and throughout the final GSP. Their contributions (data, input, maps, quotes) to the GSP should be noted as provided by entities that are affiliated with a private interest in the valley. Further, the HCM and the GSP should contain a listof all non-publicagencies that have submitted data, with notations on their affiliations. Specifically, Cleath-Harris is affiliated with the North Fork property; EKI is affiliated with the Cuyama Basin Water District.	Data and knowledge about the geology in this Basin is deficient in details. Any available data or reports were reviewed and formally cited if used.
62	2.1	Global			All maps and charts that do not include data from the current 850 acres of North Fork planting should be flagged and noted as not including the current planting and wells drilled.	The HCM is limited to geology. Comment noted for other sections.
63	2.1.4	4	1	There is a syncline in the western	It should be noted that this information has not been verified through independent review and has been provided by an entity affiliated with a grower that has vested interest in outcomes that may result from including this information in the HCM and the GSP.	Comment noted. A link to the referenced document has been provided in the references section of the HCM section.
64	2.1.4	6	1	The Russell fault is a subsurface	According to Sweetkind et al., the Russell Oil Field is located at the western edge of the valley, not "in the center of the main basin". If the location is referring to "center" on a north-south axis, please state as such.	The text has been revised.
65	2.1.4	21	1	A fault located southwest of the Russell	Refer to #1 above. This material appears to have been provided by Cleath-Harris. Please include citation, and flag that this information has not been verified by an independent, public entity.	Comment noted. A link to the referenced document has been provided in the references section of the HCM section.
66	2.1.5	4	2	The lower member of the Morales Formation is composed of clay..	As noted in 2.1.10 References of the Draft HCM, the Cleath-Harris study "Groundwater Investigations and Development, North Fork Ranch, Cuyama, California" did not appear to address the main basin. Is this citation correct? Or should an earlier reference be cited?	Citation has been revised.
67	2.1.6	10	3	The dewatered alluvium has an average specific yield of 15 percent	The wide ranges of specific yield appear to be problematic in estimating an average specific yield of 15%. Please note how these wide range will be addressed.	How conductivity reference information will be used in the groundwater model will be described in the Basin Model section.
68	2.1.6	10	3	The dewatered alluvium has an average specific yield of 15 percent	Please explain why the HCM refers to a specific yield cited in 1970, yet, as written, seems to imply that the average specific yield is correlated to data noted by the USGS 35 years later. If this is a sound hydrogeological practice, please elaborate	Properties of the subsurface geology do not change over time, because subsurface materials (sand, silt, rock) do not move.

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69	2.1.7	4	1	In 2013, the USGS collected groundwater from 39 wells and two...	Before submitting the GSP, these readings should be updated at minimum to 2018, five years following the initial readings, and that these readings should be taken at regular intervals going forward. Please state in the text how and when these readings will be updated.	Additional groundwater quality information will be included in the Groundwater Conditions section. A field study on groundwater quality could be chosen by the GSA as a plan action. GSP development does not include field work due to budget and time constraints.
70	2.1.7	5		Groundwater is used primarily for irrigation.	This statement should be updated to include the North Fork plantings. Further, in section 4€ of the GSP emergency Regulations (https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/GSP_Emergency_Regulations.pdf), pg. 14 states that the HCM shall include the following regarding the aquifer/aquitards: "Identification of the primary use or uses of each aquifer, such as domestic, irrigation, or municipal water supply." While not 'primary' use, the description above does not include domestic and municipal use by the CCSD.	The statement has been revised to also discuss domestic and municipal uses and add a statement regarding irrigation in the west, along the river.
71	2.1.10				An additional suggested reference is "Tertiary Tectonics and Sedimentation in the Cuyama Basin, San Luis Obispo, Santa Barbara, and Ventura Counties, California, Book 59, April 1988" http://www.worldcat.org/title/tertiary-tectonics-and-sedimentation-in-the-cuyama-basin-san-luis-obispo-santa-barbara-and-ventura-counties-california/oclc/19296307	Noted. We will review this document.
72	2.1.2	Figure 2-1			This figure states that faults were obtained from the Dept of Conservation webpage yet there are many faults on the figure which are not part of the interactive map. If there are other sources for the faults they should be listed.	Second source of fault information was added to figure.
73	2.1.4	9	4	In 2015, the USGS identified the Russell fault as a barrier to flow...	This is not accurate. The fault was used as a no-flow boundary for the sake of model computation. It was never identified as a barrier; in fact, it is identified in the publications as not being a barrier to groundwater flow. The wording in this instance is misleading needs to be reconsidered.	The USGS has contradicted itself in its characterization of the Russell fault across multiple reports.
74	2.1.4	9	5	Based on the conclusions of the...	My observation is that this ["Standing moisture near the fault.."] is all Green Canyon flow from Caliente Ranch	Noted. No change needed to HCM.
75	2.1.4	9	6	In addition, Cleath-Harris....	This document should be made available for review by members of the Technical Forum	Comment noted. A link to the referenced document has been provided in the references section of the HCM section.
76	2.1.4	9	1		Is this illustrated in Figure 2-6?	Yes, the fault is shown in Figure 2-6.
77	2.1.6	4	2	The recent and younger alluvium is the primary source of groundwater...	Appears to be referencing much older publications when younger alluvium actually was the primary source of groundwater on the western side of the basin. Now there are 850 acres of vineyard and wells as deep as 900 feet. (primary pumping wells ranging from 450 to 730 feet).	Noted. No change needed to HCM.
78	2.1.6	Figures 2-9 to 2-11			Figures 2-9 through 2-11 need a legend, showing what formation each unit represents.	These cross sections have been removed. Revised versions will be included in a later draft.
79	2.1.8	3	5	Peak flows through the Cuyama River	Reference to peak flows. What gage and where is it? Upstream Ventucopa gage (period of record?) or downstream Buckhorn gage 15+ miles outside of the basin?	Gages were shown in the Plan Area section and more surface water data will be part of the Water Budget Section.
80	2.1.4	Global			This looks very good to me. I applaud the choice to verify fault barriers to water flow by well monitoring and not to rely on theoretical modelling of the geology. The modelling that has been done is understandably biased by the interests of a major user who has also employed two of the consultant firms listed as having modelled these faults and their impacts. This needs to be publicly disclosed in the interest of transparency.	Noted. No change needed to HCM.
81	2.1.4	Figure 2-6			Fault maps on pages 6 and 16 show the Whiterock/Russell Fault zone as a broken line, which does not match the continuous lines used on the maps.conservation.ca.gov (referenced source) or the map on page 13 or Dibblee's map on page 20.	The Russell fault line on a map is indicative of the fault's general area. The figure is revised to show a continuous line.
82	2.1.6	Figures 2-9 to 2-11			Pages 24 and 25: Cross-section A-A' crosses the bedrock high's mapped by Dibblee and DeLong, which are shown on page 20. The page 25 interpretation incorrectly leaves bedrock far below the surface. If this cross section was meant to cross the river bed, it is not based on available data as permeable sediments average only the top 50 feet below the surface across this section of the fault zone.	These cross sections have been removed. Revised versions will be included in a later draft.
83	2.1.3	2	6	The deposits thicken to the east; typically ranging from 5 to 50 feet...	The younger and recent alluvium are the principal water-bearing formations in the Cuyama Basin. Since the alluvium is so much thinner on the western portion of the valley, would this not imply that the actual amount of stored groundwater would be much less, and that any calculations (for example the estimate of the amount of water in the Cottonwood sub-area where Harvard's vineyard is located) of how much actual groundwater is available needs to be verified?	Water budget details will be prepared in the Water Budget Section.
84	2.1.3	6	7	In 1970, Singer and Swarzenski reported the Morales Formation....	It is unclear to what extent and which faults are being called into question as limiting the lateral extent of the Morales Formation. For some faults there is good data on this limiting effect, and on others it is unclear or disputed (for example the Russell Fault), and for others, how much depth of the Morales Formation there might be over some of the more inactive faults.	Noted. No change needed to HCM.
85	2.1.3	12	3	To the east, the Vaqueros Formation grades into the lower	What about the so-called Vaqueros outcrop near the confluence of Cottonwood Creek? There is no evidence that this outcrop is part of a continuous below-ground formation, or an isolated uplifted portion of the formation that is now independent of the below ground material.	Noted. No change needed to HCM.
86	2.1.3	Figure 2-3			The figure seems to represent the upper member of the Morales Formation to only be made up of gravel conglomerate. Our understanding is that it is actually layered sediments that include gravel, but also layers of silt, clay, and sand, more like the lower member. Is this true?	Noted. Sedimentary rock is typically deposited in layers.

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87	2.1.4	5	1	There is a syncline in the western portion of the basin.....	This citation is from unpublished, non-peer reviewed work produced for a stakeholder with specific interests. If this information is to be part of the HCM it needs to be made publicly available and peer reviewed, or stated that it is not.	Comment noted. A link to the referenced document has been provided in the references section of the HCM section.
88	2.1.4	5	2	The full extent of this syncline....	Presence or absence of this extension needs to be ground-truthed.	Field study could be chosen by the GSA as a plan action to fill data gaps. GSP development does not include field work due to budget and time constraints.
89	2.1.4	9	5	Based on the conclusions of the USGS, Dudek stated that the fault...	It should be noted that DWR rejected the boundary modification based on conflicting scientific evidence that claims that the Russell Fault is buried under at least 1000 feet of Lower and Upper Alluvium and Morales Formation, all of which are water bearing and probably allowing permeability at the Fault. This should be mentioned in the HCM draft.	Discussion of the DWR's rejection of the basin boundary modification has been added to the text.
90	2.1.4	9	6	In addition, Cleath-Harris determined that the..	For all information submitted by Cleath-Harris: This is cited from unpublished, non-peer reviewed work produced for a stakeholder with specific interests. It is also in conflict with the previous comment we make above.	Comment noted. A link to the referenced document has been provided in the references section of the HCM section.
91	2.1.4	9	1	The Russell fault has been analyzed	Furthercomment on Russell Fault: The fault has been inactive for 4 million years and since then has had 1000 feet of deposition of Morales formation on top of it of which several strata are water bearing. Agricultural wells on both sides of the fault are less than 1000 feet deep. Hence, there is a high likelihood of water movement in both directions above the fault. (Citation: Yeats, R.S., J.A. Calhoun, B.B. Nevins, H.F. Schwing, and H.M. Spitz. 1989. Russell Fault: Early Strike-Slip Fault of the California Coast Ranges. The American Association of Petroleum Geologists Bulletin. Vol. 73 (9): 1089-1102.) Therefore we agree with the conclusion for further investigating that needs to include the strata on top of the Fault. This could be an appropriate area for more test wells.	Noted. We will review this document.
92	2.1.4	21	1	A fault located southwest of the Russell fault runs southeast....	This is lacking a citation.	Text as been revised to include a citation
93	2.1.4	21	1	A fault located southwest of the Russell fault runs southeast....	Please include: There is no evidence that this Fault is a barrier of water flow from south to north and no evidence that it prevents water use in the north from impacting wells to the south, especially in the Cottonwood Canyon area.	Preexisting reports disagree about the fault's nature and the fault's characteristics to flow are considered a data gap.
94	2.1.4	Figure 2-7			Is this figure included in the draft? What is the source of this figure?	Yes, Figure 2-7 is included in the draft - data sources are listed in the top left corner.
95	2.1.4	last paragraph	4	The presence of these non-aquifer materials in this area....	There is no hydrologic data to back this up, so it is important to not infer any attributes of permeability.	The characteristics of the formations in the outcrops indicate that they are non-water bearing. They could be further studied with well installation and pump testing to improve understanding of their permeability.
96	2.1.5	5	2	The lower member of the Morales Formation is composed of clay....	If Cleath-Harris is citing work done by other authors, those authors should be cited as the original source of the information. Also, since the cited Cleath-Harris study is an unpublished, private report prepared for stakeholders with interests in access to water in the Cuyama Valley, it needs public vetting and validation from other experts in the field before being given any weight in the HCM.	Noted. This document will be made publicly available.
97	2.1.5	5	4	The top of the Morales Formation...	This infers that everything above 750 feet at a minimum is potentially water bearing sediments. Is this correct?	The Morales Formation thickness is variable.
98	2.1.6	9	3	Using aquifer tests from 63 wells...	Does this vary seasonally and/or from wet year to dry year?	Conductivity is not connected to above ground seasons.
99	2.1.6	10	4	The USGS estimated the specific...	It is not clear what these yield numbers mean. Are they a percent? Why is the value for dewatered alluvium a percentage, and the ranges for recent alluvium not listed as percentages? How does the dewatered yield relate to these ranges?	Text has been revised for consistency.
100	2.1.6	Figures 2-9 to 2-11			Comment: What is A-A', B-B', C-C'. It would be helpful for the figures to have captions. Where are the faults on these sections and the differentiation between upper and lower Morales?	These cross sections have been removed. Revised versions will be included in a later draft.
101	2.1.6	Global			Within this section there is no mention of aquitards. It is important to know about aquitard presence especially clay layers in the Morales since they can significantly restrict water movement.	There are no continuous clay layers that cover a large area of the Basin in the reviewed literature. Individual clay lenses are not considered a regional aquitard. The extent and nature of clay lenses is not well understood in Cuyama and could be investigated as a data gap.
102	2.1.6 & 2.1.7	Figures 2-12 & 2-13			It would be helpful to clarify what the boundary line is in these figures. It appears to exclude the western portion of the Basin. If the drawn boundaries are not aligned with Bulletin 118 boundaries, can that be overlayed?	Basin boundary has been overlain over the USGS map
103	2.1.6 & 2.1.7	Figures 2-12 & 2-13			Water quality sites appear to be lacking in both the western and eastern portion of the Basin.	Noted. There is very limited data in these areas.

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104	2.1.7	4	1	In 2013, the USGS collected groundwater from 39 wells and two...	All of these constituents need to be monitored over time, especially nitrates. Since one of the proposals for increasing recharge rates is through percolation through ag land use, these soils which will most likely continue to increase nitrate levels even from organic farming.	Additional groundwater quality information will be included in the Groundwater Conditions section. A field study on groundwater quality could be chosen by the GSA as a plan action. GSP development does not include field work due to budget and time constraints.
105	2.1.7	5	2	The majority of agricultural activity	This statement does not take into account the new intensive viticulture in the western portion of the Basin.	The text has been revised to include western area.
106	2.1.8	3	3	The river is perennial with most dry seasons	Based on historic records of streamflow we know that year-round surface flow has become rare, especially in dry years. Even in normal years, the Cuyama River no longer has surface flow all year. The loss of riparian vegetation is a good indication of the reduction of perennial streamflow. We think this change should be mentioned.	Surface water flows will be discussed as part of the historical Water Budget.
107	2.1.8	3	5	There are approximately four main....	Wells Creek should be changed to Aliso Creek	Wells Creek has been renamed Aliso Canyon Creek
108	2.1.8	4	2	Downstream on the Cuyama River	Twitchell Reservoir is completely dry in most summers and completely dry all year during drought years, demonstrating how limited surface stream flow is for the entire Cuyama River. This should also be included.	Surface water flows will be discussed as part of the historical Water Budget.
109	2.1.8	Figure 2-15			Wells Creek should be changed to Aliso Creek	Wells Creek has been renamed Aliso Canyon Creek
110	2.1.2	4	5	Thrust and compression continued..	Comment: Thrusting reactivated older faults, particularly in the western basin. The upper and lower Morales are unconformable (percom with E&B Natural Resources and Ellis 1994), visible in seismic lines available in Ellis 1994 thesis. Lower Morales is fine grained, and generally predates or dates to very early compressive stage. The low gradient in the system leads to deposition of finer grain size material. As compression begins/continues you get first uplift and erosion (the unconformity) followed by coarser-grained deposition of Upper Morales as slopes increase (mountain range rise). Upper Morales often shows some degree of angular unconformity as well. Studies have also looked at composition and sources of gravels in Morales (Ellis 1993,???) which help firm up this timing. The western valley shows extensive Morales deformation, particularly echelon folding as was noted by Nevins, 1983, Schwing 1984, Calhoun 1985.	Comment noted. Thank you. No change needed in HCM.
111	2.1.3	4	5	Older alluvium is typically 400...	Comment: Western area is more gypsiferous than east of Russell. Add citation/description from DeLong of this unit for western area as cited paper does not address this area. See also Hill 1958.	Comment accepted. Description from DeLong and Hill, etc. has been reviewed and incorporated as appropriate.
112	2.1.3	6	4	The contact between the upper...	Comment: Older alluvium is much thinner than this in the Western Valley (much less than 100' typically). The USGS 2013a report did not address the western valley. When using this report to address generalized conditions for the valley, generalizations are often not applicable west of the Russell fault (out of the report study area). This means that if this source is used, western valley needs to be addressed separately.	Comment accepted.
113	2.1.3	6	4	The Morales is massively bedded...	Comment: This paper is East of the Russell fault only. There are areas in the western basin where Morales is less than this, particularly near the western boundary.	Comment accepted. Text has been revised per the USGS report extent.
114	2.1.3	9	6	The formation underlies the....	Comment: Unconformably underlies the Morales Formation (unconformity reported by Hill et al. 1958). Other marine units unconformably underlie Morales Fm. in the western area as well based on Dibblee, Hill, DeLong, etc..	Comment accepted. Description from DeLong and Hill, etc. has been reviewed and incorporated as appropriate.
115	2.1.3	--	Figure 2-3	--	Comment: Should be an unconformity between Upper and Lower Morales. In most of the valley this unconformity is buried. It is not highly apparent in well logs, but is very obvious in seismic sections. As most papers have addressed only well log data, this is not widely reported. See seismic sections for the Eastern Valley (in Ellis 1994).	Comment accepted. Description of upper/lower Morales unconformity and reference has been added to the text per Ellis 1994.
116	2.1.4	4	2	The full extent of this syncline....	Comment: Dibblee mapped back in the 1940's and 1950's in this area, John Minch did the editing and digitization around and after Dibblee's death in 2004. Minch is the editor, not the mapper.	Comment accepted. Citation has been edited to refer only to Dibblee.
117	2.1.4	8	3	The USGS in 2013 studied the fault...	Comment: InSAR report notes that deformation did not extend far enough west to be truncated by fault (insufficient data). They concluded without data. This is an important caveat to this statement.	Comment noted. Thank you. No change needed in HCM.
118	2.1.4	23	3	Figure 2-7 shows an overlay....	Edit: "Figure 2-7shows an overlay.." (space needed)	Comment accepted.
119	2.1.4	12	4	The Whiterock fault is a barrier...	Comment: This fault forms part of the boundary to the basin but also extends under the basin (under the Cuyama River and Highway 166) (see Yates et al 1989, Calhoun 1985, Schwing 1984, Nevins 1983. This portion of the white rock (along with the TTRF and GRF) help to impede N-S infiltration of river water into the main (central) basin east of the Russell fault. This should not be neglected in either the HCM or the groundwater model.	Comment noted. References have been reviewed regarding Whiterock fault.
120	2.1.4	23	5	As shown in Figure 2-7, Outcrops	Comment: It is important to note that these outcrops occur west of the area in Figure 2-7 as well (See mouth of Cottonwood Canyon, and other areas mapped by Dibblee). They are very common in the entire western basin, but have not been well mapped or well structurally constrained. The focus has been in the area terrace mapped by DeLong as this is pretty much the best data available. It is not comprehensive.	Comment noted. Thank you. No change needed in HCM.
121	2.1.4	17	6	The USGS in 2013 also concluded...	Comment: Oil well data across this fault (See Ellis 1994 and others) addresses this as well including structure and offset.	Comment accepted.
122	2.1.4	8	7	EKI reviewed the USGS's work in...	Comment: Except at the river, alluvium is above the water table along the fault. This can clearly be seen in mapping of the area. Only the Morales Formation need be truncated for this to be a barrier to flow. The river channel is a spill point between the east and west subbasins.	Comment noted. Thank you. No change needed in HCM.

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123	2.1.4	--	Figure 2-6	--	Comment: This map does not show the Russell fault as continuous across the Valley. To my knowledge, every published geologic map of the area does: USGS 2013, Dibblee, DeLong, Smith and Jennings, Jennings and Strand, Yates et al, Vedder and Repenning, English, Singer and Swarzenski, Upson and Worts. 18 miles of offset along this fault does not occur without a continuous fault plane. When one of the key issues in the valley is both the continuity and offset of this fault to ignore well established maps on the continuity of the fault (all the way across the valley, no gaps) will lead to a LOT of misunderstandings. I realize this is likely a GIS translation issue, but another GIS shapefile which shows the continuous fault across the valley should to be used.	Comment accepted. Data from Ellis 1994 has been reviewed and incorporated as appropriate.
124	2.1.4	--	Figure 2-6	--	Comment: Work in Ellis 1994 pulls the SBCF into Ballinger Canyon and establishes a minimum degree of offset. This line should extend further east.	comment accepted
125	2.1.4	4	Heading	Syncline in the Northwestern....	Formatting Edit: Move header onto next page	comment accepted
126	2.1.6	10	7	The highest values in the Morales...	Comment: Most of the fault discussions in the technical forums have suggested to dealing with faults using a reduction in conductivity. How will this by resolved both in the model and in the conceptual model given that the values would be expected to deviate significantly from average, and given limited pump test data. Hydraulic conductivity across fault zones is an important issue.	Model development will be discussed in the Basin Model section.
127	2.1.6	--	Figure 2-9	--	Comment: There is a major difference between surface mapping (Dibblee and others) and this section line. See annotation (below).	The figure has been reviewed and updated.
128	2.1.7	2	7	Along the eastern edge of the...	Comment: Again, this does not reflect TDS conditions in the western basin which show a sharp change across the Russell fault based on historic data (the USGS water quality series that was used to develop Singer and Swarzenski circa 1965-1970). If you are going to cite this study then you should look at the data the USGS collected in the western area (same time span) that shows the quality shift and address both the cross fault quality change and more broadly conditions in the west. Water quality (both historic and current) across the Russell fault is a KEY discussion point in the basin as it is a metric for helping to define both potential subbasins and management areas.	Comment noted. Groundwater quality will be discussed further in the Geologic Conditions section.
129	2.1.1	1	1	The basin is located at the south...	Edit: "...north of the Western Transverse Ranges (Figure 2-1~~Figure2-1~~)	Comment accepted
130	2.1.2	5	1	Following a period of orogeny...	Comment: Suggest adding general ranges of time in Ma after epoch names	Noted. Text has been revised to include ranges of time in Ma.
131	2.1.2	5	2	This period also correlated...	Edit: "This period also correlated with two transgressive-regressive cycles, when the sea advanced and retreated over the area that is now Cuyama Basin".	Comment accepted
132	2.1.2	6	3	The transition to a predominately...	Edit: "The transition to a predominant~~ely~~...."	Comment accepted
133	2.1.3	1	5	The Cuyama Valley Groundwater...	Edit: "....nonmarine deposits of Pliocene to Pleistocene age unconformably over~~laying~~ consolidated marine and nonmarine sedimentary rocks of late Cretaceous to middle Cenozoic age on top of ~~overlaying~~ Mesozoic....."	Comment accepted
134	2.1.3	5	1	The Paso Robles Formation part...	Edit: The Paso Robles Formation is part of the Quaternary....	Comment accepted
135	2.1.3	2	2	Recent alluvium is active fluvial...	Edit: "Recent alluvium is active fluvial channel deposits associated with the Cuyama River and other active channels." Suggest header "Stratigraphic Units Within the Main Cuyama Basin Aquifer"	Comment accepted
136	2.1.3	5	2	It is identified by an unconformity...	Comment: How identified? Unconformity is at top of unit? Bottom of unit?	Comment accepted
137	2.1.3	5	3	The Paso Roble Formation is a gray..	Edit: The Paso Robles Formation is a gray, crudely bedded alluvial gravel derived from Miocene rocks and basement rocks of western San Emigdio Mountains east of the San Andreas Fault	Comment accepted
138	2.1.3	1	5	A generalized stratigraphic...	Edit: "...of the Valley is ~~mapped in~~ shown on Figure 2-3."(space needed)	Comment accepted
139	2.1.3	6	--	Morales Formation	Comment: Suggest breaking Morales into separate paragraphs for Upper Morales and Lower Morales, then separate by header "Stratigraphic Units Below the Main Cuyama Basin Aquifer"	Comment accepted.
140	2.1.3	--	Figure 2-2	--	Comments on Figure: - Suggest marking intervals of young alluvium - Morales Formation as "Cuyama Basin aquifer" or something similar and everything below the Morales Formation as "Bedrock (below groundwater basin" or similar - Younger Alluvium - Pliocene highlighted - confirm the unconformity is Pliocene aged	Comment accepted.
141	2.1.3	--	Figure 2-4	--	Comments on Figure: - A-A' does not match USGS (2013a) - B-B' is not discussed in text - Confusing. "Study Area boundary is not the same as the Basin Boundary - the basin is the focus of the study."	Comment noted. Bulletin 118 Basin boundary has been added for context.
142	2.1.4	5	1	There is a syncline in the western...	Edit: "...that roughly follows a west-northwest (WNW)	Text has been edited to remove (NW) acronym after west-northwest and move to the first instance of northwest.
143	2.1.4	etween 14 & 1	1	The South Cuyama Fault.....	Comment: Missing header format: South Cuyama Fault	Comment accepted
144	2.1.4	1	2	Major Faults and synclines are...	Edit: Major ~~F~~faults and synclines are...	Comment accepted
145	2.1.4	13	2	The fault dips southwest by north...	Comment: Wide variation in orientation? Or does it just dip mostly NE?	The text has been revised.

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146	2.1.4	19	2	The Morales fault is a 30-mile....	Comment & Edit: The Morales thrust has a dip of approximately 30 degrees and has a large amount of offset." Unclear. Suggest "...dips approximately 30 degrees north, and has been mapped with offsets of approximately XXXX feet (reference, date)..."	Comment accepted.
147	2.1.4	14	5	Both faults are considered to be....	Comment on Figure: Turkey Trap Ridge, Graveyard Ridge, and Santa Barbara Canyon Faults should be clearly differentiated as likely barriers to GW flow on the structural map.	Comment noted. Thank you. No change needed in HCM.
148	2.1.4	9	7	EKI reviewed the USGS's work in...	Comment: EKI (2017) concluded that the Russell Fault as implemented in the CUVHM was not consistent with its characterization in the USGS study. We did not make the conclusion you stated. Instead, we recommended further investigation of the hydraulic properties of the fault.	Comment accepted.
149	2.1.4	--	Figure 2-6	--	Comments on Figure: In the Legend - - Remove "reverse faults"; no reverse faults shown in map - Explain SBCF, TTRF, GRF - Show plunge direction on syncline - Use different linetype, halo, or other graphic means to represent faults considered to be GW flow barriers.	Comment accepted.
150	2.1.5	5	3	The top of the Morales Formation...	Comment: Suggest a map of depth to basin bottom or basin/aquifer thickness	Comment noted. Thank you. No change needed in HCM.
151	2.1.6	2	6	Cross sections were created...	Comment: Need better description of the relationship between basin & model layering.	Model layering is described in the model development portion of the report
152	2.1.6	4	3	In the west, younger alluvium...	Edit: "...thick beds ~~up~~ of clay (ranging from 1 to 36 ft. thick)..." Comment: 36-ft thick beds of clay sounds like at least a local aquitard, which contradicts assertion of no aquitards on previous page.	There are no continuous clay layers that cover a large area of the Basin in the reviewed literature. Individual clay lenses are not considered a regional aquitard. The extent and nature of clay lenses is not well understood in Cuyama and could be investigated as a data gap.
153	2.1.6	6	5	In most regions of the basin, the....	Comment: "...of the basin, the top of the saturated zone (the water table) is either..." (or just use water table alone)	Comment accepted. Text is revised to "...of the basin, the top of the saturated zone (the water table) is either..."
154	2.1.6	7	5	In the east and southeastern...	Comment: This section is the first time water transmitting properties are mentioned. It seems contradictory to state properties are "not well defined," yet the hydraulic conductivity "varies greatly laterally and with depth."	Comment noted. Thank you. No change needed in HCM.
155	2.1.6	12	2	Using aquifer tests from 63 wells...	Comment: The distribution of test locations is limited, and wells with data are not located "across the valley."	Comment accepted. Text is revised to state "Using aquifer tests from 63 wells ~~across~~ located primarily in the central portion of the valley."
156	2.1.6	12	6	Data from the 51 wells were not....	Comment: What 51 wells? Different from the 63 wells discussed above?	Comment accepted. The text is revised to "63 wells."
157	2.1.6	12	7	Using groundwater level contours...	Comment: Transmissivity exhibits spatial variability. "Fluctuate" conveys oscillation with time.	Comment accepted.
158	2.1.6	--	--	--	Comments on Figure: - Absolutely nothing on east side? So no hydraulic data for Morales Fm? Or are wells available W of Russell Fault with P/T data? - Need to show data from west of Russell Fault. - Show DWR Basin Boundary as overlay on all maps to avoid confusion. Especially maps from USGS (2013).	The DWR Boundary has been overlayed on the figure. Detailed data on this Basin is not widely available and not widely, spatially distributed.
159	2.1.7	--	--	--	Comment: Suggest point or post maps of WQ data for TDS, Cl, B, NO3. Include symbolization to identify shallow, moderate, deep well data where available. May help to identify both horizontal and vertical data gaps.	Comment noted. Groundwater quality is further discussed in Groundwater Conditions.
160	2.1.8	3	5	Peak flows through the Cuyama...	Comment: suggest mentioning the period of record.	Comment accepted
161	2.1.8	5	2	The basin is comprised mostly of...	Edit: "...comprised mostly of fine- to co~~a~~urse-loamy soils..."	Comment accepted
162	2.1.8	7	2	Approximately 25 miles of the...	Comment: Wetlands are typically discharge areas - they are GW fed. What is going on here (what is feeding the wetland - perennial SW flows)? The wetlands should be shown on a map.	Citation from US Fish & Wildlife wass incorrectly located and has been removed.
163	2.1.8	8	5	SAGBI data shown in figure Figure...	Edit: "SAGBI data shown in ~~figure~~ Figure 2-16~~8: Recharge Areas, Seeps, and Springs~~..."	Comment accepted
164	2.1.8	9	3	Figure 2-18 shows the location of....	Edit: "Figure 2-1~~8~~6 shows the location..."	Comment accepted
165	2.1.8	9	3	The springs shown in Figure 2-18...	Edit: "The springs shown in Figure 2-1~~8~~6 shows the location..."	Comment accepted
166	2.1.8	9	3	The springs shown in Figure 2-18...	Comments on Areas of Recharge Section: - Where is the discussion of inflows and outflows and system dynamics? - Conceptual 3-D block diagram is needed, in fact it is critical for supporting outreach activities. - Missing land use - processing it is part of IDC work and is surely available. - Groundwater Elevation map - USGS provides for part of the basin.	Comment noted. These items will be discussed in the Groundwater Conditions and Water Budget sections.
167	2.1.8	--	--	--	Comment: Section describes topography, surface water, soil, and recharge potential but not sources of recharge....Include description of sources of recharge?	Comment noted. The amount of recharge will discussed in the Water Budget section.
168	2.1.8	--	Figure 2-16	--	Comment on Figure: Incomplete per 23 CCR §354.14 (d) - need to graphically show recharge areas in addition to these SAGBI soil data. More data available at https://gis.water.ca.gov/app/NCDatasetViewer/	Comment noted. The link is to GDE data, which is discussed in Groundwater Conditions section.
169	General Comment				Comment: Need to develop 3D cartoon diagram, conceptual components of water budget. Not all water budget components are identified, e.g. river relationship to GW, others.	Comment noted. Water Budget components are discussed in the Water Budget section.
170	General Comment				Comment: Need to mention uses of GW, inflows, outflows; main basin outflow is pumping.	Comment noted. Water Budget components are discussed in the Water Budget section.

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171	General Comment				Comment: Spatial component of hydraulic properties is not presented. Same for water level measurement density and water quality data density. Suggest maps showing these data densities or gaps.	Comment noted. Groundwater Conditions components are discussed in the Groundwater Conditions section.
172	General Comment				Comment: Statement re no imported water?	Comment accepted.
173	2.1.2	5	5	The Paso Robles Formation is sandwiched...	Edit: "....it rests ~~uncomforably~~ unconformably below the older alluvium...."	Comment accepted.
174	2.1.2	--	Figure 2-1	--	Comments on Figure: The label for the Santa Ynez Fault appears to have been misspelled ("Yenez"), "Transerverse Ranges" is misspelled (Transverse)	Comment accepted. Figure 2-2 has been revised.
175	2.1.4	11	4	The USGS determined the fault to...	Comment: Subsidence is mentioned in discussion of the Rehoboth Fault as a barrier to GW flow, then it is never mentioned again. Has subsidence been documented in the Basin? Is it potentially problematic? Consider including a brief paragraph discussing subsidence later in the GW conditions discussion.	Comment noted. Subsidence will be discussed further in the Groundwater Conditions section of the GSP.
176	2.1.4	last paragrap	6	The presence of these non-aquifer...	Comment: "The presence of these non-aquifer materials in this area likely *restricts GW movement*...". I'm not sure I agree with this statement. Does an island of bedrock in an alluvial aquifer restrict GW flow? The GW flows around it, correct? When I think restricting flow, I think of faults, barriers, etc. This seems to include a debatable statement where it isn't necessary. Consider simplifying to the "presence of these non-aquifer materials in this area limits the extent of permeable materials in this portion of the basin."	Comment accepted.
177	2.1.4	--	Figure 2-6	--	Comment: If possible, provide direction arrows for strike-slip faults and up/down symbols for normal faults.	Comment accepted
178	2.1.5	3	2	The Cuyama and Carrizo Plain...	Comment: Consider including the neighboring basins (Carrizo Plain too) on one of the figures.	Comment noted. A map of the Cuyama Basin and neighboring subbasins was developed and included in the Plan Area section, please see Figure 1-3.
179	2.1.6	8	5	In the east and southeastern parts of...	Edit: "...where the Morales Formation ~~outcrops~~ crops out, the formation..."	Comment accepted
180	2.1.6	--	Figure 2-9 Figure 2-10 Figure 2-11	--	Comment: Include legend identifying strata depicted in cross sections.	Comment accepted.
181	2.1.7	2	3	With the exception of spikes in nitrate..	Comment: This is an overly broad statement: "...groundwater quality is...typical of alluvial basins." What is typical of alluvial basins? TDS here is pretty high, not typical of the alluvial basins I have worked in to date.	Comment accepted.
182	2.1.7	3	2	Marine rocks produce brackish water...	Comment: This is an overly broad statement: "Marine rocks produce brackish water..." Maybe these marine rocks produce brackish water, and if so, identify the specific formations that produce brackish water here, but there are plenty of marine rocks that don't produce brackish water.	Comment noted. Citation is a direct quote from author.
183	2.1.7	4	7	Nitrate concentrations ranged from...	Edit: "....to 45.3 mg/L, exceeding the ~~S~~MCL (10 mg/L) in...." Nitrate is a primary standard with an MCL, not a secondary standard with SMCL.	Comment accepted.
184	2.1.7	#1 -3	--	--	Comment: Strongly suggest including a map with groundwater level hydrographs, along the lines of the attached figure for SLO Basin. You discuss historic groundwater quality, but no historic groundwater levels. This is the crux of the biscuit and why the basin is in critical overdraft. A figure with hydrographs can communicate at a glance areas that have significant declines and areas that do not.	Comment noted. Groundwater levels are discussed in the Groundwater Conditions section.
185	2.1.4	9	1	The Russell fault has been...	The InSAR data is only an indicator that a combination of factors were not present to create differential deformation across the fault. These factors include large enough water-level declines to cause deformation along with a fault the can truncate the transmission of those declines across the fault. Although the InSAR images show no obvious differential deformation there is no evidence that it is still not a barrier to or partial barrier to groundwater flow and that the water level declines in proximity to the fault and on either side of the fault were enough to cause a signal of 10mm or more of deformation to be seen in InSAR image (which is the lower resolution when differencing radar reflection images as InSAR). The Russell Fault was treated as a no flow boundary in all layers except for just one cell in the youngest alluvium (layer 1) and a pair of cells in the Morales and Older alluvium directly below the Cuyama River in the Greek Ranch. So the Russell Fault was treated as a flow boundary in the CUVHM model with the concept of potential re-incised channels that could allow some groundwater underflow directly beneath the Cuyama River. "MiniVibe" seismic profiles across the fault on both sides of the River with short receiver spacing's (<1 meter spacing) would probably be needed to better determine the structural integrity and geometry of this potential flow barrier and fault in all three geologic units. The truncation of the geologic units is also indicated by Sweetkind and others (2013). The EKI conclusion is suspect as the hydraulic gradients are generally unknown in the recent alluvium and may well be closer to perpendicular to the river except near the river channel.	Comment noted. Reference provided was inaccurate, correct reference is USGS, 2013c. On pg. 55 the USGS states "Similar to the other faults, the Russell fault did not appear to be acting as a barrier to groundwater flow. " The text has been updated to include this statement.

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186	2.1.4	11	4	The USGS determined the fault to...	Comment: The Rehoboth Fault was treated as an HFB barrier in the younger, older alluvium and Morales in the CUVHM.	Comment noted. Will review CUVHM literature regarding Rehoboth Fault.
187	2.1.4	18	5	The fault is considered a barrier...	Comment: The Santa Barbara Canyon Fault was not represented as a barrier to flow in the younger alluvium in the model cells that represented the Cuyama River channel in the CUVHM.	Comment accepted. Data from Ellis 1994 will be reviewed and incorporated as appropriate.
188	2.1.4				Comment: The entire Cottonwood area is poorly defined including potential faults that could be groundwater flow barriers that are not shown on maps, described, and are not implemented in the new model.	Comment noted. Data and reports on this area are sparse, and details in this area will be noted as a data gap.
189	2.1.4		Figure 2-6		Comment on Figure: Missing faults such as Russell and Santa Barbara Canyon Faults as well as others in the Cottonwood area. These are likely transform faults that create flow barriers along with the other normal and thrust faults in the Cuyama Valley.	Comment noted. Russell fault and Santa Barbara Canyon Fault (SBCF) are shown on Figure 2-6. acronyms have been defined on this figure
190	2.1.5	2	1	The Cuyama Basin is geologically..	Comment: Lateral boundaries lack information from USGS studies and research drilling in Cuyama Valley	Comment noted. Thank you. No change needed in HCM.
191	2.1.6	1			Comment: What aquitards? There is no mention of them or physical data to support such a discussion	Comment noted, The 5th sentence of Section 2.1.6 notes that "There are no major stratigraphic aquitards or barriers to groundwater movement..."
192	2.1.6	3	2	Rocks older than the upper....	Comment: Need citation on "rocks older than the Morales...."	Comment accepted. Text has been revised to include reference to USGS, 2013a.
193	2.1.6	8	5	In the east and southeastern...	Comment: Most of it is far above the zone of saturation	Comment noted. Thank you. No change needed in HCM.
194	2.1.6	11	7	The highest values in the Morales...	Comment: Not sure the statement about yields on the west end is accurate...perhaps different in 1970 when there was more saturated thickness.	Comment noted. Thank you. No change needed in HCM.
195	2.1.6	11	3	The dewatered alluvium has an....	Comment: Specific yields from the 1998 CDWR work states 10-15% used in calibration. Please reference properly. USGS had additional estimates from their Tech files and was published in Everett and others (2013).	Comment noted. Text has been revised
196	2.1.6				Comment: Do not use information from USGS studies	Comment noted. Thank you. No change needed in HCM.
197	2.1.7	5	1	The Cuyama Valley is known for...	Comment: Aquifer use section does not give reference for claim that this is one of the most productive agricultural regions in Southern California. Groundwater has also been used in support of oil-well drilling and secondary recovery techniques.	Comment accepted.
198	2.1.7	#1-4			Comment: Water quality section did not reference the USGS GAMA reports and related sampling. No discussion of age dating, tritium isotopes, trace metals. The citations from Singer & Swarzenski (1970) are interesting] but the section Recent Groundwater Quality uses little to none of the water chemistry, water quality or isotope geochemistry published by the USGS as part of the Cuyama studies and the GAMA project.	Comment noted. Groundwater quality, including discussion of GAMA data will be further discussed in the Groundwater Conditions section.
199	2.1.8	3	5	There are approximately four main..	Comment: Missing/misstating major drainages: should have Upper Cuyama, Rancho Nuevo, Apache Canyon, Berges Canyon, Quatal Canyon, Ballinger Canyon, Santa Barbara Canyon, Branch Canyon, Alisos Canyon, and Cottonwood, as well as the Cuyama River	Comment noted. The GSP identifies the main sources that feed the Cuyama River, only select streams were listed.
200	2.1.8	4	1	No standing bodies of water....	Comment: Surface water bodies section does not catalogue the man-made ponds used as storage for irrigation water	Comment noted. Man-made ponds could be inventoried as a GSP implementation action item.
201	2.1.9	1	1	HCM data gaps are present in the...	Comment: Several Data Gaps not mentioned including pumpage data, annual-seasonal land use and irrigation methods, linkages between where water is extracted and where it is applied for irrigation such as the well at Bell and Foothill roads that pumps groundwater which is transported miles eastward to the main zone across the Rehoboth Fault. Subsidence data is not mentioned and additional streamflow data such as reactivating the gage on the Cuyama River is a huge data gap.	Comment noted. Water Budget components are discussed in the Water Budget section.
202	General Comment				General comment: The report seems more like a compendium of compiled information rather than a "conceptual model." There is no discussion of routing surface waters into the Cuyama GW Basin nor a discussion of how the different components of the Integrated Water Flow Model will work together to synthesize accurate output numbers	Comment noted. Groundater conditions components, water budget components, and the groundwater model will be discussed in the appropriate upcoming sections.
203	General Comment				Comment: Use of Kellogg should be done with caution as our understanding is that this work was largely a compilation of previous studies and had limited field verifications. We recommend that you check with Kellogg before using any of his maps.	Comment noted. Thank you. No change needed in HCM.
204	General Comment				Comment: HCM report uses and cites old reports such as Upson et al. and Singer et al a lot but does not use much of the information from any of the USGS reports Hanson et al. and somare are not even cited such as the USGS Kirschenmann Road Monitoring well site Open File Report.	Comment noted. Thank you. No change needed in HCM.
205	References				Comment: Some USGS citations are incorrect, the format is inconsistent and some references are missing.	The references have been reviewed and updated.

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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "...	Comment	Response to Comment
1	General	N/A	N/A	N/A	The text is overtly understated regarding significante conditions depicted with conclusive data sets & trends.There is a need to "state the obvious" when viewing conclusive data sets.	Comment noted. No change required in document.
2	General	N/A	N/A	N/A	No historical baseline is established for the discussion of measurable objectives. The contextual perspective of past or current conditions is not generally available. The uncertainty of this will not be helped when a algorithm generates it in the model.	Comment noted. No change required in document.
3	General	N/A	N/A	N/A	Data Gaps are recognized as a significant challenge to fully understanding the groundwater conditions and drive a higher degree of uncertainty when making assumptions & conclusions	
4	2.2	1	N/A	Bullets # 4,5 & 6 of 7	Three intended objectives outlined in the first paragraph of section 2.2, have not been addressed	As noted in the document, these sections are under development and will be available in a future version of this section.
5	2.2.1	N/A	N/A	Fig. 2.2-1	Landmarks - Caliente Range - Ventucopa Uplands (Badlands) - Apache Canyon	Caliente Range and Apache Canyon have been added to Figure 2.2-1. Ventucopa Uplands are not specifically discussed in this section.
6	2.2.3	N/A	N/A	Fig. 2.2-16 to18	If the screening intervals and perforation depths of these three multi completion wells are know and presented here, then why are they not in the Opti DMS?	This information will be added to the Opti DMS for these well locations
7	2.2.3	N/A	N/A	Fig. 2.2-19	Text should explain that the blue arrows indicate the direction of the downward horizontal groundwater flow. These arrows are helpful and should be used in other Groundwater Contour maps.	The text referring to this figure has been updated. There are no other figures in this section for which these arrows would be appropriate.
8	2.2.3	N/A	N/A	Fig. 2.2-20	Illustrates a classic example of a Bullseye depression. Speak to the significance of these conditions. Speak also to the Data Gaps representing the missing northeast area, near the intersections of 166 & 33. How big or deep is the zone of depression?	Comment noted. The document notes that the depth to water is up to 600 feet deep.
9	2.2.4	1	N/A	Bullet #1	Storage loss is a significant groundwater condition that should be measurable, but we are going to model it first. The cart is before the horse!	While changes in groundwater storage can be inferred from changes in groundwater levels, storage quantities cannot be directly measured with the available data. The numerical model will provide the best available estimate of groundwater storage.
10	2.2.6	2	1	Subsidence	Subsidence at a rate of > 0.5" / year should not be dismissed or diminished by comparison to the collapse of the San Joaquin. This is a critical Data Gap with only one monitor site in the central basin. It may or may not be anomalous without anything to compare it to	Comment noted. The need for additional subsidence monitoring is discussed in the Monitoring Networks section.
11	2.2.7 Literature Review	8	1	The USGS reported the following	The USGS, SBCWA & the GAMA data files all indicate constituante levels (TDS, Nitrate, Sulfate, & Arsenic) above MCL in the central basin implicating a causal nexus with localized excessive groundwater extraction.	Comment noted. The data is insufficient to make a definitive conclusion about the relationship between groundwater extraction and water quality.
12	2.2.7	5	2	Toward the northeast end of the basin...	The available data is inconclusive in establishing any trends in conditions over time, stable or otherwise. How can we quantify a minimum threshold and how can we monitor this causal nexus between groundwater extraction & groundwater quality degradation?	Comment noted. The data is insufficient to make a definitive conclusion about the relationship between groundwater extraction and water quality.
13	2.2.7	N/A	N/A	Groundwater Quality	Available groundwater age & temperature data should be used to help determine flow rates over faults, intermixing of aquifer layers, and recharge rates of deep percolation.The response to this same comment on the Draft HCM was that it would be presented in this section of the GSP. What section will it be in next?	As discussed at the November 1 SAC meeting,
14	2.2.8	N/A	N/A	InterconnectedSurface Water Systems	When this section is developed it should additionally include the following: 1.)Consideration of the causal nexus between declines in ephemeral and intermittent streams, and SGMA related activities. 2.)Estimates of the ecological services and emergent benefits of interconnected surface water systems. 3.)Literature Review of the historic loss of the riparian habitats through the valley. 4.)Consider potentials for river channel modification to slow, spread & sink stream discharge for enhanced recharge.	Comment noted. This will be taken into consideration when this section is developed.
15	2.2.9	N/A	N/A	Groundwater Dependent Ecosystems	When this section is developed it should additionally include the following: 1.)Estimates of Evapotranspiration needs of existing GDEs and the stream discharge requirements to satisfy their dependance. 2.)Assessment of the Beneficial Uses and emergent benefits of the biology associated with the GDEs. 3) Consider the causal nexus of desertification and the loss of native wetland habitats due to SGMA related activities. 4)Consideration of enhancing GDEs to facilitate stormwater capture and recharge by the reduction of flash runoff	Comment noted. This will be taken into consideration when this section is developed.
16	2.2.10	N/A	N/A	Data Gaps	Recognised Data Gaps include: 1) Recent groundwater level & quality data in the Ventucopa upland & river corridor, 2) Historical groundwater data from the Cottonwood subarea. 3) More multi-completion wells in the main basin to better understand the zone of depression. 4) Data for Groundwater elevations in the north and west of the basin. 5) Well Completion Data with perforation intervals. Available from down hole video logging. 6) More CGPS Subsidence monitors in the main basin. 7) Current Groundwater quality data basin wide. 8) Surface water flow gauges on the Cuyama in the Basin, at bridges on Hwy 33 in Ventucopa uplands and Hwy 166 in the central basin. 9) Data concerning GDEs in the basin.	Comment noted. This will be taken into consideration when this section is developed.
17	2.2.10	N/A	N/A	Data Gaps	Major Data Gaps continue to generate the concern for the uncertainty of any conclusions made from the assumptions needed to develop a numerical model. Greater uncertainty requires a more conservative approach to model assumptions.	Comment noted. No change required in document.
18	General	N/A	N/A	N/A	In its current form, the draft GWC chapter is incomplete relative to 23 CCR §354.16 because several GWC elements identified above (groundwater storage changes, interconnected surface water systems, and groundwater dependent ecosystems) are included in the chapter only as placeholders and are not complete	Comment noted. No change required in document.
19	2.2.2 GW Hydrographs 2.2.3 GW Contours	N/A	N/A	N/A	The GWC chapter does not adequately reference the hydrogeologic conceptual model (HCM). The discussion of groundwater contour figures lacks any mention of the hydraulic effect of faults. For instance, the HCM documents that SBCF is a barrier to groundwater flow. This significant fact should be used to interpret water level observations ("Groundwater Hydrographs" [2.2.2]; "Groundwater Contours" [2.2.3]).	Comment noted. No change required in document.
20	2.2.2 GW Hydrographs 2.2.3 Vertical Gradients 2.2.3 GW Contours	N/A	N/A	N/A	The GWC chapter does not adequately reference the hydrogeologic conceptual model (HCM). Similarly, the HCM discusses varying hydraulic conductivities between the younger alluvium, older alluvium, and Morales Formation. The effects of hydrostratigraphy should be considered in discussions of vertical gradients, hydrograph comparisons, and groundwater elevation contours ("Groundwater Hydrographs" [2.2.2]; "Vertical Gradients" [2.2.3]; "Groundwater Contours" [2.2.3]).	Comment noted. No change required in document.
21	2.2.3			1947 to 1966 Groundwater Trends	The chapter cites results from the outdated CUVHM model. Cited CUVHM results ("1947 to 1966 Groundwater Trends" [2.2.3]) may be unreliable and obsolete given that WC is developing a new model.	Comment noted. Even after development of the updated model, data from the USGS study will still be a primary source of information for the earlier period from 1947-1966.

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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "...	Comment	Response to Comment
22	Figures 2.2-11 to 2.2-15				Hydrograph figures lack organization and their interpretation is insufficiently clear (2.2-11 to - 15). Partial overlap and repetition of hydrographs make the figures confusing. Figures should be revised so that each one exclusively covers a portion of the basin with unique hydrographs. Well 620 should be discussed under "central portion" because it is north of SBCF and follows the pattern of decline in that region. South of the fault to the Ventucopa area is showing a largely consistent picture of long-term steady elevations (Wells 40, 41, 85) with the exception of decline in Well 62 since the 1990s. The area of decline in the western portion of the basin extends to Well 70, just west of Bitter Creek. Regarding the statement that "all monitoring wells in [the central portion of the basin] show consistent declines, consider that Well 28 has elevations leveling off in the 1990s and then starting to recover in the 2000s.	The figure and text have been made consistent. Title corrected.
23	2.2.3				Referenced hydrographs are missing, or more useful selections are available. Hydrographs for Wells 40, 316, and 640 are discussed in the text but not included in the figures. Consider adding hydrographs for Wells 70, 107, 110, 112, and 114, because they have significantly long data records, fill spatial gaps, and preserve the variation in water level trends observed in the basin. Consider removing hydrographs for Wells 108, 121, 571, 830, 840, and 846 because their data records are too short to reveal much about water level trends.	The figure and text have been made consistent. Title corrected.
24	2.2.3 GW Hydrographs			Groundwater levels followed	The GWC chapter contains unsupported statements. The statement, "Groundwater levels followed climactic patterns" ("Groundwater Hydrographs" [2.2.3]) is ambiguous. If it refers to cycles of wet and dry years, a hyetograph of monthly or annual rainfall totals should be included to support it.	Comment noted. No change required in document.
25	2.2.7 Data Analysis			The spikes of TDS	The GWC chapter contains unsupported statements. The statement, "The spikes of TDS increases correspond with Cuyama River flow events" ("Data Analysis" [(2.2.7]) should be supported by showing a river hydrograph on the same plot.	Figures showing the climactic variability will be included in the Water Budgets section.
26	2.2.1 Useful Terminology 2.2.3 Vertical Gradients				Wells that are screened in different intervals are not differentiated. In two mentions of wells having different depths ("Useful Terminology" [2.2.1], "Vertical Gradients" [2.2.3]), language should be precise that perforations are at different depth intervals.	Comment noted. No change required in document.
27	2.2.3 Vertical Gradients				Improvements are needed in vertical gradient hydrographs and interpretation ("Vertical Gradients" [2.2.3]). The hydrographs should have finer x-axis label resolution than annual, because seasonality is discussed in the document. Regarding their interpretation, hydrographs that behave similarly lend themselves into being grouped by geographic subareas when possible. This type of grouping is one consideration when defining potential groundwater management areas. It is therefore important that these assessments accurately represent the data. Uncertainty must be clearly communicated by (for example) use of hydrographs which reflect the variability observed in a spatial grouping. Some specific examples include:	The scale of the hydrographs have been modified to show greater vertical detail
28	2.2.3 Vertical Gradients				a. (CVFR) "There is no vertical gradient." At the scale of the hydrograph figure, we cannot discern whether there is no gradient or a small gradient.	The scale of the hydrographs have been modified to show greater vertical detail
29	2.2.3 Vertical Gradients				b. (CVBR) We cannot dismiss the contribution of horizontal recharge; the CVFR site shows the basin is not vertically driven, at least not everywhere. Also, given the depth to water it is speculative to conclude vertical recharge exceeds horizontal. Furthermore, the hydrographs show "shallow" wells are influenced by seasonal conditions just as much as "deep" wells.	The text has been revised for clarity.
30	2.2.3 Vertical Gradients				c. (CVKR) "The hydrograph of the four completions shows that at the deeper completions are slightly lower than the shallower completions in the spring at each completion, and deeper completions are generally lower in the summer and fall." This statement seems to say groundwater levels decrease with depth in the in the spring, summer, and fall. Why is winter excluded—no measurements?	The text has been revised for clarity.
31	2.2.3 Vertical Gradients				d.(CVKR) "This likely indicates that...the vertical gradient is significantly smaller at this location in the spring measurements." Or does it indicate that there is no vertical gradient during unpumped conditions?	The text has been revised for clarity.
32	2.2.3 Appendix Y				Errors and overgeneralizations exist in the mapped groundwater elevation contours (including Appendix Y). The text analyzing the contour figures (including in the appendices) contains interpretive errors ("Groundwater Contours" [2.2.3]). For instance, "In the southeastern portion of the basin near Ventucopa, groundwater is mostly between 100 and 150 feet bgs" should be "between 150 and 200 feet bgs."	The text has been revised for clarity.
33	2.2.3 Appendix Y				The same discussions of contour maps in Appendix Y seem to be reused for each season/map, ignoring or smoothing over distinctions between them. For example, an area of low groundwater elevation is described as "northeast of...Cuyama" for Figures Y-1, -3, -5, and -7, yet the figures show that area shifting between the north and northwest of Cuyama.	The text has been revised for clarity.
34	2.2.3 Appendix Y				In several instances, "groundwater levels rising" should be replaced with "depth to water decreasing" because the topic is DTW contours. Contour labels on Figure Y-4 neither match values posted on wells nor represent a 50-ft contour interval.	Figure Y-4 has been corrected.
35	2.2.3 Appendix Y				Explanation of the maps should specify that they "improve understanding of recent horizontal trends in the basin." The inferred contours are unnecessary, speculative, and often seem to be physically unreasonable. The small contour interval relative to low well density causes several occurrences of a "target" effect, where a single well drives the appearance of a dramatic groundwater mound (like a "bullseye"). In some cases, the actual cause of the large head differential appears to be the SBCF. Larger contour intervals would decrease this effect.	Due to the regional nature and large topographic and groundwater depth ranges in the Cuyama Basin, the 50 foot contour interval was chosen to capture trends while not ignoring conditions that are shallower than 100 feet. Like many presentation figure decisions, this one is a compromise. No change made to contour maps.
36	2.2.7 Data Analysis				Explanation of water quality constituents is needed. An explanation of why TDS, nitrate, and arsenic are selected for mapping and discussion would be helpful ("Data Analysis" [2.2.7]).	These consituents were selected because they were identified as being of interest during the stakeholder process. Very limited data is available for analysis of other constituents.
37	2.2.7 Data Analysis				An incorrect Nitrate MCL is cited. The nitrate MCL is cited as 5 mg/L ("Data Analysis" [2.2.7]). It actually is 10 mg/L as N.	The MCL value has been corrected
38	Figure 2.2-25				Consistent time scales in Figure 2.2-25 should be used for clarity. The plot time scales are inconsistent, which makes interpretation unnecessarily difficult.	The time scales on the plots have been set to allow readers to clearly see the data.

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39	Appendix X				The hydrograph appendix contains errors and omissions. Many wells are symbolized in the map but not labeled. Many wells labeled in the map do not have hydrographs included. Data axis label intervals are inconsistent (one year vs. three years). For Wells 90 and 639, the y-axis minimum is too high.	Wells symbolized in the maps incorporated into Appendix X incorporate all "OPTI Wells." These includes both groundwater level monitoring and groundwater quality wells that are included in the source datasets. This means that some wells on the map will not have a hydrograph associated with them. Additionally, some of the wells may overlap one another so closely that GIS is unable to automate every well number label on the map. These limitations are not affected in the online DMS, but Appendix X is intended to provide as much information as reasonable in print form. Hydrograph label axis intervals are automated. Labels still effectively show GWE and DTW. The Y-axis in the hydrographs have been adjusted to show all data in wells 90 and 639.
40	Appendix Z			This loss of aquifer	The subsidence appendix requires further explanation. Regarding the statement, "This loss of aquifer is limited to the water that was stored in the compressed clays, and storage capacity lost is limited to the water that was stored in clays that were compressed" ("How Subsidence Occurs"), what does WC intend to communicate regarding the difference between loss of aquifer and loss of storage capacity? Aren't they effectively the same thing?	The text has been revised for clarity.
41	2.2 GW Conditions	1	1	The groundwater conditions section	Chapter scope. The statement, "The groundwater conditions section is intended to…Define measurable objectives to maintain or improve specified groundwater conditions" ("Groundwater Conditions" [2.2]) is more accurately worded in the following paragraph: "The groundwater conditions described in this section…are used elsewhere in the GSP to define measurable objectives."	The text has been revised for clarity.
42	2.2.1 Useful Terminology				Terms not used in the document. Two defined terms ("Useful Terminology" [2.2.1]) are not used elsewhere in the document, and their purposes should be stated: "historical high groundwater elevation" and "historical low groundwater elevation."	These definitions have been removed from the section.
43	Figures 2.2-1 & 2.2 2				Map symbology. Figure 2.2-1 has non-intuitive and inconsistent symbology. Purple lines and points represent an eclectic set of "landmarks". All the canyons are labeled, but most of the creeks are not. Bitter Creek is referenced many times in this document, but it is not shown on any subsequent figures. In Figure 2.2-2, Bitter Creek and SBCF are mentioned in the text discussion but not shown on the figure.	Comment noted. The purpose of Figure 2.2-1 is to show the locations of elected landmarks in the Basin to assist in discussion of conditions in the section. It is not necessary to repeat each landmark in subsequent figures.
44	2.2.3 GW Hydrographs			In the western area	Unclear sentences. There are several incomplete and/or confusing sentences in the document. "In the western area west of Bitter Creek are near the surface near the Cuyama river, and deeper below ground to the south, uphill from the river, and have been generally stable since 1966" ("Groundwater Hydrographs" [2.2.3]).	The text has been revised for clarity.
45	2.2.3 Vertical Gradients			The hydrograph of the four completions	Unclear sentences. There are several incomplete and/or confusing sentences in the document. "The hydrograph of the four completions shows that at the deeper completions are slightly lower than the shallower completions in the spring at each completion, and deeper completions are generally lower in the summer and fall" ("Vertical Gradients" [2.2.3]).	The text has been revised for clarity.
46	2.2.3 GW Countours			Measurements from wells of different	Unclear sentences. There are several incomplete and/or confusing sentences in the document. "Measurements from wells of different depths are representative of conditions at that location and there are no vertical gradients" should say "…assumes there are no vertical gradients" ("Groundwater Contours" [2.2.3]).	The text has been revised for clarity.
47	2.2.7 Data Analysis			TDS in the central portion	Unclear sentences. There are several incomplete and/or confusing sentences in the document. "TDS in the central portion of the basin" ("Data Analysis" [2.2.7]).	The text has been revised for clarity.
48	2.2.7 Data Analysis			The chart for Well 85	Unclear sentences. There are several incomplete and/or confusing sentences in the document. "The chart for Well 85 at the intersection of Quatal Canyon and the Cuyama River is generally below 800 mg/L TDS with spikes of TDS increases" ("Data Analysis" [2.2.7]).	The text has been revised for clarity.
49	Appendix Z			[Subsidence is] not restricted	Unclear sentences. There are several incomplete and/or confusing sentences in the document. "[Subsidence is] not restricted in rate, magnitude, or area involved" (Appendix Z).	The text has been revised for clarity.
50	2.2.7 Reference and Data Collection				Links and sources identical. Two different DWR data source links ("Reference and Data Collection" [(2.2.7]) share the same web address.	The link for the CNRA dataset has been updated.
51	General	N/A	N/A	N/A	It seems that there has been no examination of faults/aquitards down stream (West) from the basin border. While it is acknowledged that the GSA has no authority beyond the defined basin, it would seem that knowing what the further extent of pooled ground water is present and where/why that water is held back would be important for making management decisions in that segment of the basin. It may well be that the basin's western limit was drawn for exactly to account for this but that does not seem to be clearly spelled out.	Comment noted. This is outside of the scope of the GSP.
52	Figure 2.2-1				On Figure 2.2-1 the location of the Russell Ranch Oil Field is not too accurate….it is also wrong on OPTI ID (Jane to send Brian a map).	Russell Ranch Oil Field has been removed from the figure.
53	Appendix X				In the hydrographs (appendix X), many of the wells on our place are no longer there. It is misleading because some wells were drilled, tested once and that was it. I guess they give info about water depth.	The maps and data in Appendix X are intended to show the groundwater level information that is available historically in the Basin. Because of this, many wells that no longer exist will be included.
54	Figures Y-4 & Y-6				Just based on what I know the stats were on our wells, it looks like Figures Y-4 and Y-6 are over-generalized. Some places we saw differences and some places the Wells didn't fluctuate all.	Comment noted. The contour maps represent estimates based on the available information in each period.
55	General				On all maps, in every section, please show the major faults and major streams as landmarks for easier location of what is being shown on the specific map.	This represents too much detail for most maps in the section. Figure 2.2-1 is intended to provide geographic locations of features for reference.

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56	General				Age dating of water is an important component of groundwater conditions since it indicates sources and recharge. Any claim for surface recharge of the groundwater needs to be validated by tritium analysis.	This is incorrect. Tritium analysis can provide some useful information about groundwater recharge, but is not a conclusive method for determining whether surface recharge has occurred.
57	General				The Cuyama Basin needs dedicated test wells at critical locations in order to better understand groundwater availability and movement	Comment noted. Potential locations of new monitoring wells is discussed in the Monitoring Networks section.
58	2.2.3 GW Trends				While the maps clearly show the decades-long downward trend of the central basin (Figure 2.2-7), the narrative just mentions specifics and does not give enough of a full watershed overview of how there are records since 1950 of extraction without replenishment which has created a record of a severe downward trend of approximately 500 feet over 6+ decades. This overview is key to establishing minimum thresholds for the GSP since this downward trend needs to stop with no continued depletion. We recommend adding a summation overview to this section.	Comment noted. This level of detail is not needed in this section.
59	2.2.4 Change in GW Storage				The determination of groundwater storage from the model seems backwards, since the model is highly dependent on how much water there is to pump. Isn't there data available to inform the groundwater storage available in certain areas? Without such data the accuracy of the model seems much more uncertain.	The model provides the best estimate currently available of the quantity of groundwater storage available.
60	2.2.6 Land Subsidence				Any subsidence can negatively affect groundwater storage. The very limited measurements to date don't adequately determine if current subsidence has been occurring for a long period of time or is just beginning. This creates a data gap that adds more uncertainty to the model and therefore more monitoring sites are needed to determine both rates and extent of subsidence.	Comment noted. The need for additional subsidence monitoring is discussed in the Monitoring Networks section.
61	2.2.7 GW Quality				This section on groundwater quality reports on various constituents' historical conditions, but does not develop a foundation for a baseline for future monitoring nor identify what constituents are recommended for monitoring.	Monitoring is addressed in the Monitoring Networks section. There is not enough existing historical data to 'establish a baseline' in this basin.
62	2.2.7 GW Quality				In reviewing the information in this section, plus in discussing this in meetings as well as with the CCSD and other hydrologists involved in monitoring wells in the Cuyama Basin, we would recommend that current baselines be established for TDS, nitrate levels, and specific heavy metals such as arsenic relevant to different areas of the basin	What is a 'baseline' for TDS, arsenic, nitrates and metals? This is not a term typically used in conjunction with water quality
63	2.2.7 GW Quality				Monitoring be established that relates depth of groundwater extraction to constituents present and monitors for changes over time. Water quality analysis should also include tritium analysis to determine the age dating of water and verify if recharge from the surface is occurring.	The relationship between depth to groundwater and the concentration of water quality constituents is not known in this basin due to limited groundwater quality monitoring information - therefore - the relation between depth and constituent concentration cannot be developed accurately, and is a data gap that should be filled during GSP implementation
64	2.2.7 GW Quality				How will nitrogen loading from both agricultural applications and groundwater use be monitored?	GSAs do not have authority toregulate agricultural fertilizer practices - therefore, the GSA will not be monitoring them.
65	2.2.7 GW Quality				How will arsenic induction by extraction of ancient water be monitored?	It won't be performed as a part of the initial GSP - the relationship between depth to groundwater and the concentration of water quality consituents (like arsenic) is not known at this time. The GSA board may decide to establish an arsenic monitoring program as part of GSP implementation and expansion of the water quality monitoring grid, but existing monitoring is erratic, spatially inaedquate and not useful for this purpose.
66	2.2.7 GW Quality				Does CCSD have a time series of arsenic level in their wells to see if changes have occurred?	The CCSD has not provided water quality data
67	2.2.8 Interconnected Surface Water Systems				This section will also need a historical component of surface water loss through looking at riparian habitats.	Comment noted. Historical information on surface water loss is not available except through model estimates.
68	2.2.9 GDE				A response to the study being conducted by a consulting biologist: this study should be done when GDEs are most biologically active and engage ground-truthing by accessing local knowledge of the different areas of the Basin.	Comment noted.
69	2.2.10 Data Gaps				Throughout this section data gaps are referred to, but are not listed here. The fact that there are so many data gaps in this section is very disconcerting, since most of these gaps provide critical data to inform the model. Not having these data introduces greater uncertainty in the validity of the model.	Comment noted. The model will be developed based on the best available information that is currently available, but can be updated in the future.
70	Ch 2 Intro	1	1	This document includes the	It looks like some the GSP regulations for § 354.8 is missing or maybe part of another chapter. Other GSP Regulations seem to be included but not listed.	As noted, this is just one section that will satisfy the requirements of § 354.8
71	2.2.1 Useful Terminology	N/A	N/A	MCL – Maximum Contaminant	Suggest defining the Primary and Secondary MCL which is discussed in the document, but not defined.	These terms are not used in the document.
72	2.2.2 GW Elevation Data Processing	Bullet list	N/A	N/A	Please verify if any wells are duplicates and/or reported to multiple agencies?	This was performed prior to development of the section.

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73	2.2.2 GW Elevation Data Processing	2	2	Data collected also included	Please clarify the meaning of "questionable measurement code"	This information is provided by monitoring agencies to indicate when conditions at a well effect the quality of a measurement. This level of detail is not needed in this document.
74	Figure 2.2-2 & 2.2-4	N/A	N/A	N/A	Please label [Bitter Creek] on figure.	The location of Bitter Creek is shown in Figure 2.2-1
75	2.2.1 Useful Terminology	N/A	N/A	Figure 2.2-1	Add faults to acronym list (missing GRF and TTRF)	These have been added to the acronyms list
76	Figure 2.2-2	N/A	N/A	N/A	Suggest removing the word Earlier from figure and adding actual years, if possible	This change is not needed as the purpose of this figure is to highlight wells with recently measured data.
77	General	N/A	N/A	N/A	Suggest showing State and Federal lands on all of the figures. This may help the public understand why some areas have no wells or water quality data.	These are shown on the figures in the Plan Area section.
78	General	N/A	N/A	N/A	Suggest adding stream/creek names to all figures that mentioned streams/creeks in the description of the figure.	The stream names have been added to Figure 2.2-1
79	Figure 2.2-3	N/A	N/A		Suggest adding on figure abbrev. or defining terms in the description of Figure 2.2-3 for CVKR, CVFR, CVBR	These are names that are provided for the wells. We assume they are abreviations, but have not come across definitions, and thus cannot provide that information.
80	Figure 2.2-5	N/A	N/A		Suggest - Label on figure (Russell Ranch Oilfields, Cottonwood Canyon, & Aliso Canyon)	These are labeled on Figure 2.2-1
81	Figure 2.2-11	Bullet list	N/A		Round Springs Canyon, near Ozena Fire Station & Springs Canyon, near Ozena Fire Station - Please label on figures.	These are labeled on Figure 2.2-1
82	2.2.3 GW Hydrographs			Figure 2.2-12 shows	Suggest stating your interpretation of why this area is having a quick recovery (for example - stream influence provides recharge to this basin area / fault/ etc.), if known or is additional investigation required?	Comment noted. This is beyond the scope of this section.
83	2.2.3 GW Hydrographs			Near Ventucopa, hydrographs for Wells 85	Suggest defining climatic patterns.	Figures showing the climactic variability will be included in the Water Budgets section.
84	Figure 2.2-12			The hydrograph for Well 40	Missing: Suggest adding well hydrograph to the Figure 2.2-12. (for wells 40 & 316)	The text has been revised for clarity.
85	2.2.3 GW Hydrographs	9	2	The hydrographs in this area show consistent	Suggest adding your interpretation of why this area shows consistent decline and little to no responses, if known or is additional investigation required?	Comment noted. This is beyond the scope of this section.
86	Figure 2.2-14	10	3	Levels remain lowered along	Missing: Suggest adding well hydrograph to the Figure 2.2-14. (well 640)	The text has been revised for clarity.
87	2.2.3 GW Hydrographs	10	4	Groundwater levels are higher to the west	Suggest adding your interpretation of why this area shows consistent decline, if known or is additional investigation required?	Comment noted. This is beyond the scope of this section.
88	Figure 2.2-15	N/A	N/A		Please define GSE and WSE – located on hydrographs	These have been added to the acronyms list
89	2.2.3 Vertical Gradients	Bullet list	N/A	CVFR is comprosed of four completion	Please clarify term "completion". Is this a cluster of monitoring wells?	A sentence has been added to the section to define "multiple completion well"
90	2.2.3 Vertical Gradients	Bullet lists	N/A	N/A	Suggest showing the map location for CVFR, CVBR, and CVKR if possible.	The locations of these wells are shown in Figure 2.2-3
91	2.2.3 GW Countours	Bullet List	N/A	Due to the limited spatial amount	Please explain more of the process to generate the contours in this section or in an appendix, number of wells used, etc.	Comment noted. Additional information is not needed.
92	2.2.3 GW Countours			The contour maps are not indicative	Suggest adding: do not account for topography ***or faults*** . A short discussion on faults would be helpful to the public with the groundwater contours.	The faults are discussed in detail in the GCM section.
93	Figure 2.2-20				Bitter Creek - Place label on figure	This is labeled on Figure 2.2-1
94	2.2.3 GW Countours			Contour maps for spring 2017	Suggest explaining the difference between the years from all of these figures, to help the public understand what they are reviewing.	The text has been added to the document.
95	Figure Y-1, Y-3, Y-5, Y-7				Suggest adding groundwater flow arrows to the figure	Groundwater flow arrows have been added to these figures
96	Figure Y-1				Ozena fire station - place label on figure	This is labeled on Figure 2.2-1
97	2.2.3 GW Countours			The contour map shows a steep	The contour map shows a steep gradient ***north*** of - Suggest verifying the direction	The text has been revised for clarity.
98	2.2.6 Land Subsidence	N/A	N/A	N/A	Suggest showing and discussing the entire basin area, as well as showing the three stations (P521, OZST, and BCWR) on a figure with graphs, if possible.	The current figure shows all 3 station locations. The data for P521 is shown because it is the most relevant.
99	2.2.7 Data Analysis	2	2	In 1966, TDS was above the MCL	Please list and discuss all of the secondary MCL standards for TDS (500 mg/L; 1,000 mg/L and 1,500 mg/L) and why 1,500 mg/L is being recommended.	Comment noted. No change needed.
100	Figure 2.2-23	N/A	N/A	N/A	Place label on figure (Ozena Fire Station, Santa Barbara Canyon, and upper Quatal Canyon)	These are labeled on Figure 2.2-1
101	2.2.7 Data Analysis			In the 2011-2018 period, TDS was	In the 2011-2018 period, TDS was above the **MCL** in over 50% of measurements. - Suggest listing which MCL standard?	Comment noted. No change needed.
102	Figure 2.2-24	N/A	N/A		Place label on figure (Quatal Canyon, and along the Cuyama River between Cottonwood Canyon and Schoolhouse Canyon)	These are labeled on Figure 2.2-1
103	Figure 2.2-25	N/A	N/A		Place label on figure (Quatal Canyon)	This is labeled on Figure 2.2-1

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104	2.2.7 Data Analysis			Figure 2.2-26 shows that the	Figure 2.2 26 shows that data collected in 1966 was below the MCL of 5 mg/L throughout the basin, with **some measurements** above the **MCL** in the central portion of the basin where irrigated agriculture was operating Suggest adding number of samples: ## samples out of ### total samples & Suggest adding the primary MCL for nitrates to be consistent with the rest of the page	Nitrate MCL has been corrected to 10 mg/L
105	2.2.7 Data Analysis			Figure 2.2-27 shows that the	Figure 2.2 27 shows that data collected over this period **was generally** below the **MCL**, with two measurements that were over 20 mg/L. Suggest adding number of samples: ## samples out of ### total samples & Suggest adding the primary MCL for nitrates to be consistent with the rest of the page	Nitrate MCL has been corrected to 10 mg/L
106	2.2.7 Data Analysis			Figure 2.2-28 shows that the	Figure 2.2 28 shows arsenic measurements from 2008-2018. Data was not available prior to this time period in significant amounts. Figure 2.2 28 shows arsenic measurements **were below** the MCL of 10 ug/L where data was available. Suggest adding number of samples, ## samples out of ### total samples	Text has been revised for clarity.
107	Figure 2.2-31				Place label on figure (Ballinger, Quatal, and Apache Canyons)	These are labeled on Figure 2.2-1
108	2.2.7 Literature Review	Bullet List		97% of samples had concentrations greater than	Is this the MCL for each concentration? If so, please add the MCL in the bullet point	These are not the MCL. No change needed.
109	General				This section as a whole requires significant revision. The description of wells needs to be revised to be clear what entity conducted the monitoring, not what database W&C gathered the data from. For a discussion of SBCWA monitoring programs in the basin, the SBCWA contract with the USGS, and its relationship to CASGEM, please contact Matt Scrudato. This section contains minimal analysis of groundwater conditions, just reporting of selected hydrographs, with little explanation or interpretation. The water quality section is confusingly structured and incomplete. Finally, although we understand the time sensitivities in preparing the GSP by spring 2019, it would save reviewers quite a bit of time if a technical editor or senior W&C staff member reviewed these sections prior to distribution.	The section has been revised for clarity.
110	General				Most of the wells in the basin are not dedicated monitoring wells, but are frequently described in this section as such.	Text has been revised for clarity.
111	2.2.1 Useful Terminology	Bullet list		There are two versions of contour maps	Consider breaking identification of gw elevation and depth to water info out into a separate bullet point. GW elevation and depth to water are not just used on contour maps, they are used in hydrographs as well.	Text has been revised for clarity.
112	General				Please change "collected" to "compiled" throughout this section. It is potentially confusing to the reader to describe gathering data from various sources as collecting data. Typically collecting well data refers to taking measurements	Text has been revised for clarity.
113	2.2.2 GW Elevation Data Processing	1	1	Groundwater well information and	"collected from **local stakeholders**" - These appear to be included in the 8 major sources.	Text has been revised for clarity.
114	2.2.2 GW Elevation Data Processing	Bullet List		Well and groundwater elevation data were	Was data collected from the CSD? If so, include in list.	No data was collected from the CSD
115	2.2.2 GW Elevation Data Processing	Bullet List		list of data	Include references for publically available data sources; Any available info on data validation, and collection would be useful for these.	References are included in the Data Management GSP section
116	2.2.2 GW Elevation Data Processing			Data collected included well information	Data accuracy section is needed. What standards/protocols are each of these data collection entities following? How is ground surface elevation being determined. DGPS like the original USGS model? Off a map with +/-20 foot accuracy? Please elaborate.	This has been addressed in a footnote.
117	Figure 2.2-2 & 2.2-3				Figures should be titled differently. These are not DWR wells. They are wells with data pulled from the DWR database. The DWR database I assume is CASGEM, which was ultimately collected by SBCWA/USGS. The database that Woodard and Curran compiled the data from is ultimately less important than how it was gathered. Need to make distinction in the title (which is different on the actual figure) of what this is supposed to show. Where they got the data and/or who collected it? Actual title on figure says "DWR Wells" which is not an accurate statement.	Figure titles have been revised for clarity.
118	2.2.2 GW Elevation Data Processing			Roughly half of the wells from DWR's database	Please provide context for why this is important in the text. "measured in 17-18 is mentioned throughout without context. This is a plan that will be issued in 2020. Why 17-18 is the focus needs to be explained.	Text has been revised for clarity.
119	2.2.2 GW Elevation Data Processing			Data collected from the DWR	This is confusing. Data was perhaps collected by Woddard and Curren from DWR, but the data was not collected by DWR. Clarify data received (how / where did they locate the data) vs collected (who and how collected.	Text has been revised for clarity.
120	2.2.2 GW Elevation Data Processing			Data collected from the DWR	"one measurement in the spring, and one measurement in the fall " - If this refers to the CASGEM wells this is not entirely true – most wells monitored 1xyear with a few 2xyear	Text has been revised for clarity.
121	Figure 2.2-3				This list of wells is mostly accurate, but is missing some wells like Spanish Ranch on far west end.	Wells included in Figure 2.2-3 have been reviewed and it has been confirmed that the Figure includes all well data provided by the USGS
122	2.2.2 GW Elevation Data Processing			Data collected from USGS has been typically measured bi-annually	Not entirely true. And there is data overlap here with CASGEM program. Again, describe SBCWA/USGS monitoring program.	Text has been revised for clarity.

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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "...	Comment	Response to Comment
123	2.2.2 GW Elevation Data Processing			Santa Barbara wells are concentrated in the western portion	This does not include all wells monitored by the County. The County does not own these wells, and monitors far more than just these wells.	The maps show the wells and data that had been provided as of June 2018.
124	2.2.2 GW Elevation Data Processing			Data collected from the counties	"measured bi-annually" - Currently making quarterly measurements. Appear to be missing wells. Were a few select wells chosen?	Text has been revised for clarity.
125	Figure 2.2-4				Missing a few. Difficult to determine how many. At some point need to should describe why/how these are different from DWR/CASGEM and USGS program. For example, Matt Scrudato is monitoring in the west end because there is a lack of data in that area – something SBCWA agreed to do to help with GSP development.	The maps show the wells and data that had been provided as of June 2018.
126	2.2.2 GW Elevation Data Processing				Need to add a section somewhere that describes QA/QC process, who does it (USGS, SBCWA), who doesn't (Bolthouse/Grimmway/Grapevine), and why.	This has been addressed in a footnote.
127	2.2.2 GW Elevation Data Processing			The locations of SBCWA well data are located	What is the difference between these wells and the wells referenced in Figure 2.2-4? SBCWA should be taken off Figure 2.2-5 for several reasons (we don't own the wells shown, we're not a private company, we're not ag, etc). All of wells measured by Matt Scrudato should be in Figure 2,2-4	Wells included in these figures have been reviewed and it has been confirmed that the Figure 2.2-4 includes all well data provided by the SBCWA and that Figure 2.2-5 includes all well data provided by private landowners.
128	2.2.2 GW Elevation Data Processing			The locations of SBCWA	"The locations of SBCWA well data are located **west of Cottonwood Canyon**" - West of Aliso Canyon would be more accurate	Text has been revised for clarity.
129	2.2.2 GW Elevation Data Processing			The date of measurement varies significantly by year.	Explain why this is important as context for the reader.	Text has been revised for clarity.
130	2.2.2 GW Elevation Data Processing				"Data provided by Grapevine Capital Partners is **bi-annual** " - quarterly	Text has been revised for clarity.
131	Figure 2.2-7				This graph is more confusing than helpful. Please reomve. Well locations are already identified previously and hydrographs are better described in later sections. The need for this statement and graph appears to be validation for the quality of water level data provided by Grimway and Bolthouse. This should be done in a separate data validation section. Please remove the statement "accurate measurements" from this paragraph. At best, the statement can note that data "match ing tracking historical trends within a 4-mile area", but in no way should refer to these data as "accurate measurements". Then again, what is the definition of an "accurate measurement"? The USGS states that discrete water level measurements made with graduated steel or electric tapes are accurate to 0.01 foot. What standard is Woodard & Curran using? If this graph is kept in the document, the graph should start in about year 1977 when there is a comparison between the data sets. The data prior to this is irrelevant. It is not clear which well relates to which line on the graph. 1.Were there any wells which were monitored by BOTH Grimway/Bolthouse and the USGS where data can be compared for a single location? Are these all the Grimway/Bolthouse wells where data are available or only a select few? 2.DWR are not collecting well data in Cuyama	The figure is included because of interest expressed during public meetings regarding how data provided by private landowners compares with data provided by public agencies. The text describing the figure has been revised for clarity.
132	2.2.2 GW Elevation Data Processing			Figure 2.2-7 shows a comparison of data	Need context to explain why this comparison is being done.	Text has been revised for clarity.
133	2.2.2 GW Elevation Data Processing			Figure 2.2-8 shows a comparison of data	Need context to explain why this comparison is being done.	Text has been revised for clarity.
134	Figure 2.2-8				The need for this statement and graph appears to be validation for the quality of water level data provided by Grapevine Capital Partners. Please remove both the discussion (page 2.2-11) and the graph as these data illustrates nothing at all. 1.Two of the Santa Barbara County wells are not even part of the network. I don't even think these wells exist in the Valley. It is unclear where these data came from. 2.You appear to be comparing very shallow wells to a 6 of the 12 deep production wells. 3.Are these discrete static water level measurements used for the Grapevine data or select points from the continuous 5-minute data sets? SBCWA has been making periodic discrete water level measurements at the 12 productions wells on the Harvard property. A comparison of 26 measurements shows differences between discrete water level and computed water levels ranging from -47.9 feet to 150.36 feet. These are large outliers when compared to all the measurements, but would be a better indication of the data quality (see chart below). SBCWA has measurements from 9/2018 to compare as well. There would be some variation of only a few feet in this comparison based on equipment PSI (most likely higher PSI being used due to large level changes and therefor reduced accuracy), MP elevation choice, computation procedures, etc. Please contact Matt Scrudato to discuss specifics.	The figure is included because of interest expressed during public meetings regarding how data provided by private landowners compares with data provided by public agencies. The text describing the figure has been revised for clarity.
135	2.2.2 GW Elevation Data Processing			A long term comparison is not possible	The wells are in different locations, what value does this provide?	The figure is included because of interest expressed during public meetings regarding how data provided by private landowners compares with data provided by public agencies. The text describing the figure has been revised for clarity.

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136	Figure 2.2-5				Again, misleading title here vs. actual figure which states "Owners and Operating Entities" SBCWA does not own or operate the wells assigned to us in this graph. We only own and maintain CVFR, CVKR, and CVBR. Further this map does not include most of the wells measured by the SBCWA	The figure title has been revised for clarity
137	2.2.3 GW Trends				This section needs major reorganization. There is a time based section, then a number of other sections without a designated timeframe. Also, the wording in this section needs a thorough review by a technical editor.	The text has been revised for clarity.
138	2.2.3 1947 to 1966 GW Trends			1947 to 1966 Groundwater Trends	Hydrographs illustrated are all through 2018. Are you trying to differentiate between times or is the next section a separate concept? If so, there needs to be discussion on more current trends following 1966.	The text has been revised for clarity.
139	2.2.3 GW Hydrographs			Groundwater Hydrographs	This is confusing. The previous section is about a specific time period. If this is 1966-present you should say so.	The text has been revised for clarity.
140	2.2.3 GW Hydrographs			Groundwater hydrographs were developed to provide indicators	What indicators? Don't the hydrographs just show trends?	The text has been revised for clarity.
141	2.2.3 GW Hydrographs			Hydrographs for all monitoring wells with elevation	There can be a big difference between a monitoring well and a well that is being monitored. Be more clear.	The text has been revised for clarity.
142	Appendix X				Comments on Appendix X: 1) Some graphs extrapolate off the hydrograph – is this in error or is there a data point(s) not shown? 2) Similarly, some graphs don't show any data points. 3) Scale issues 4) No need for one per page, consider 4 5) Hydrographs don't identify data source, who and how collected and whether data has been QA/QC. Consider adding an index of all wells, like a lookup table, with OPTI number, USGS number, and well number owner/operator uses, etc.	1) This has been fixed by increasing vertical scale 2) Some OPTI wells only have groundwater quality data associated with them. Because there are so many wells, a hydrograph was made for every OPTI well; therefore some do not have level data. 3) This has been addressed in #1. The graph scales were selected to show the depth to water of all wells on the same scale. 4) One figure per page allows greate detail to be seen in the graphs, as some have a significant amount of data points. 5) This information is available through OPTI for those who would like to review it.
143	2.2.3 GW Hydrographs			Figure 2.2-11 shows Hydrographs in different portions	Please describe in the text why these wells were chosen. Are they representative of the areas?	The text and figure have been revised for clarity.
144	2.2.3 GW Hydrographs	Bullet list		In the area southeast of Round Springs Canyon	Please edit for clarity and grammar. Also, if you are going to describe the hydrographs, you should describe all of them If they want to generalize then make the graph mimic these areas, pick 5 representative hydrographs. Right now there are 7 on the Figure which looks cluttered.	The text has been revised for clarity.
145	Figure 2.2-11				Bitter Creek area - Illustrate on map as a reference	This is labeled on Figure 2.2-1
146	2.2.3 GW Hydrographs			Figure 2.2-12 shows selected hydrographs	Why is this section in a different format than the previous. Please make consistent.	Comment noted. No change needed.
147	Figure 2.2-12				Well 40 & 316 - where? Not shown in map	The text has been revised for clarity.
148	2.2.3 GW Hydrographs			Figure 2.2-13 shows hydrographs of discontinued monitoring wells	Then need to explain why they were selected.	The text has been revised for clarity.
149	General				Stick with one descriptor – either elevation or depth to water. Mixing elevation and depth to water is confusing to the reader.	The section consistently discusses depth to water
150	Figure 2.2-14				Well 640 - where? Not shown in map	The text has been revised for clarity.
151	2.2.3 GW Hydrographs			Figure 2.2-15 shows hydrographs of monitoring wells	The discussion on west end hydrographs and the related Figure 2.2-15 is misleading. Continuous data sets from the 12 wells indicate water levels drops as large as 100 feet in CHG-14 since data collection started in June 2017. This well is the extreme, where other production wells on Harvard vineyard property show water level drops of 25-50 feet. The trends indicate the yearly hydrologic minimum continues to drop.	Wells shown in Figure 2.2-15 show a range of conditions in the western edge of the Basin. OPTI Well 840 shows conditions see in part of the Basin.

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152	2.2.3 GW Hydrographs			Hydrographs for wells 571 and 108	Earlier discrete data located in NWIS.	Well 571 (USGS Code 345847119534901) only has two measurements as shown in the hydrograph (https://groundwaterwatch.usgs.gov/AWLSites.asp?S=345847119534901&ncd=) Well 108 has 8 measurements. Individual points are difficult to destinguish due to hydrograph size, but the hydrograph is correct.
153	Figure 2.2-11				Suggest illustrating hydrographs using same scale / minimize white space for all Figures in this section	All hydrographs on each figure are the same scale
154	Figure 2.2-12 & 2.2-13				Actual Figure has typo in title Also for all Figures in this section, suggest only showing hydrographs referred to in text.	The figure and text have been made consistent. Title corrected.
155	2.2.3 Vertical Gradients			Knowledge about vertical gradients is required by regulation	Please cite the regulation for the reader.	The text has been revised for clarity.
156	2.2.3 Vertical Gradients			Figure 2.2-16 shows the combined hydrograph	State that these wells were installed by USGS as part of the Cuyama Valley Water Availability Study in cooperation with the SBCWA. Multiple completion wells are owned by SBCWA.	This text has been added.
157	Figure 2.2-16, 2.2-17, 2.2-18				The data used to determine there is no vertical gradient as illustrated in the figure 2.2-16 (page 2.2-27) appear to be discrete measurements. At times, there were only two discrete measurements in a year with the remainder of the year interpolated. This is not enough data for an elevation comparison. The USGS used continuous 15-minute unit value data for this nested well and concluded the following (from page 39, Scientific Investigations Report 2013-5108) CVFR.....did show similar seasonal and longer-term changes. Similar to CVKR and CVBR, the vertical hydraulic gradients were upward during the winter months and reversed to downward gradients during the irrigation season; however the gradients at the CVFR site were notably smaller. USGS conclusion supported by water chemistry samples showing increased tritium with depth which may result from younger water from shallow sytem. Woodard & Curran should review the full continuous data set prior to making a conclusion about vertical gradients. Data are available on NWIS. This is data for 3B2- https://nwis.waterdata.usgs.gov/ca/nwis/uv?cb_72019=on&format=gif_default&site_no=345351119323102&period=&begin_date=2010-09-04&end_date=2012-09-01 1.The scale used in these graphs (2.2-16, 17 and 18) mask the trends and makes any analysis impossible. Please change the graph scale for all three graphs (2.2-16-18). 2.The x-axis date scale for Figures 2.2-16 and 17 follow an unusual interval. Is this done for any specific reason (see figure below)? A graph with a scale that masks everything that is happening. A 600 ft axis for a graph with an 80 ft range.	Available Continuous Data has been added. Continuous data is only available from 7/21/201 through 11/28/2012 as it has been "Approved." All other "Provisional" data is only available in summary form, which is the data that was being shown in the hydrograph. Newly added continuous data follows the trend that was already shown on hydrograph.
158	2.2.3 GW Countours			Groundwater contour maps were prepared for	Where is 2016	The hydrograph periods were selected to show the change over the most recent period of 3 years for which data was available in the Spring (from 2015 to 2018) and from the Fall (from 2014 to 2017). Therefore, a figure for 2016 was not necessary.
159	2.2.3 GW Countours			These years were selected	Explain in the text the importance of this date in relation to SGMA. Why? Explain. I may have missed this in earlier sections but are they choosing Jan 1 2015 as their baseline?	The text has been revised for clarity.
160	2.2.3 GW Countours			Each contour map is contoured at	Labels and symbols should be obvious on the map without having to describe in the text	Comment noted. No change needed.
161	2.2.3 GW Countours			Due to the limited temporal amount	Non-pumping and static measurements? What was the selection of wells based on? It appears wells are missing.	The maps are based on available data during the period in question.
162	2.2.3 GW Countours			These assumptions make the contours	Explain in the text which wells aree used and why? Howe was data interpolated?	The maps are based on available data during the period in question.
163	Figure 2.2-19				Correct typo in text on lower right of map - “limitated”	The figure has been corrected.
164	Appendix Y				Where are contour maps for 2016?	The hydrograph periods were selected to show the change over the most recent period of 3 years for which data was available in the Spring (from 2015 to 2018) and from the Fall (from 2014 to 2017). Therefore, a figure for 2016 was not necessary.
165	2.2.3 GW Countours				These descriptions are not useful with the maps in the appendix. The descriptions should be with the maps, either here in the text or back in the appendix.	Comment noted. No change needed.

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166	2.2.3 GW Countours			Figure Y-1 through Figure Y-8	Explain reason for changes in seasonal contours.	Comment noted. No change needed.
167	2.2.4 Change in GW Storage			Change in groundwater storage for the last 10 years	Why 10?	SGMA requires 10 years of data for historical water budgets
168	2.2.6 Land Subsidence				The paper mentions that the USGS determined 0.2 feet of subsidence in 10 years. This appears to be the change in daily land surface elevation starting in about May 2007 (0.00 mm) and ending in April 2012 (-68mm). This would be a 5-year period of record for analysis. The full 12 year period of record from 2000-2012 is 0.4 feet of subsidence and the 10-years mentioned in the W&C paper (2000-2010) is 0.26 feet of subsidence. Woodard&Curran used data from 1999 to 2018 to determine 1 foot of subsidence. The brief and general summary of the USGS data and analysis from SIR 2013-5108 does not seem to correlate to what is written in this paper. Please expand on the first paragraph related to the USGS data. This will help the reader determine what was completed prior to your analysis of these data.	The subsidence estimate in the first paragraph has been corrected.
169	Appendix Z				Appendix Z adds little value to the document, appears to be at least partly taken directly from Wikipedia, only focuses on subsidence effects on agriculture, and appears to have been written prior to W&C contracting with the GSA. It is unclear why this was included in the document. Background educational materials data on, e.g., water level data collection, water quality, and other topics is not provided, so why provide this for subsidence. Please delete.	Comment noted. The appendix is included because some readers are interested in this content.
170	2.2.7 GW Quality				A summary of the conclusions drawn about water quality would be very useful. As written, the section is quite disjointed. There is a smattering of data analysis, and review of other studies, but no conclusions about what groundwater quality conditions are in various regions of the basin. There is no explanation of why constituents were selected for analysis. The literature review might be better placed before the data analysis to provide context.	Some additional explanation has been added, including an explanation has been added for why these constituents were included.
171	2.2.7 Reference and Data Collection				Why was age dating data not considered in this analysis and discussion? Why no data from the CSD? Does this (USGS) include NWIS?	The CSD did not provide water quality data. Age dating does not provide information on water quality conditions in the data. The USGS data does include NWIS.
172	2.2.7 Reference and Data Collection			Data used in reference studies was not generally available	This is not correct. ALL data used in USGS and SBCWA studies (3 out of the 4 referenced in this section) are available and are therefore represented in the data.	The text has been revised for clarity.
173	2.2.7 Data Analysis			Collected data was analyzed for TDS, nitrate, and arsenic	Explain in the text why only these constituents were selected. Explain for the lay reader what the possible sources of these constituents are	The text has been revised for clarity.
174	2.2.7 Data Analysis			Figure 2.2-24 shows TDS of groundwater	Note: Additional data for west end collected July 2018 will be available soon.	Comment noted. Due to budget and schedule constraints, data provided after June 2018 will not be incorporated into the current version of the plan.
175	2.2.7 Data Analysis			Multiple years of collected data were used	Where is the comparison? Figure 2.2-23 (1966 data) shows high (>2000mgL) TDS for wells on west end N of river. These are very shallow and recharged by the river. Figure 2.2-24 shows wells directly S of river with low TDS. These are new deep wells. They shouldn't be compared as the same unit. The map aludes to the fact that they are. That possibly the quality has improved	The text does not make a direct comparison because there is insufficient data to make specific conclusions regarding how TDS may have changed over time.
176	Figure 2.2-25				Include a line showing the MCL on the figure	MCL lines have been added to the figure.
177	2.2.7 Data Analysis			Figure 2.2 28 shows arsenic measurements	USGS data indicate 4 of the 33 wells were >10 Only 25 wells used in this study. Why the discrepancy and why were the 4 wells with >10 not used? Please elaborate on data selection used for this analysis.	The text and figure have been reviewed and updated.
178	2.2.7 Data Analysis			Figure 2.2-28 shows arsenic measurements	What about the CSD? They treat for arsenic.	The CSD did not provide any arsenic data.
179	2.2.7 Data Analysis			Figure 2.2-29 shows that most of these sites	Describe for the reader what this means – leaks from storage tanks?	The text has been revised for clarity.
180	2.2.7 Literature Review	1	1	In 1970, Singer and Swarzenski reported	"TDS was as high as 1,500 to 1,800 mg/L TDS" - contradicts following sentence; "and higher (3,000-6,000 mg/L) in wells " - This is much higher than the first sentence says.	The text has been revised for clarity.
181	2.2.7 Literature Review	1		They state that the high TDS is generated	"water from marine rocks" - Confusing if you don't identify them geologically	Comment noted. No change needed.
182	2.2.7 Literature Review	2		The study identified that specific conductance	In the text, please provide context for why this is important and what this means in the context of groundwater quality.	The text has been revised for clarity.
183	2.2.7 Literature Review			In 2013, USGS reported	Please discuss any vertical gradients in constituent concentrations in the multicompletion wells.	The text and figure have been reviewed and updated.

Cuyama Basin Monitoring Networks Chapter
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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "...	Comment	Response to Comment
1	General				The Monitoring Networks spatial density around the faults of interest is insufficient.	Comment noted. These areas have been included in the groundwater level data gaps.
2	General - Well Data with Completion reports				The insufficient Quality Control / Quality Assurance compounds the uncertainty due to the scarcity of data.	Comment noted. Monitoring protocols will be set up to ensure consistent QA/QC for monitoring in the future.
3	General (Well ID #)				Will any cross reference table for well ID#s be made available?	This can be provided separate from the document.
4	Global (Salinity)				Please use the term TDS	The text has been changed to note at first usage that salinity is measured in TDS
5	General				The MN must asses all causal nexus between groundwater quality and groundwater extraction, such as constituents migrating into areas with lower pressure heads due to heavy groundwater extraction.	Comment noted. This can be accomplished in the implementation phase by filling in the monitoring data gaps.
6	4.2 Basin Conditions (Pg. 4-11)			Fig 4-2 Combined Hydrograph	The text should clearly articulate that groundwater elevations have declined consistently over 500' since pumping started in 1947.	The text has been revised for clarity.
7	4.3 Existing Monitoring Used (Pg. 4-13)				Other wells that have been monitored by DWR - CASGEM, USGS and/or The Ventura County Watershed Protection District (VCWPD) in the Ventucopa Uplands river corridor should be reconcidered for selection as a monitoring site for the GSP.	Comment noted. Additional wells can be added during the GSP implementation phase.
8	Table 4-5: Cuyama Basin VCWPD Wells (Pg. 4-22)				Table is mislabeled as; Number of SLOCFC&WCD wells	The table has been corrected.
9	Table 4-9: Cuyama Basin NWQMC, USGS, IRLP Water Quality Monitoring Sites (Pg. 4-29)				The texts suggests "The NWQMC database provides data on 47 water quality monitoring sites", but the table indicated there are 176 sites.	The text has been revised for clarity.
10	GAMA / DWR (Pg. 4-31)			age dating and groundwater movement trending	If freshwater recharge is assumed to be happening, then where is it going if not into the productive wells of the area?	Comment noted. This is not relevant to the Monitoring Network section.
11	4.3.5 Surface Water Monitoring (Pg. 4-37)			Fig 4-14	Not one stream gauge exists on the Cuyama River within the basin. Can we get a Plan to fill this Data Gap? Flow Gauges at the 3 bridges over the Cuyama?	This will be discussed in Section 4.10 when it is developed.
12	4.5.5 Representative Monitoring (Fig 4-16 thru Fig 4-18)				The major Data Gaps area in Fig 4-18 are also the fault zones of interest and the likely boundaries to proposed Management Areas (or Threshold Regions). What is the plan to solve this uncertainty?	This will need to be addressed during the GSP implementation phase.
13	4.6 Groundwater Storage Monitoring Network (Pg. 4-53)				All of the data gaps for the groundwater level monitoring network will now compound the uncertainty of the Groundwater Storage calculations. How will calculations made from uncertain data be verfied for QA/QC?	Monitoring protocols will be set up to ensure consistent procedures for monitoring in the future.
14	4.8 Degraded Groundwater Quality Monitoring Network (Pg. 4-53)				The best available science suggests a causal nexus between SGMA related activities like groundwater extraction and the migrations of constituents into areas with lower pressure heads due to unsustainable extraction.(See Appendix A, page 21-29) Boron, Arsenic & Nitrites should be monitored along with age dating to determine the movement of bodies of groundwater and the rates of any freshwater recharge.	The text has been revised to describe the rationale for establishing the monitoring network only for salinity.
15	4.9 Land Subsidence Monitoring Network (Pg. 4-60)				Is it possible to use other avaliable technologies (like InSAR to match the USGS data set) while we wait for more CGPS installations to come online?	The can be explored by the GSA during the GSP implementation phase.
16	4.9.5 Monitoring Protocols (Pg. 4-62)			"New stations will require downloading the data as equipment storage..."	Garbled english!	The text has been revised for clarity.
17	4.10 Depletions of Interconnected Surface Water Monitoring Network (Pg. 4-64)				The last of the Cuyama River Cottonwood trees stand as testament to the depletion of interconnected surface waters. Try to count them before their dead limbs crack and fall to the dry sands of their former wetlands.	Comment noted. No change needed in the Monitoring Network section.
18	Pg. 4-22				On page 4-22 the first line of the table is incorrect (not SLOCFC&WCD)). It should read VCWPD wells.	The table has been corrected.
19	Figure 4-7				The map in Figure 4-7 the title for VC wells in the legend for VCWPD should be more descriptive - Ventura County Watershed Protection District database wells to be consistent with the other maps.	The figure title has been changed.

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20	Intro			This section was prepared to meet the requirements	Consider listing the GSP regulations for this chapter	The regulation has been added.
21	4.2 Monitoring Networks Obj.	1	1	This section describes the Cuyama	Consider adding a comment or footnote on seawater intrusion to reinforce why it is not being monitored.	This is discussed in the Undesirable Results GSP Section.
22	4.2.1 Basin Conditions Relevant	2	3	There are no major stratigraphic aquitards or	Suggest clarifying this sentence. The basin has faults, maybe adding a figure of the Morales Formation.	The text has been revised for clarity. A figure of the Morales Formation is shown in the HCM Section.
23	4.2.1 Basin Conditions Relevant	2	4	The aquifer ranges from	Consider adding the top and bottom basin range.	The text has been revised for clarity.
24	4.2.1 Basin Conditions Relevant	3	1	The largest groundwater	Suggest adding a table of the entire basin for land use, square miles, and percentage, such urban, rural, open space, and etc.	This is discussed in the Plan Area section.
25	4.2.1 Basin Conditions Relevant	4	2	Generally, groundwater elevations	Consider quantifying the decrease in years, such as ... decreasing by approximately XX ft from the 1940s and 1950s to the present	The text has been revised for clarity.
26	4.2.1 Basin Conditions Relevant	4	2	Generally, groundwater elevations	Suggest verifying if the figure is missing.	The figure is included in the GSP section.
27	4.3.1 Groundwater Level Monitoring	4	1	CASGEM allows locally	Editorial: "CASGEM allows ~~locally~~ local agencies to be designated"	The text has been revised for clarity.
28	4.3.1 Groundwater Level Monitoring			There are currently six CASGEM	Clarification - The two SLO County CASGEM wells are volunteer wells (County agreement with private owner)	The text has been revised for clarity.
29	Figure 4-3			Cuyama Basin DWR/CASGEM Wells	Suggest adding the Federal and State areas to the monitoring network to help show why groundwater wells are not located in several basin areas.	These are shown in the Plan Area section and are not needed in this section.
30	Table 4-2			Cuyama Basin USGS Well Statistics	Suggest verifying if duplicate wells exist between all agencies, such as County, DWR, and USGS.	This is addressed in Section 4.3.2
31	Figure 4-4			Cuyama Basin USGS Wells	Suggest adding the Federal and State areas to the monitoring network to help show why groundwater wells are not located in several basin areas.	These are shown in the Plan Area section and are not needed in this section.
32	Table 4-3			Cuyama Basin SBCWA Well Statistics	Suggest verifying if duplicate wells exist between all agencies, such as County, DWR, and USGS.	This is addressed in Section 4.3.2
33	Figure 4-5			Cuyama Basin SBCWA Managed Wells	Suggest adding the Federal and State areas to the monitoring network to help show why groundwater wells are not located in several basin areas.	These are shown in the Plan Area section and are not needed in this section.
34	4.3.1 GW Level Monitoring - SLO	1	2	SLOCFC&WCD also reports the data for	SLO County – the two CASGEM wells are in the County's volunteer program (agreement between the County and owner). If using these 2 wells in the GSP, the CBGSA will need agreements with the owners.	Comment noted. Agreements can be sought during the GSP implementation phase.
35	Figure 4-6			Cuyama Basin SLOCFC&WCD Wells	Suggest adding the Federal and State areas to the monitoring network to help show why groundwater wells are not located in several basin areas.	This is addressed in Section 4.3.2
36	Figure 4-7			Cuyama Basin VCWPD Wells	Suggest adding the Federal and State areas to the monitoring network to help show why groundwater wells are not located in several basin areas.	This is addressed in Section 4.3.2
37	Figure 4-8			Cuyama Basin Community Services District Wells	Suggest adding the Federal and State areas to the monitoring network to help show why groundwater wells are not located in several basin areas.	This is addressed in Section 4.3.2
38	Figure 4-9			Cuyama Basin Private Landowner Wells	Suggest adding the Federal and State areas to the monitoring network to help show why groundwater wells are not located in several basin areas.	This is addressed in Section 4.3.2
39	4.3.3 GW Quality Monitoring - NWQMC	2	3	Initial water quality data for the Cuyama	Could this data be leveraged for the GSP? If so, please add the regulations pertaining to the IIRLP, such as water quality sampling.	This is included in the monitoring network. Regulations for IRLP progam can be found here: https://www.waterboards.ca.gov/centralvalley/water_issues/irrigated_lands/
40	Multiple figures			Cuyama Basin NWQMC, USGS, IRLP Water Quality Monitoring Sites	Suggest adding the Federal and State areas to the monitoring network to help show why groundwater wells are not located in several basin areas.	These are shown in the Plan Area section and are not needed in this section.
41	4.3.3 GW Quality Monitoring - Private Landowners	1	1	Private landowners within the	Consider verifying if these owners are in the IRLP, included in GAMA?	Comment noted. This can be done during the GSP implementation phase.

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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "...	Comment	Response to Comment
42	4.4 Monitoring Rationales	1	2	Monitoring networks in the Cuyama GSP	Suggest adding – "Cuyama Basin GSP"	The text has been revised for clarity.
43	4.4 Monitoring Rationales	3	2	The schedule and costs associated	Suggest adding –a period "GSP."	The text has been revised for clarity.
44	Table 4.13			Number of Wells Selected for Monitoring Network	SBCWA - Suggesting verifying that well are not being counted twice between agencies and verifying that the programs are continuing, if leverage existing programs	The table has been updated to note that the total does not equal the sum of the rows due to wells being duplicated in multiple databases.
45	Table 4.13			Number of Wells Selected for Monitoring Network	SLOCFC&WCD - Clarification - The two SLO County CASGEM wells are volunteer wells (County agreement with owner), not monitoring wells. The CBGSA will need agreements with the well owners for additional sampling beyond CASGEM	Comment noted. No change needed to text.
46	4.5.3 Monitoring Frequency	5	1	The Basin is an unconfined aquifer	Where did the 5 inches per year come from?	"5-inches" is based on values provided in Table 4-14, which is from the *Monitoring Networks and Identification of Data Gaps Best Mangement Practices.* " 5-inches" refers to the quantitative value of annual recharge. This value is output from the model, which currently models an annual recharge of # inches. Although this value is subject to change based on model calibration efforts, it is not expect to increase above 5-inches per year.
47	4.5.3 Monitoring Frequency	5	2	Based on the data in Table 4-14	Suggest that the CBGSA Board review the consultant economic benefit cost analysis on monthly, quarterly, and semi-annual groundwater sampling to determine what is feasible? Suggest the Consultant reviews the sampling timeframe with the CBGSA Board.	Comment noted. The specific time frame will need to be selected by the CBGSA Board going forward.
48	4.5.4 Spatial Density	3		Based on Hopkins well density	Suggest adding reference	The reference has been added to the text.
49	4.5.4 Spatial Density	3		Based on Heath	Suggest adding reference	The reference has been added to the text in the section and to the references at the end of the section.
50	4.5.6 GW Level Monitoring Network	1	1	The Groundwater Level Monitoring Network	Suggesting verifying that well are not being counted twice between agencies and verifying that the programs are continuing, if leverage existing programs.	Entities with current monitoring programs were attempted to be contacted. Of those that responded to our inqueries, most were non-committal with the continuation of their programs, however, this non-committal response was a result of not knowing specifics about the wells in Cuyama and not wanting to be responsible for missinformation. This is also why criteria for inclusion in the monitoring network is so broad. In the event some wells are discontinued, it is the hope that other wells will be able to provide sufficient data. If this is not the case, the GSA will have to determine if additional wells will need to be constructed. A review of the monitoirng network was conducted and no duplicates were found. Wells that appear in Figure 4-17: Cuyama GW Basin Groundwater level and Storage Monitoring Network Wells that have multiple labels for what appears to be the same site are actually multi-completion (aka multi-depth) wells. Each individual casing is considered an independent well due to the output of GWL measurements. Note: Due to revisions to the Monitoring Network and Representative Wells through Board direction, the Table and List of wells has been updated.
51	4.5.6 GW Level Monitoring Network	1	1	The Groundwater Level Monitoring Network	Does the CBGSA have to form agreements with the well owners for volunteer programs?	Yes, this will need to be done going forward during the GSP implementation phase.
52	4.5.6 GW Level Monitoring Network	3	1	The proposed monitoring frequency	Suggest that the CBGSA Board review the consultant economic benefit cost analysis on monthly, quarterly, and semi-annual groundwater sampling to determine what is feasible? Suggest the Consultant reviews the sampling timeframe with the CBGSA Board.	Comment noted. The specific time frame will need to be selected by the CBGSA Board going forward.
53	Appendix K	1	1	General	Suggesting verifying that this follows SGMA GSP protocols.	Appendix K is *Best Management Practices for the Sustainable Management of Groundwater Monitoring Protocols, Standards, and Sites* published by DWR and provided on the SGMA website.

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54	4.5.8 Data Gaps	3	1	Well construction information is not	Suggesting verifying if there is a SGMA GSP standard for well construction. If so, does this monitoring network meet these standards?	Article 3, Section 352.4, (c) describes the standards to apply to the wells. Although it outlines the information that should be included under Part (1), Part (2) states that either the GSA create a schedule for acquiring the necessary information, or describe why the information is not necessary to undersand and manage groundwater in the basin. Due to the extremely limited amount of data within the Cuyama Basin, an attempt to use all valuable data was made. To understand the limitations of the data, the Tiering System was utlized and discussed within the section. Additionally, within Project and Management Actions, there will be additional information about pursuing projects to obtain additional well information.
55	4.5.9 Plan to fill data gaps	3	3	New wells drilled by DWR's	Suggest updating this section when DWR approves the TSS for new wells	Comment noted. This will be considered if DWR approves the TSS before completion of the GSP.
56	4.8 Degraded GW Quality	1	1	Due to the relationship of undesirable	This needs to be vetted by the CBGSA Board for any constituent to be monitored and sampled. Is sampling for salinity meeting SGMA GSP regulations? Suggest providing a discuss of why other constituent are not being monitored	The text has been revised to describe the rationale for establishing the monitoring network only for salinity.
57	4.8.2 Monitoring Sites Selected	1	4	Note that due to duplication of wells	Consider updating the table (4-17) with the correct values.	The table has been updated.
58	4.8.3 Monitoring Frequency	2	3	The Basin, in coordination	This needs to be vetted by the CBGSA Board for any constituent to be monitored, sampled, and frequency of sampling.	Comment noted. The specific time frame will need to be selected by the CBGSA Board going forward.
59	4.8.6 GW Quality Monitoring Network	1	3	All 64 wells are representative	Suggest verifying if these are duplicate wells and if leveraging data from existing programs to verify that the program is continuing.	Comment noted. This will be done during the implementation phase going forward.
60	4.8.8 Data Gaps	4	3	All management entities are	Suggest verifying that this assumption is true	The text has been revised for clarity.
61	4.8.9 Plan to fill data gaps	3	2	Downhole video logging	Suggest verifying that you can perform downhole video logging in existing wells with casings.	This will be verified as specific wells are identified for video logging by the DWR TSS.
62	4.9.7 Plan to fill data gaps	1	3	Although there are multiple	Suggest reviewing the pros/cons and cost associated with recommendation	The rationale for this recommendation is provided in the text.
63	General				It is quite difficult to determine the appropriateness of the proposed monitoring network without know what the management areas will be. Suggest revising/recirculating once they have been identified.	Comment noted. This can be considered by the GSA Board.
64	Figure 4.1			Well completion diagram	Depth to Bottom of Well should/could be reworded to match the what is written under useful terms - Total Well Depth	Updated Figure
65	4.1 Useful Terms			Subsidence (refer to appendix Z	Suggest deleting appendix Z for reasons described in comments to Groundwater Conditions Section	Comment noted. The appendix is included because some readers are interested in this content.
66	4.2.1 Basin Conditions Relevant	2	3	There are no major stratigraphic aquitards	Fault lines?	The text has been revised for clarity.
67	4.2.1 Basin Conditions Relevant	2		The aquifer ranges from 10's to 100's of feet	Not a very useful, give #s.	Specific values are unavailble in this summary sentence. Therefore, numbers have been removed. For details on aquifer thickness, refer to the HCM section.
68	4.2.1 Basin Conditions Relevant	2		Median reported hydraulic	Median or a range?	Median, as shown in Table 2.1-1.
69	4.2.1 Basin Conditions Relevant	2		Figure 2.1-2 shows the extent	Do we have that?	This figure is in the HCM section.
70	4.2.1 Basin Conditions Relevant	3		Based on the most recent data from 2016,	Sentence is somewhat confusing.	The text has been revised for clarity.
71	Figure 4-2			Central Basin with Combined	Label wells on map	The figure has too many wells to effectively label them.
72	4.3 Existing Monitoring Used	1	1	This section discusses current groundwater	As mentioned in comments to the groundwater conditions section, this is a list of databases from which W&C pulled data, it is not a list of monitoring programs.	The text has been revised for clarity.
73	4.3.1 Groundwater Level Monitoring				I like how each monitoring entity is mentioned in a separate section below. A general summary of how these data were collected should be included for each entitry to include information such as: 1-protocols 2-accuracy 3-equipment used 4-QA/QC	Users can refer to the metadata provided by each data source for this information. This level of detail is not needed in this GSP section.

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74	4.3.1 Groundwater Level Monitoring - DWR, Statewide...			CASGEM Wells – Wells with well	Many of the voluntary wells have publically available well construction info. This distinction is not correct.	The text has been revised for clarity.
75	4.3.1 Groundwater Level Monitoring - DWR, Statewide...			Most wells were measured on a semi-annual	This is not correct, most wells are measured annually. Some were measured semi-annually during the USGS study.	The text has been revised for clarity.
76	Table 4-1			Summary Statistics for CASGEM Wells	No CASGEM program in 1946. It started in 2000. No big deal. These wells are now CASGEM.	The table header has been revised for clarity.
77	Figure 4-3			Cuyama Basin DWR/CASGEM	As commented on the groundwater conditions section, these are not DWR wells.	The figure title has been changed.
78	4.3.1 Groundwater Level Monitoring - USGS	5	1	USGS has approximately 25 approved	Needs to be much clearer. USGS doesn't "have" these wells. They happen to appear in the USGS database.	The text has been revised for clarity.
79	Table 4.2			Cuyama Basin USGS Well Statistics	# of provisional wells - This is unclear. There may be some provisional data from the last few months that re currently not approved. Standard to approve data within 150 days. This statement leads one to believe that these data are not useable.	The distinction between provisional and approved USGS wells has been removed.
80	Figure 4-4			Cuyama Basin USGS Wells	These are not USGS wells. They are wells that are in the USGS database.	The text has been revised for clarity.
81	4.3.1 Groundwater Level Monitoring - SBCWA	1	1	The Santa Barbara County Water Agency (SBCWA) manages	Summary of SBCWA monitoring programs: USGS network for entire basin was 32 wells. •About 14 of these 32 wells are overlapped on the west-end with our quarterly network. •Our quarterly network is 36 wells but could be considered as large as 47 if we want to count the Harvard production wells which they self-monitor and we periodically verify. •Mandatory CASGEM is 3 and Voluntary CASGEM is 13. These are also part of the USGS total of 32 wells. • The USGS has stopped monitoring wells in the basin.The entire network we will start to monitor will be about 52 in total (or 63 if we want to consider the 11 Harvard production wells).	Text and Table has been updated
82	4.3.1 Groundwater Level Monitoring - SBCWA	1	3	Many of these wells are included in the DWR	I didn't see any in the DWR database. Some are in NWIS. Important to clarify that wells may be in database and maps, but our data for the last couple of years is not located in the database.	Unecessary detail removed from document
83	Table 4-3			Number of SBCWA-wells	29 should be 55	Numbers reflect data provided by SBCWA. Numbers have been updated to reflect this.
84	Table 4-3			Number of SBCWA wells included in the Monitoring Network	30 is ?	Numbers have been updated.
85	Figure 4-5			Cuyama Basin SBCWA	As mentioned, this does not include all the wells monitored by SBCWA	Figure has been updated
86	4.3.1 Groundwater Level Monitoring - Private Landowners	1	1	Private landowners within the Basin	Nearly all the wells mentioned previously are owned and "managed" by private landowners. The terminology is very confusing.	The text has been revised for clarity.
87	4.3.1 Groundwater Level Monitoring - Private Landowners	1	3	Summary statistics for these	Are these private wells that are measured by USGS, Ventura, SLO, and SBCWA? Or are these overlap wells found in separate databases? Hard to tell without shapefiles. If there are 99 wells measured by private landowners, there would a serious issue with data quality and accuracy and should not be the foundation of the model.	The text has been clarified to note that these are additional wells beyond those included in the previously described datasets.
88	4.3.2 Overlapping and Duplicate Data	2	1	Duplicates were identified and then	Were similar MP elevations, accuracy standards, and methodology used?	Well data was not altered during this duplicate identification processing. Sources were either combined (i.e. one source had GSE and another had RPE) or the source with the more accurate information was utilized (i.e. once dsource only had ID and general coordinates whereas another may have had well construction info and general coordinates). Sources where there were conflicting data, such as Well Depth, were addressed one by one and researched and professional determination was made. All elevation values were ultimately corrected using a singular DEM dataset to standardize all elevation values.

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89	Table 4-8			MSC column	Explain how Local Name is different from Name? Explain how is USGS ID different from MSC?	Some wells had two names. For example, OPTI Well 834 has a state well number, a well name of "Mustang Production" and local well name of "Spanish WM-1". In an effort to include as much well information as possible "two" well name categories were included. The USGS ID and MSC are two unique identification serial numbers. For example, OPTI well 134 has a SWN of 07N23W20M001S and a USGS Site Code of 344115119202001.
90	Table 4-8			SBCWA row	The table needs to include all SBCWA-monitored wells, which includes all of the CASGEM Wells in the basin within SB County.	Data provided by the SBCWA in indivudal spreadsheets did not include CASGEM ID, and thus a check mark was not included in the CASGEM ID column for the SBCWA row in Table 4-8. Table 4-8 is intended to show what information was included in the orginal data provided to W&C to illistrate the necessity of finding duplicates and data processing. Although those wells may have CASGEM IDs, these were associated with the wells during data processing.
91	Table 4-8			Managing Entity column	Change heading to Database	The heading has been changed to "Data Maintaining Entity"
92	4.3.3 GW Quality Monitoring	1	1	This section discusses existing groundwater	Confusingly worded – the programs were "collected"?	The text has been revised for clarity.
93	4.3.3 GW Quality Monitoring - NWQMC				Why is NWIS not mentioned?extensive water quality data available.	The data downloaded form the NWQMC includes NWIS data. The text has been revised for clarification.
94	4.3.3 GW Quality Monitoring - NWQMC				What sample constituents and parameters?	Text has been editted for clarity.
95	4.3.3 GW Quality Monitoring - NWQMC	2	3	IRLP was initiated in 2003	Are these data collected by the landowner? Explain in text who does this data collection?	Who collects this data is unknown and not included in the data provided by the management enetities
96	Table 4-9			Median period of record	Is this accurate?	Yes. A considereable number of sites only took 1-2 samples during a single year.
97	4.3.3 GW Quality Monitoring - GAMA/DWR				Explain in text what sample constituents and parameters.	Clarification has been added to the text, detail about consituents was not added due to nexus of causality in water qualty result.
98	4.3.3 GW Quality Monitoring - GAMA/DWR			Earliest measurement date year	GAMA started in 2000 Many of these data are historic USGS data from NWIS. The database W&C pulled the data from is not indicative of what program or agency collected the data.	While this comment is correct, the intent of this section is to summarize the data that is available, and was downloaded, and could be downloaded, from each of these sources and to show the processes W&C took to processes and collect data for the Cuyama Basin.
99	4.3.3 GW Quality Monitoring - Ventura County Watershed				Need to add a section on the CSD.	A new section has been added to include data provided by the CSD.
100	4.3.3 GW Quality Monitoring - Ventura County Watershed				What sample constituents and parameters?	Clarification has been added to the text, detail about consituents was not added due to nexus of causality in water qualty result.
101	4.3.3 GW Quality Monitoring - Private Landowners				What sample constituents and parameters?	The text addresses that only TDS is utlized by this data source.
102	4.3.4 Subsidence Monitoring			Appendix Z, a subsidence white	As commented on groundwater conditions section, suggest deleting this white paper.	Comment noted. The appendix is included because some readers are interested in this content.
103	4.3.5 Surface Water Monitoring				Perhaps assess whether there is more needed? Where?	This will be addressed in Section 4.10
104	4.4 Monitoring Rationales	2	1	The monitoring networks were	Be specific - levels? Storage?	The text has been revised for clarity.
105	4.5.2 Monitoring Wells Selected for Monitoring Network				SBCWA knows of currently available wells to fill these data gaps for monitoring. Also, a few wells, which are also currently available, should be monitored in the Ventucopa Uplands and east uplands. We don't need the network density here, but maintaining a baseline dataset is important. It is unwise to completely overlook these areas because there's currently little to no and use. Please contact Matt Scrudato for information on wells available	Comment noted. In the GSP implementation phase, the GSA should coordinate with SBCWA staff to identify appropriate wells to fill data gaps.

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106	4.5.2 Monitoring Wells Selected for Monitoring Network	2	1	Tier 1 encompasses wells with the most	Are there any in the Basin? None show up on the figure	No, there are no Tier 1 wells in the Basin.
107	4.5.2 Monitoring Wells Selected for Monitoring Network			Table 4-13 & following paragraph	This is not useful and unnecessarily confusing due to the overlap between the top three monitoring groups. The database that W&C found the well in is irrelevant.	The paragraph has been removed.
108	Figure 4-16			Cuyama Basin Groundwater Level and Storage Monitoring	No Tier 1 Wells?	No, there are no Tier 1 wells in the Basin.
109	4.5.3 Monitoring Frequency	5	1	The Basin is an unconfined aquifer	Large withdrawals are not consistent across the basin. Mention where the large withdrawals occur.	The text has been revised for clarity.
110	4.5.3 Monitoring Frequency	5	2	Based on the data in Table 4-14	If there are management areas, may not need monthly monitoring this across all areas. A good reason to wait until MAs jave been decided.	Comment noted. This can potentially be updated in the Public Draft if the GSA Board provides direction on management areas.
111	4.5.4 Spatial Density				Should be done by management area.	The monitoring wells correspond to the wells used to develop threholds, which have been selected by threshold region.
112	4.5.4 Spatial Density	1	5	Monitoring wells in close proximity	Many of the wells in the basin are themselves pumped. There are very few dedicated monitoring wells.	Comment noted. No change needed to text.
113	4.5.5 Representative Monitoring				The GSA will need access agreements with private landowners to monitor nearly all of these wells. These ability to get these agreements may drastically alter which wells are selected.	Comment noted. No change needed to text.
114	4.5.5 Representative Monitoring			Monitoring Well – Other wells are	"Supplemental wells" may be a less confusing description.	The text has been changed accordingly.
115	4.5.5 Representative Monitoring			Adequate Spatial Distribution – Representative monitoring	Awkward phrasing, please restate for clarity	The text has been revised for clarity.
116	4.5.6 GW Level Monitoring Network	1	1	The Groundwater Level Monitoring Network is comprised	Sum of Table 4.13 is 151 wells. Not useful.	Paragraph was removed.
117	Table 4-16			Column: Managing Agency as of 2018	These are not the managing agency. This is the database W&C pulled the data from	The column has been renamed "Data Mantaining Agency"
118	Table 4-16			OPTI ID	Add Bittercreek. Appears to be a discrepancy between managing agency mentioned here and monitoring agency mentioned on the OPTI webpage.	We are unclear what "Add Bittercreek" means. With more clarification, we can make a change in the Public Draft.
119	Table 4-16			2* SB County	This well appears to be located in Ventura in OPTI	Table has been updated
120	Table 4-16			105 - confidential	This data is published in NWIS. Not confidential. Depth of well 600 feet. Depth of hole 750 feet.	The table has been updated.
121	Table 4-16			109	Plots in the ocean near Channel Islands.	Data provided to W&C was plotted in the Ocean. This well has been removed, and and the correct well/lat/long was added to the network as OPTI Well 833
122	Table 4-16			120	Collapsed well. Not a good choice.	Data provided to W&C did not indicate the well was collapsed. Instances like recent collapses that happened after data collection will be addressed in the GSP implementation phase.
123	Figure 4-17			Groundwater Level and Storage Representative	Big data gaps in this map. SBCWA can assist in providing better spatial coverage.	Comment noted. In the GSP implementation phase, the GSA should coordinate with SBCWA staff to identify appropriate wells to fill data gaps.
124	4.5.7 Monitoring Protocols	1	1		LSD accuracy standard? What is the required accuracy for the WL data? May want to refer to USGS publication Groundwater Technical Procedures of the USGS if this is the required standard. https://pubs.er.usgs.gov/publication/tm1A1	As mentioned before about Appendix K (*Best Management Practices for the Sustainable Management of Groundwater Monitoring Protocols, Standards, and Sites)* the GSP cites DWRs published material for sampling protocols.
125	4.5.7 Monitoring Protocols	1	1	Monitoring protocols for the groundwater	The attached appendix is titled Appendix A.	The text has been revised for clarity.
126	4.5.8 Data Gaps	1	1	Groundwater levels monitoring data gaps	awk - delete sentence and 2 bullet points below	The text has been revised for clarity.
127	4.5.9 Plan to fill data gaps	2	1	The CBGSA has already been	Provide context (Proposition 1, etc)	The text has been revised for clarity.

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128	4.5.9 Plan to fill data gaps	2	2	This task includes identification	Explain where? Why? What will this illustrate and how will it help? Better than discrete monthly measurements?	The text has been revised for clarity.
129	4.5.9 Plan to fill data gaps	3	1	DWR provides Technical Support Services (TSS) to	This needs context and has no basin-specific info.	The text has been revised for clarity.
130	Figure 4-18			Groundwater Levels Monitoring Network	See Figures 4.10 and 4-4. There appear to be wells available to fill data gaps. CVCR6 RRU1 and 2	Comment noted. W&C will coordinate with SBCWA staff to identify appropriate wells to fill data gaps.
131	4.8 Degraded GW Quality	1	1	Due to the relationship of undesirable	Elaborate. This need a lot more justification. Why only salinity? What is the standard? What would cause this to change? No other parameters needed at all?	The text has been revised to describe the rationale for establishing the monitoring network only for salinity.
132	4.8.2 Monitoring Sites Selected				Too many in North Fork. Large data gaps. No west end monitoring? Poor distribution when other wells are available.	The monitoring network identified in the document only includes wells that are currently being monitored for salinity. Wells for filling the data gaps identified in the document will be idenfied in the future during GSP implementation.
133	4.8.2 Monitoring Sites Selected	1	4	Note that due to duplication of wells	Why show this if there are overlaps? What value does it add?	It identifies the role that these entities currently play in managing and maintaining water quality data in the Basin.
134	4.8.3 Monitoring Frequency	1	1	Monitoring agencies such the USGS	USGS always in July, except during the recent basin study. They collect these samples for the SBCWA. The SBCWA will likely discontinue this program once the GSP is submitted.	Text has been editted for clarity. Text reflects the conversation with USGS staff and W&C.
135	4.8.3 Monitoring Frequency	1		Monitoring agencies such the USGS (entire paragraph)	This is irrelevant. Explain what the GSA is going to do first, then explain how it will leverage samples collected by other agencies.	The text has been revised for clarity.
136	4.8.3 Monitoring Frequency	2	2	The Basin, in coordination with partnering	This should come first	The text has been revised for clarity.
137	4.8.3 Monitoring Frequency	2	2	Representative wells, those with sufficient	Not necessary, it was already stated that all are representative wells.	The text has been revised for clarity.
138	Table 4-18			Managing Agency as of 2018	See previous comment.	The text has been revised for clarity.
139	Table 4-18			Department of Water Resources	Wells 710-758 are DWR. This managing agency should stay consistent and use DWR.	The table has been revised for clarity.
140	Table 4-18			Last Measurement Date	Many of these are from the USGS Study, not part of a regular monitoring program. There is no “managing entity as of 2018”.	"Managing entity" has been changed to "Data Maintaining Agency"
141	4.8.7 Monitoring Protocols			Existing groundwater quality monitoring	Irrelevant. GSA will be establishing its own network and using its own protocols. Existing programs may not continue.	The text has been revised for clarity.
142	4.8.8 Data Gaps	3		Additional information about how	Use the three wells completed at different depths.	Comment noted. This can be considered during the GSP implementation phase.
143	4.8.8 Data Gaps	4	1	The entire Basin is identified as	??? The basin is the data gap?? Please restate to explain what data is missing.	The text has been revised for clarity.
144	4.8.9 Plan to fill data gaps	1	1	The CBGSA will fill the temporal	Explain (DWR’s TSS program. to perform downhole logging….)	The text has been revised for clarity.
145	Figure 4-20				Wells are available. SBCWA can help find them. SBCWA are actually measuring them and collecting water quality samples.	Comment noted. The GSA can coordinate with SBCWA to incorporate these wells during the GSP implementation phase.
146	4.9.3 Monitoring Frequency	1	1	Subsidence monitoring frequencies should capture	State clearly in the beginning of the section what the GSA will do.	The text has been revised for clarity.
147	4.9.4 Spatial Density	1	1	The current spatial density of subsidence	With 2 stations within the basin as mentioned in 4.9-2?	Yes, this is based on the 2 stations currently in the Basin.
148	Figure 4-21			Current Subsidence Monitoring	Legend does not include symbols for the sites.	Stations are labeled on map, and thus are not needed in the legend.

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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "...	Comment	Response to Comment
149	4.9.5 Monitoring Protocols				Is there equipment calibration needed? There needs to be a written standard. This needs to be elaborated on. There are some standards already developed which may be useful as a guide and reference. These are as follows: (for GNSS surveys) USGS- https://pubs.usgs.gov/tm/11d1/tm11-D1.pdf NOAA https://www.ngs.noaa.gov/PUBS_LIB/NGS-58.html https://www.ngs.noaa.gov/PUBS_LIB/NGS592008069FINAL2.pdf USGS reports have information about "future monitoring" which may be a useful reference when establishing the standards and protocols. Here's an example: https://pubs.usgs.gov/sir/2014/5075/pdf/sir2014-5075.pdf	Comment noted. This can be considered during the GSP implementation phase.
150	4.9.5 Monitoring Protocols	2	1	Data should be saved on	Where? Central databse?	The text has been revised for clarity.
151	4.9.7 Plan to fill data gaps				Should we create a baseline dataset set now since it may take time to establish permanent sites? DGPS biannually?	Comment noted. This can be considered during the GSP implementation phase.
152	4.9.7 Plan to fill data gaps	2	1	Theses stations can be managed	Why USGS? Are they running the current stations or have we determined that they will do this monitoring? If so, M Sneed (USGS) should elaborate on the protocols and methodology.	Comment noted. This can be considered during the GSP implementation phase.
153	General				Representativeness of wells for water level monitoring. Wells used within a monitoring network must not only meet standards for sufficient well construction and monitoring data, they also must be representative of local hydrogeologic conditions. "The designation of a representative monitoring site shall be supported by adequate evidence demonstrating that the site reflects general conditions in the area." [§ 354.36(c)]. The process for selecting candidate wells for the water level Monitoring Network is explained based on well construction and monitoring frequency criteria, but the chapter is unclear on how selected wells were determined to be representative of certain areas of the basin.	Comment noted. These factors can be considered when the monitoring network is finalized during the GSP implementation phase.
154	General				Representativeness of wells for water quality monitoring. The process used to select wells as representative for water quality monitoring also is not transparent. All available wells apparently were included in the water quality Monitoring Network, but this section (e.g., Page 4-54) lacks discussion of basin groundwater quality characteristics. A Piper diagram with data from all wells, or maps with well-by-well Stiff diagrams could highlight spatial differences (and redundancies) in water quality. If only TDS data are available, a figure showing side-by-side historical TDS data boxplots for all wells would allow identification of wells with statistically-distinct (or redundant) historical data.	Comment noted. The available water quality data is discussed in the Groundwater Conditions chapter. This level of detail is not needed in this chapter.
155	General				General determination process. In general, a systematic process for selecting representative wells is not discussed. The basis used to identify the various wells as representative is not clear.	The criteria used to select representative monitoring wells are given in Section 4.5.5
156	General				Optimization. It also is unclear whether an effort was made to simplify the network to increase efficiency, and reduce cost (i.e., have the same wells be used for water levels, water quality monitoring, etc). The chapter needs a discussion of network optimization, including (a) coordination of monitoring with other agencies or entities to potentially share costs and eliminate redundant monitoring, and (b) identification of clustering and spatial redundancy within the network, via comparison of water level, well construction, and water quality data (see preceding comment #2), to eliminate wells that are not both unique and representative.	Comment noted. This can be addressed when the monitoring network is finalized during the GSP implementation phase.

Cuyama Basin Monitoring Networks Chapter
Summary of Public Comments and Responses
January 25, 2019

Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "...	Comment	Response to Comment
157	General				Clustering effects. The potential effect of data clustering on conclusions drawn from parts of the network with very high well densities also is not discussed. The well density discussion needs to consider the potential effects of data clustering on conclusions drawn from aggregation of water level data. For example, if Undesirable Results are defined as a certain percentage of monitoring network wells experiencing water levels below their Minimum Thresholds, clustering of wells through intentional "selection of additional wells in heavily pumped areas" may artificially magnify the apparent portion of the basin affected, increasing the likelihood of it being judged as out of compliance with sustainability criteria.	Comment noted. This can be addressed when the monitoring network is finalized during the GSP implementation phase.
158	General				Sustainability Criteria. The Monitoring Network section does not include "quantitative values for the minimum threshold, measurable objective, and interim milestones that will be measured at each monitoring site", as required [§354.34 (g)(3)]. We understand that these sustainability criteria are currently under development, and anticipate that, when final, the appropriate values will be incorporated into this chapter.	This will be provided in the Sustainability Thresholds GSP chapter.
159	General				Data gaps. Discussion of plans to fill data gaps is very general, with no description of "steps that will be taken to fill data gaps before the next five-year assessment, including the location and purpose of newly added or installed monitoring sites." [§354.38 (d)]. Regulations specify that each GSA identify data gaps wherever the basin does not contain (a) a sufficient number of monitoring sites, (b) does not monitor sites at a sufficient frequency, or (c) utilizes monitoring sites that are unreliable, including those that do not satisfy minimum standards of the monitoring network adopted by the agency. There is no reason therefore to create minimum well acceptance standards to match what is currently available, and instead criteria should emphasize the capacity to reliably monitor and track basin efforts to maintain sustainability.	Comment noted. The specific plan to fill data gaps will be developed during the GSP implementation phase.
160	General				Acquisition of wells to meet network deficiencies. Regulations regarding minimum requirements for monitoring network wells state "If an Agency relies on wells that lack casing perforations, borehole depth, or total well depth information to monitor groundwater conditions as part of a Plan, the Agency shall describe a schedule for acquiring monitoring wells with the necessary information, or demonstrate to the Department that such information is not necessary to understand and manage groundwater in the basin." [§352.4]. Additionally, DWR's Best Management Practices #2 – Monitoring Networks & Identification of Data Gaps states that agricultural or municipal wells may be used in place of monitoring wells, but that "If not using a dedicated monitoring well, the GSA must provide a rationale and a schedule for acquiring one." The Monitoring Network section does not assert that the information available for existing wells is adequate to understand the basin, nor does it support or refute the need for a rationale and schedule for acquiring monitoring wells.	Comment noted. This can be addressed when the monitoring network is finalized during the GSP implementation phase.
161	General				Access for future monitoring. DWR's Best Management Practices #2 – Monitoring Networks & Identification of Data Gaps also states, "Monitoring wells should be secured by a long-term access agreement to ensure year-round site access." No discussion is provided in the Monitoring Network section regarding negotiation goals or procedures to ensure access to wells on private property for monitoring in the future.	Comment noted. This can be addressed when the monitoring network is finalized during the GSP implementation phase.
162	General				Implementation. Explanation of how the Monitoring Network will be developed and implemented is deferred to a later GSP section (Projects and Management Actions), although it is required in the Monitoring Network section [§354.34(b)].	This can be revisited for the Public Draft version of this section when the implentation section is available