Cuyama Valley Groundwater Basin

Draft Groundwater Sustainability Plan: Agency Information, Plan Area, and Communication

Prepared by:

April 2019

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Acronyms

Basin	Cuyama Valley Groundwater Basin
CASGEM	California Statewide Groundwater Elevation Monitoring
CBGSA	Cuyama Basin Groundwater Sustainability Agency
CBWD	Cuyama Basin Water District
CCSD	Cuyama Community Services District
CDFW	California Department of Fish and Wildlife
DWR	California Department of Water Resources
GAMA	Groundwater Ambient Monitoring and Assessment
GICIMA	Groundwater Information Center Interactive Map
GSP	Groundwater Sustainability Plan
IRWM	Integrated Regional Water Management
LID	Low Impact Development
NMFS	National Marine Fisheries Service
PBO	Plate Boundary Observatory
RCD	Resource Conservation District
RWQCB	Regional Water Quality Control Board
SBCWA	Santa Barbara County Water Agency
SGMA	Sustainable Groundwater Management Act
SLOCFC&WCD	San Luis Obispo County Flood Control & Water Conservation District
SR	State Route
TDS	total dissolved solids
UNAVCO	University NAVSTAR Consortium
USGS	United States Geological Survey
VCWPD	Ventura County Watershed Protection District
WDL	Water Data Library
WMP	Water Management Plan

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1. AGENCY INFORMATION, PLAN AREA, AND COMMUNICATION

1.1 Introduction and Agency Information

This section describes the Cuyama Basin Groundwater Sustainability Agency (CBGSA), its authority in relation to the Sustainable Groundwater Management Act (SGMA), and the purpose of this Groundwater Sustainability Plan (GSP).

This GSP meets regulatory requirements established by the California Department of Water Resources (DWR) as shown in the completed *Preparation Checklist for GSP Submittal* (Appendix A). The CBGSA's Notification of Intent to Develop a Groundwater Sustainable Plan is in Appendix B.

On June 6, 2016, Santa Barbara County Water Agency (SBCWA) sent DWR a notice of intent to form a Groundwater Sustainability Agency (GSA). Following this submittal, the CBGSA Board of Directors was organized, and now includes the following individuals:

- Derek Yurosek – Chairperson, Cuyama Basin Water District (CBWD)
- Lynn Compton – Vice Chairperson, County of San Luis Obispo
- Byron Albano – CBWD
- Cory Bantilan – SBCWA
- Tom Bracken – CBWD
- George Cappello – CBWD
- Paul Chounet – Cuyama Community Services District (CCSD)
- Zack Scrivner – County of Kern
- Glenn Shephard – County of Ventura
- Das Williams – SBCWA
- Jane Wooster – CBWD

During development of this GSP, board meetings were held on the first Wednesday of every month at 4 pm in the Cuyama Family Resource Center, at 4689 California State Route 166, in New Cuyama, California.

The CBGSA's established boundary corresponds to DWR's *California's Groundwater Bulletin 118 – Update 2003* (Bulletin 118) groundwater basin boundary for the Cuyama Valley Groundwater Basin (Basin) (DWR, 2003). No additional areas were incorporated.

1.1.1 Contact Information

Contact information for the CBGSA is shown below.

- Cuyama Basin General Manager/CBGSA Director: Jim Beck
- Phone Number: (661) 447-3385
- Email: tblakslee@hgcpm.com
- Physical and Mailing Address: 4900 California Avenue, Tower B, 2nd Floor, Bakersfield, CA. 93309
- Website: http://cuyamabasin.org/index.html

1.1.2 Management Structure

The CBGSA is governed by an 11-member Board of Directors that meets monthly. The General Manager manages day-to-day operations of the CBWD, while Board Members vote on actions of the CBGSA; the Board is the CBGSA's decision-making body.

During GSP development, an Advisory Committee was formed to act in an advisory capacity to the CBGSA Board of Directors. The Advisory Committee includes the following individuals:

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

1.1.3 Legal Authority

Per Section 10723.8(a) of the California Water Code, SBCWA gave notice on behalf of the CBGSA of its decision to form a GSA, which is Basin 3-013, per DWR's Bulletin 118 (Appendix C).

1.2 Plan Area

This section describes the Basin, including major streams and creeks, institutional entities, agricultural and urban land uses locations of groundwater production wells, locations of state lands and geographic boundaries of surface water runoff areas. This section also describes existing surface water and groundwater monitoring programs, existing water management programs, and general plans in the Basin. The information contained in this section reflects information from publicly available sources, and may not reflect all information that will be used for GSP technical analysis.

This section of the GSP satisfies Section 354.8 of the SGMA regulations.

1.2.1 Plan Area Definition

The Basin is in California's Central Coast Hydrologic Region. It is beneath the Cuyama Valley, which is bounded by the Caliente Range to the northwest and the Sierra Madre Mountains to the southeast. The Basin was initially defined in Bulletin 118. The boundaries of the Cuyama Basin were delineated by DWR because they were the boundary between permeable sedimentary materials and impermeable bedrock. DWR defines this boundary as "impermeable bedrock with lower water yielding capacity. These include consolidated rocks of continental and marine origin and crystalline/or metamorphic rock."

1.2.2 Plan Area Setting

Figure 1-1 shows the Basin and its key geographic features. The Basin encompasses an area of about 378 square miles and includes the communities of New Cuyama and Cuyama, which are located along State Route (SR) 166 and Ventucopa, which is located along SR 33. The Basin encompasses an approximately 55-mile stretch of the Cuyama River, which runs through the Basin for much of its extent before leaving the Basin to the northwest and flowing towards the Pacific Ocean. The Basin also encompasses stretches of Wells Creek in its north-central area, Santa Barbara Creek in the south-central area, the Quatal Canyon drainage and Cuyama Creek in the southern area of the Basin. Most of the agriculture in the Basin occurs in the central portion east of New Cuyama, and along the Cuyama River near SR 33 through Ventucopa.

Figure 1-2 shows the CBGSA boundary. The CBGSA boundary covers all of Cuyama Basin. The CBGSA was created by a Joint Exercise of Powers Agreement among the following agencies:

- Counties of Kern, San Luis Obispo, and Ventura
- SBCWA, representing the County of Santa Barbara
- CBWD
- CCSD

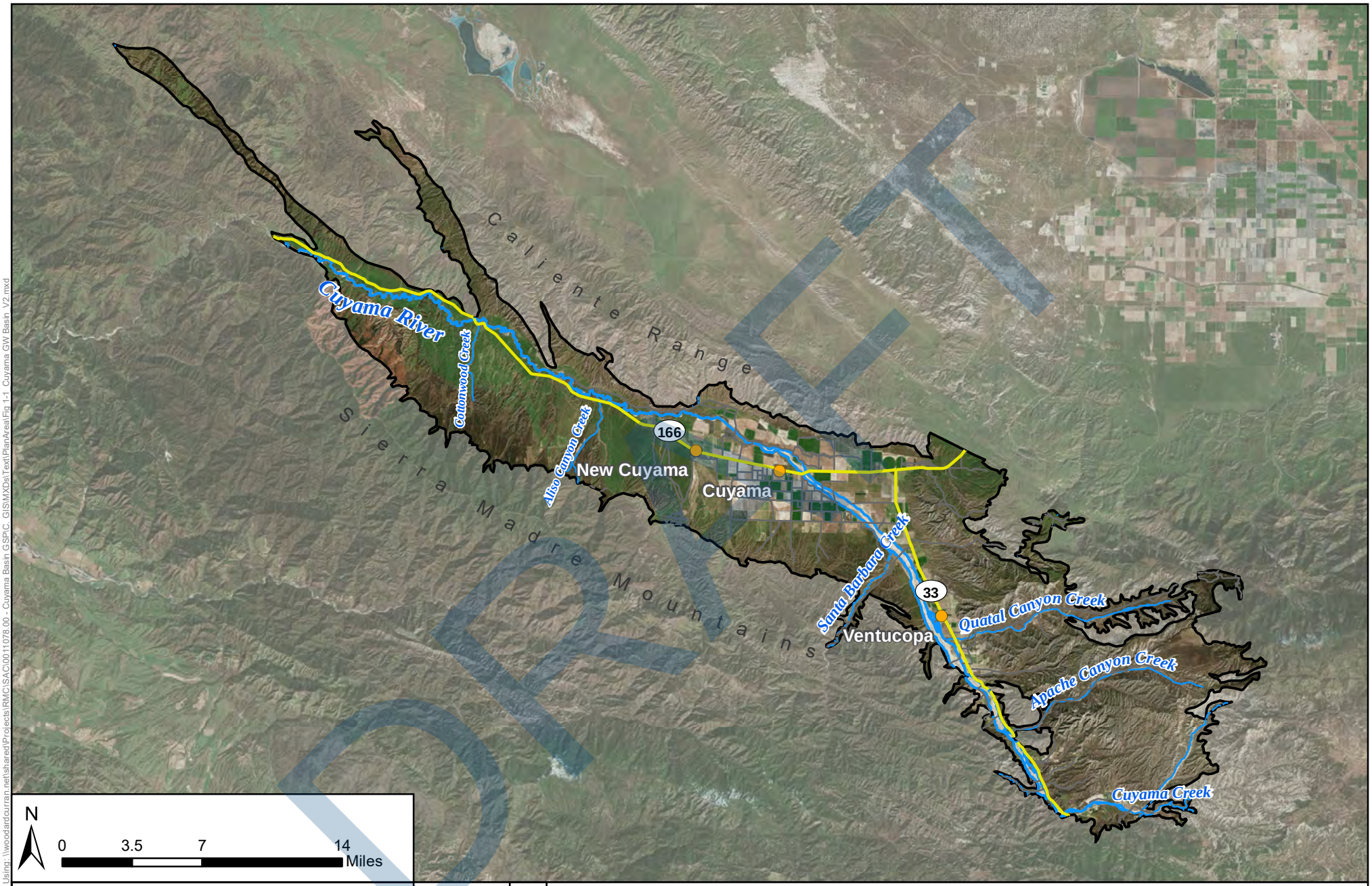

Figure 1-1 - Cuyama Valley Groundwater Basin

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

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Legend

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

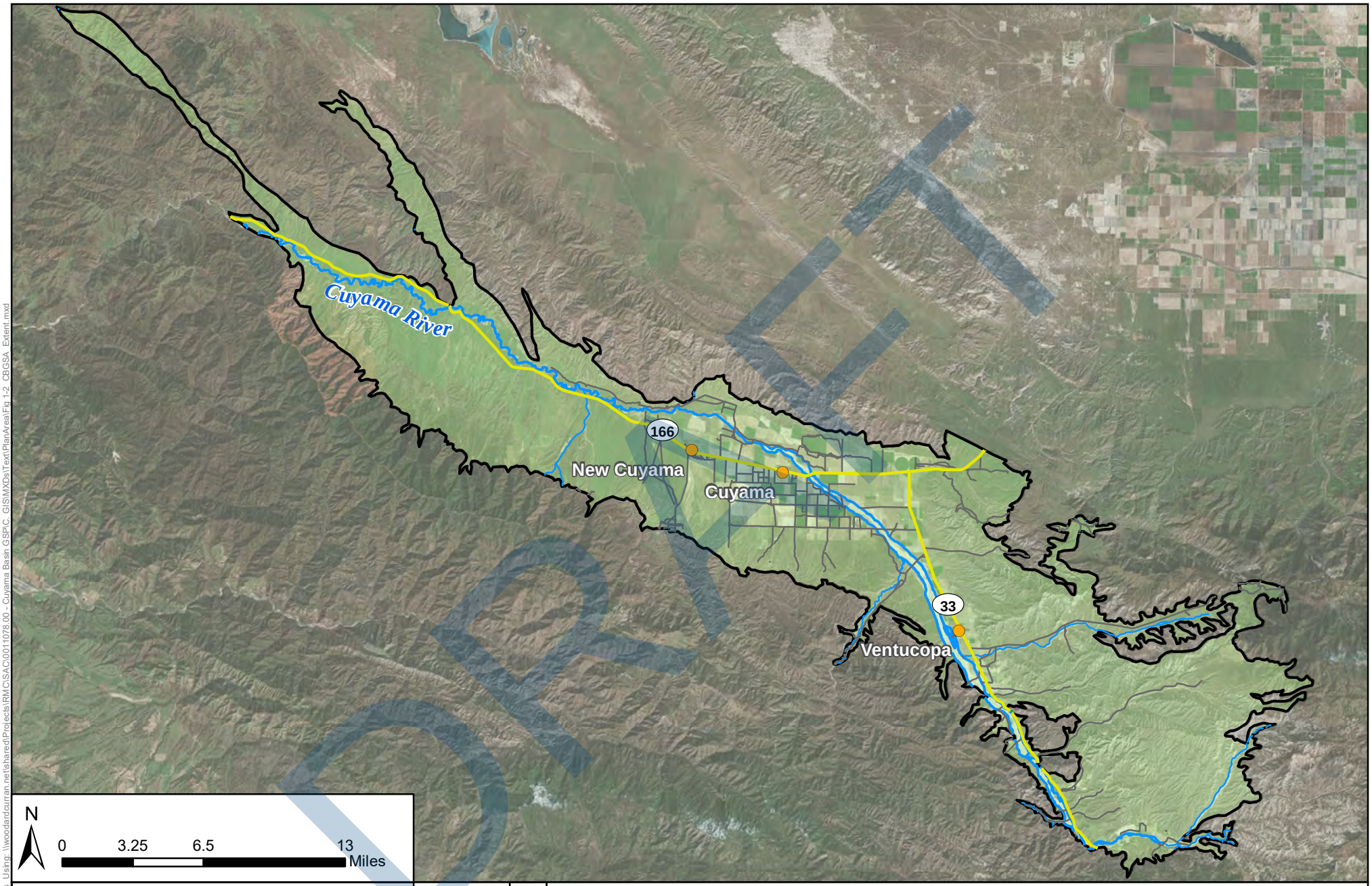

Figure 1-2 - Cuyama Valley Groundwater Sustainability Agency Boundary

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

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Figure 1-3 shows the Basin and neighboring groundwater basins. The Carrizo Plain Basin is located immediately northeast of the Cuyama Basin and they share a boundary at a location about 5 miles east of the intersection of SR 166 and SR 133. The San Joaquin Valley Basin is located just east of the Carrizo Plain Basin. The Basin also shares a boundary with the Mil Potrero Area Basin, which is located just east of one of the Basin's southeastern tips, and the Lockwood Valley Basin is located close to the Basin's southern area but does not share a boundary with it. To the southwest, and more distant from the Basin, are the Santa Maria, San Antonio Creek Valley and Santa Ynez River Valley basins, which are located about 30 to 40 miles southwest of the Cuyama Basin.

Figure 1-4 depicts the Basin's extent relative to the boundaries of the various counties that overlie the Basin. Santa Barbara County has jurisdiction over the largest portion of the Basin (168 square miles), covering most of the area south of the Cuyama River, as well as Ventucopa and a small area to the north of that community. San Luis Obispo County has jurisdiction over areas north of the Cuyama River (covering 77 square miles). The Cuyama River marks the boundary between San Luis Obispo County and Santa Barbara County. Kern County has jurisdiction over the smallest extent of Cuyama Basin area compared to the other counties (13 square miles). Its jurisdictional coverage is located just east of the SR 166 and SR 33 intersection, as well as tips of the Basin in the Quatal Canyon area. Ventura County has jurisdiction over the southeastern area of the Basin (covering 120 square miles), including the area east of Ventucopa.

Figure 1-5 shows the non-county jurisdictional boundaries in the Basin. The CBWD was formed in 2016 and covers a large area of the Basin (about 130 square miles), from a location about 5 miles west of Wells Creek to 2 miles east of the intersection of SR 166 and SR 33, and south of Ventucopa along SR 33. The CCSD was formed in 1977 and covers a small area of the Basin (about 0.5 square miles) located along SR 166 in the community of New Cuyama.

Figures 1-6 through 1-13 show the agricultural and urban land uses in the Cuyama Basin for the years 1996, 2000, 2003, 2006, 2009, 2012, 2014 and 2016, respectively. The 1996 land use data are from historical DWR county land use surveys[1] while the 2014 and 2016 land use data were developed for DWR using remote sensing data.[2] Data for the remaining years were developed by the CBGSA using the same remote sensing method that DWR used for 2014 and 2016. Agricultural land is located primarily in the New Cuyama and Ventucopa areas, and along the SR 166 and SR 33 corridors between those communities. There is a regular rotation of crops with between 9,000 and 15,000 acres of agricultural area left idle each year between 2000 and 2016 (the 1996 dataset does not include records of idle land). Areas that are in active agricultural use primarily produce 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.

[1] https://www.water.ca.gov/Programs/Water-Use-And-Efficiency/Land-And-Water-Use/Land-Use-Surveys

[2] https://gis.water.ca.gov/app/CADWRLandUseViewer/

In addition to the crop types shown on the maps, much of the land area in the Basin, particularly in the western and eastern areas, consists of non-irrigated pasture. These are not present on the map because they are not detected by the remote sensing approach. Some recently planted crops are also not shown on the maps because they were either not detected by the remote sensing approach or were planted subsequent to the most recently mapped year of 2016. These include a new vineyard along SR 166 in the western part of the basin (which the remote sensing approach identifies as "idle" in 2016) and new olive orchards along SR 33. These additional land uses will be accounted for in the numerical modeling used to develop water budgets for the GSP.

Figure 1-14 shows 2016 land use by water source in the Basin. Almost all of the water use in the Basin is served by groundwater. There are 37 surface water rights permits in the Basin that allow up to 116 acre-feet per year. Much of the surface water use is for stockwatering of pasture land, which may not be included in the land use dataset shown in the figure.

Figure 1-15 shows the number of domestic wells per square mile and the average depth of domestic wells in each square mile in the Basin. Figure 1-15 shows a grid pattern where each block on the grid is a section that covers 1 square mile of land. The number in each square represents the average depth of the well(s) in the section. Most of the sections in the Basin that have domestic wells contain only one well, while twelve sections contain two wells each, three sections contain three wells each, four sections contain four wells each, and one section contains six wells. Wells range in depth broadly across the Basin, from as shallow as 120 feet below ground surface in the southeast portion of the Basin to 1,000 feet below ground surface in the central portion of the Basin.

Figure 1-16 shows the density and average depth of production wells in the Basin per square mile. There is a wide distribution of production well density in the Basin (between 1 and 11 wells per square mile). Depths of production wells range from 50 feet below ground surface (bgs) on the outer edges of the Basin, to over 1,200 feet bgs in the central portion of the Basin.

Figure 1-17 shows the density and average depth of public wells in the Cuyama Basin. The Basin contains three public wells, one just south of New Cuyama, one east of Ventucopa and one at the southern tip of the Basin. These wells have depths of 855, 280 and 800 feet, respectively.

Information presented in Figures 1-15 through 1-17 reflect information contained in DWR's well completion report database, which contains information about the majority of wells drilled after 1947. However, some wells may not have been reported to DWR (potentially up to 30 percent of the total), and therefore are not included in the database or in these figures. Furthermore, designations of each well as a domestic, production, or public well were developed by DWR based on information contained in the well completion reports and have not been modified for this document.

Figure 1-18 shows the public lands in and around the Basin. Some portions of the land that overlies the Cuyama Basin, and most of the areas immediately surrounding the Basin, have a federal or State jurisdictional designation. The Los Padres National Forest covers most of the Basin's northwestern arm, then runs just outside the Basin's western boundary until the Forest boundary turns east at about Ventucopa where it covers the southern part of the basin. The balance of the northwestern arm consists of

private holdings and the state-owned Carrizo Plains Ecological Reserve which extends into the basin to the Santa Barbara County-San Luis Obispo County line at the Cuyama River. 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 has jurisdiction over a large area outside the Basin, and along the Basin's northern boundary, including small parts of the Basin north of the Cuyama River. Most of the northeastern arm of the Basin is designated as State Lands.

Figure 1-19 shows that the Basin is located within the Cuyama Watershed, which lies within the larger Santa Maria watershed, with the Basin occupying roughly the entirety of the Santa Maria Basin's eastern contributing watershed, and a small part of the Cuyama Basin's northeastern arm that flows into the Estrella River Basin due to the topography present in this area. Figure 1-19 illustrates the Cuyama Watershed's location in the Santa Maria Basin, as well as the larger Basin's major receiving water bodies, which include the Santa Maria River, the Cuyama River, Aliso Canyon Creek, Cottonwood Creek, Apache Canyon Creek, Santa Barbara Creek, the Quatal Canyon drainage, and Cuyama Creek.

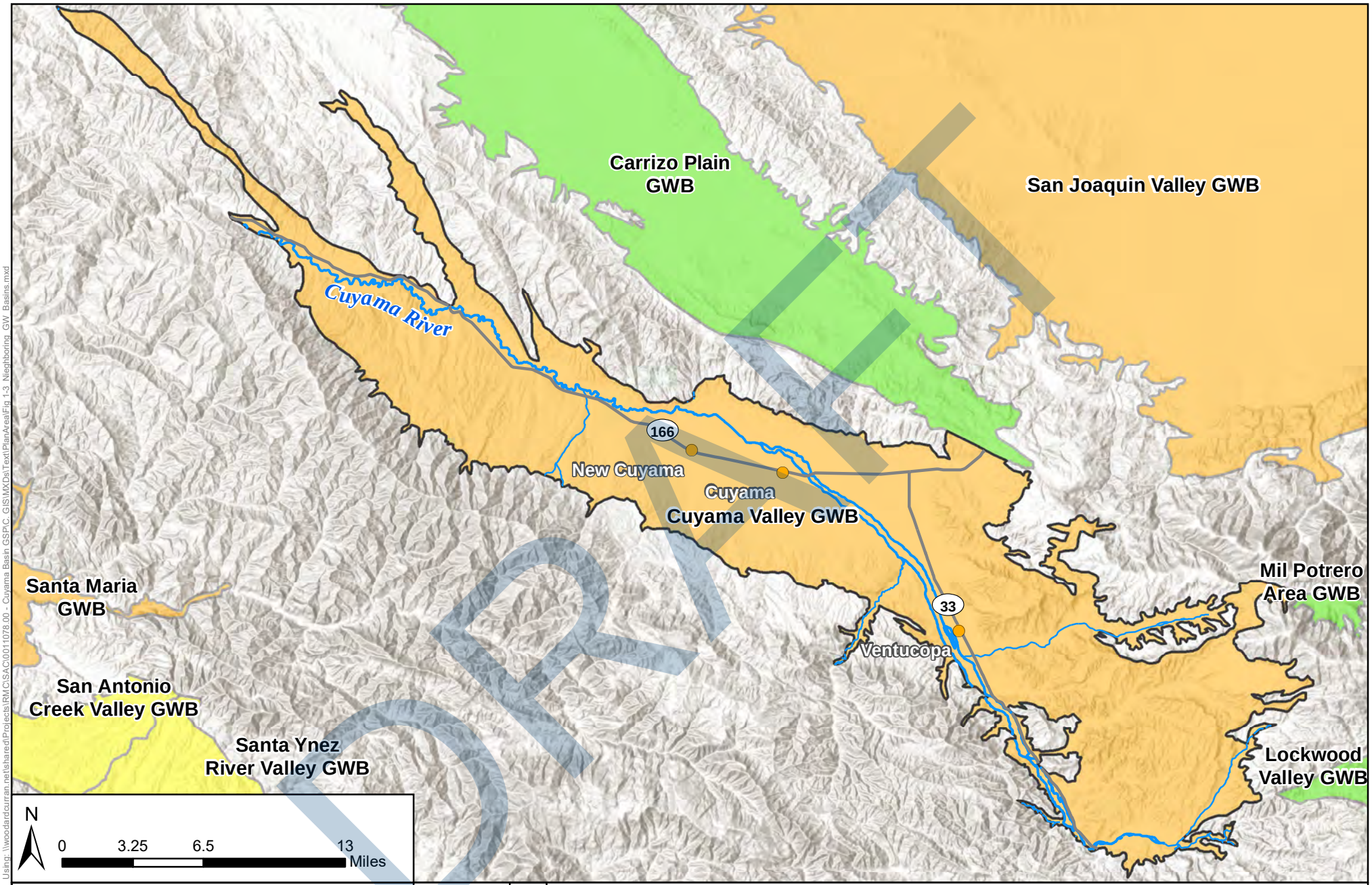

Figure 1-3 - Neighboring Groundwater Basins

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

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Legend

- Towns
- Cuyama Basin
- Highways
- Cuyama River
- Streams/Creeks

Basin Priority

- High Priority
- Medium Priority
- Low Priority
- Very Low Priority

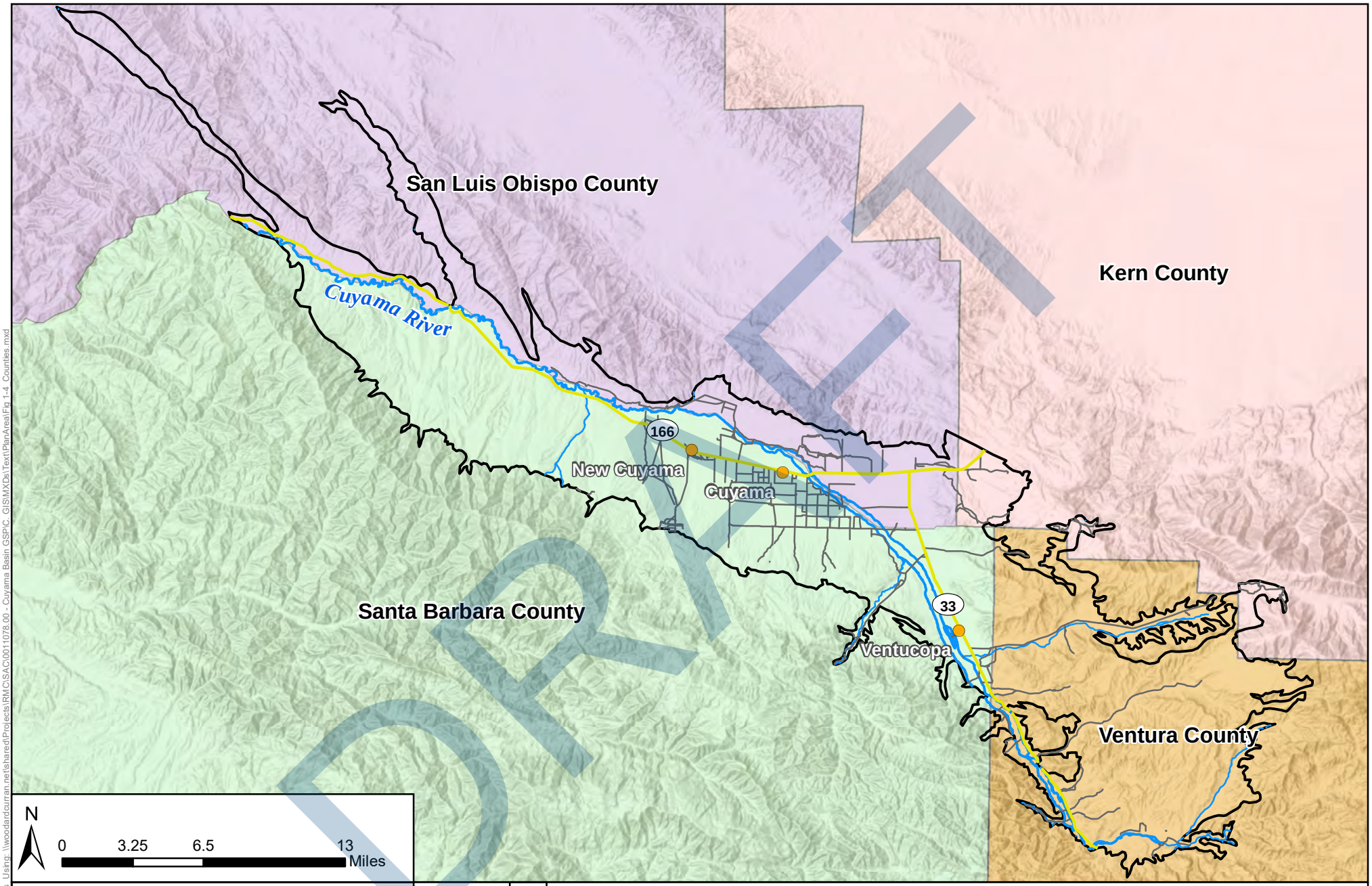

Figure 1-4 - Counties Overlying Cuyama Basin

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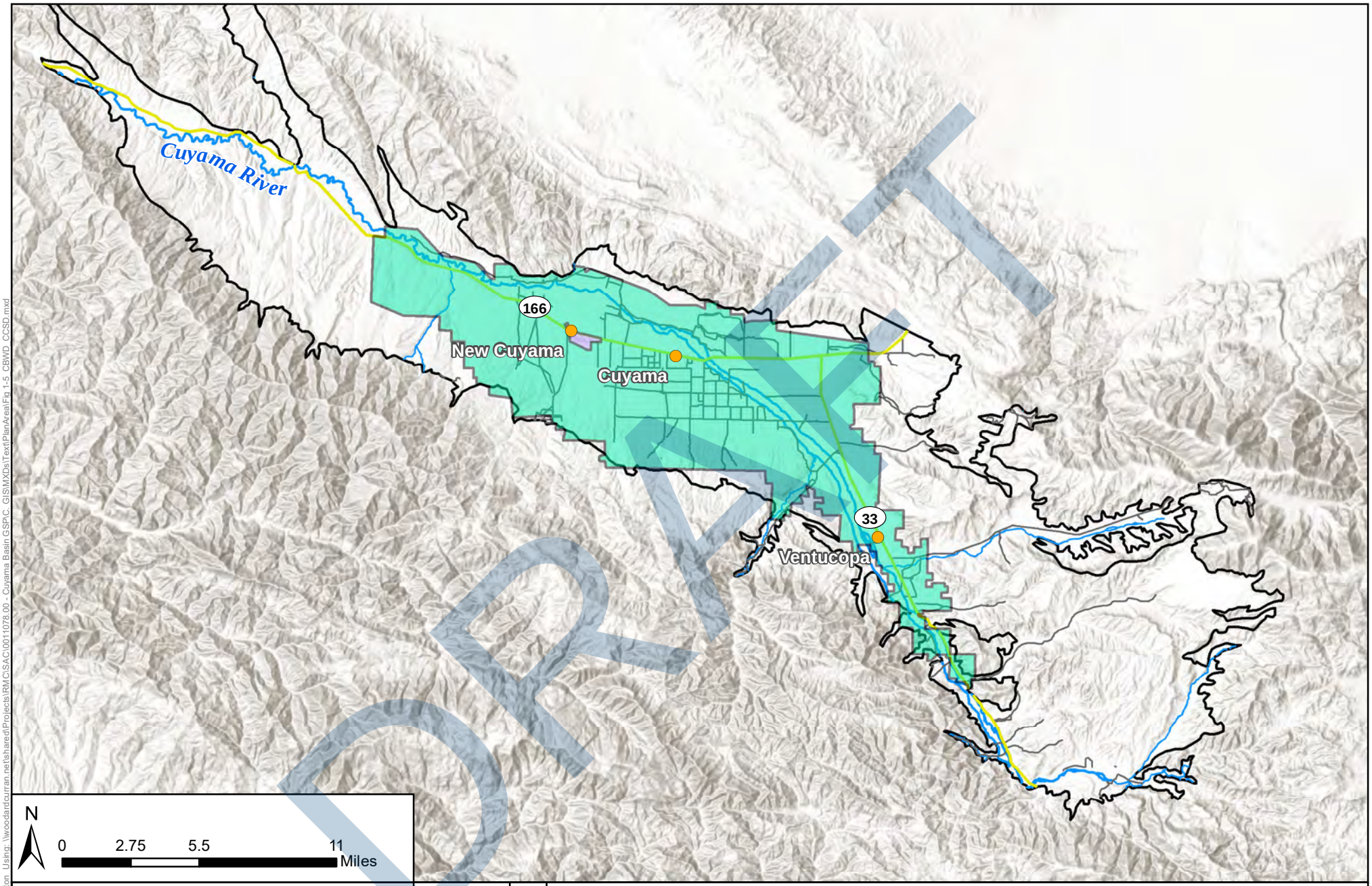

Figure 1-5 - Non-County Jurisdictional Boundaries

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

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Legend

- Cuyama Basin
- Towns
- Cuyama Community Service District
- Cuyama Basin Water District
- Highways
- Local Roads
- Cuyama River
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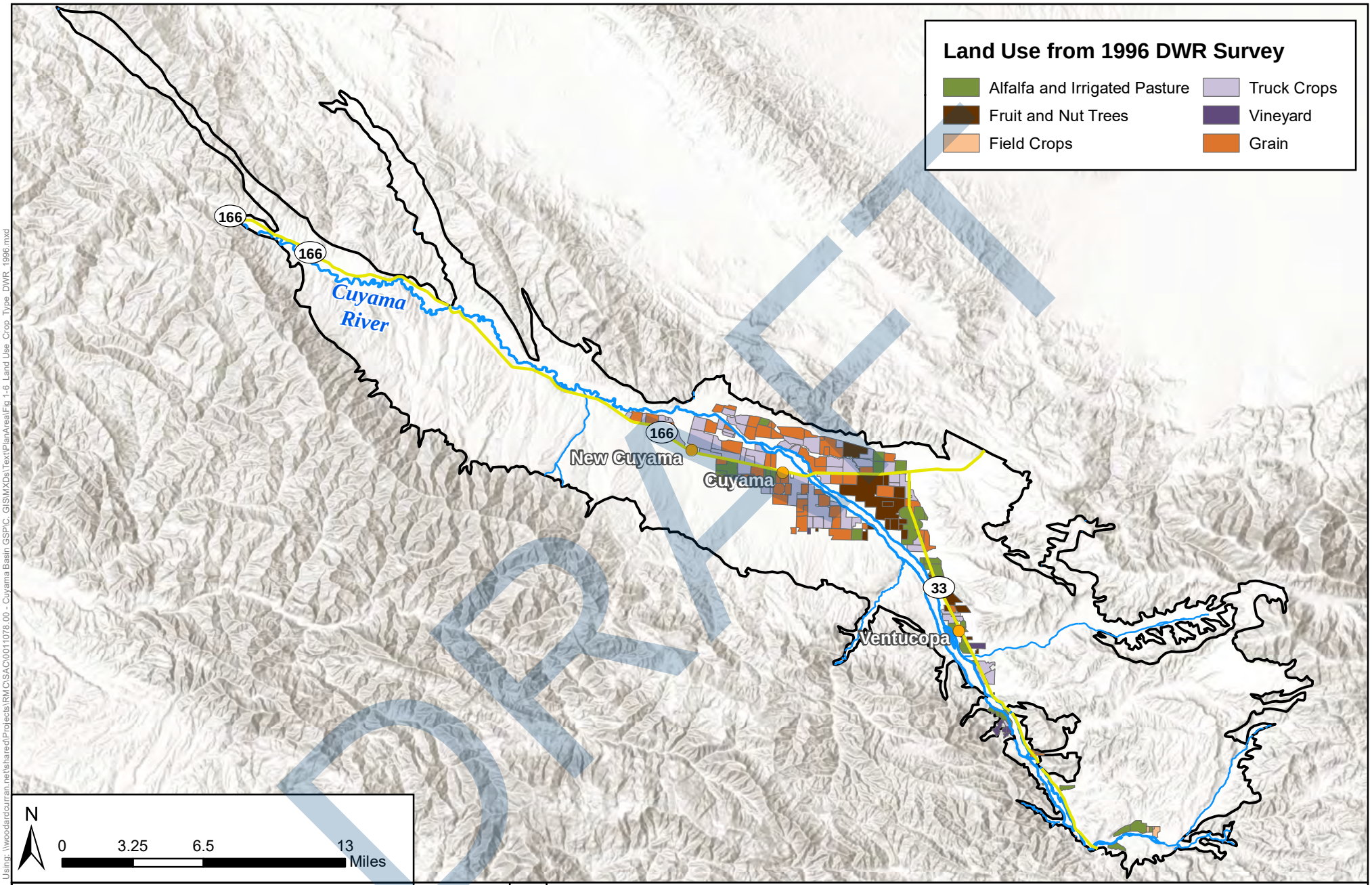

Figure 1-6 - 1996 Land Use

Cuyama Basin Groundwater Sustainability Agency

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Legend

- Cuyama Basin
- Towns
- Highways
- Cuyama River
- Streams/Creeks

Source: California Department of Water Resources County Land Use Surveys, 1996 dataset.
https://www.water.ca.gov/Programs/Water-Use-And-Efficiency/Land-And-Water-Use/Land-Use-Surveys

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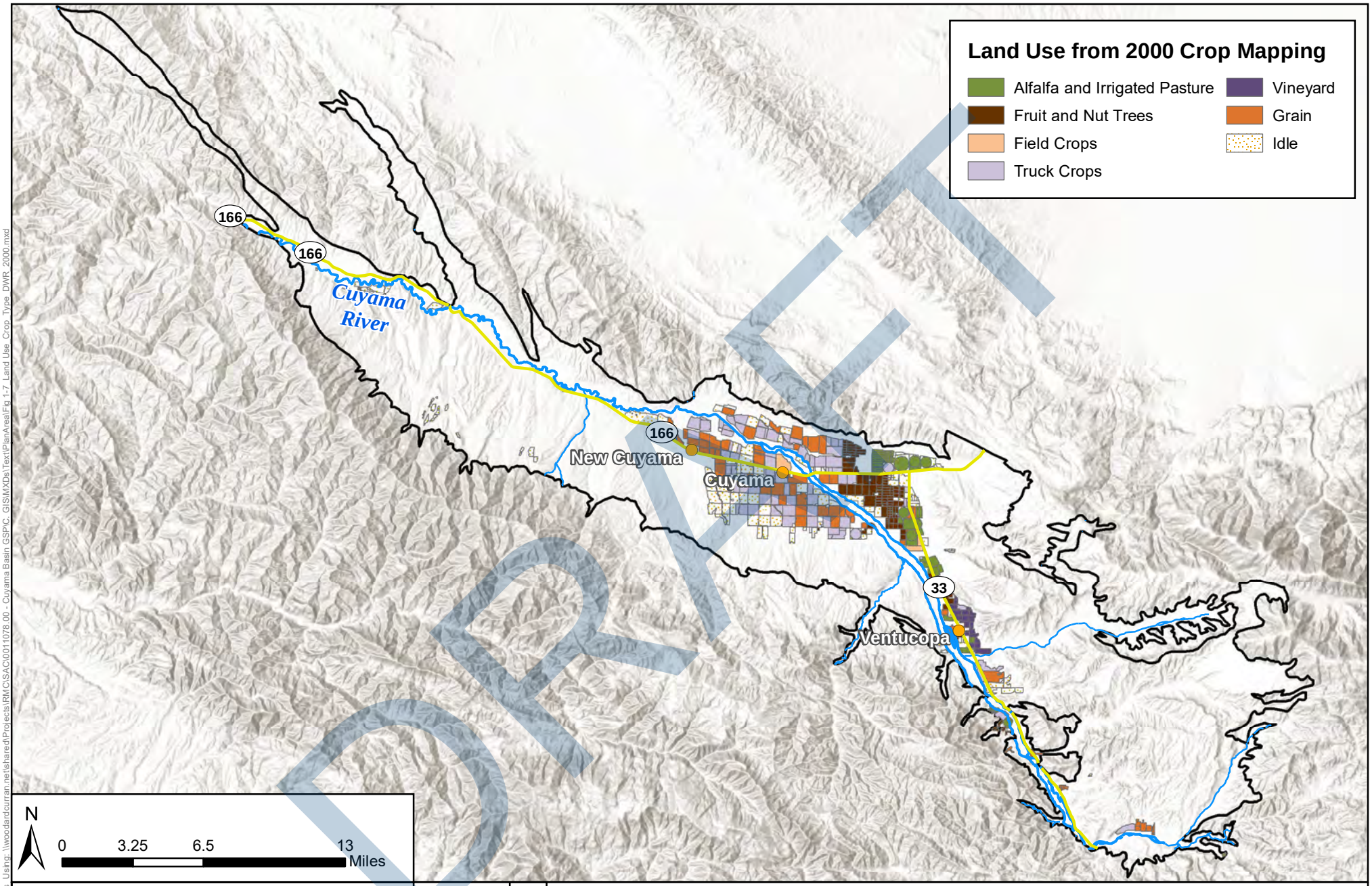

Figure 1-7 - 2000 Land Use

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

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Legend

- Cuyama Basin
- Towns
- Highways
- Cuyama River
- Streams/Creeks

Source: Crop Mapping developed by LandIQ for the Cuyama Basin GSA, 2000 dataset

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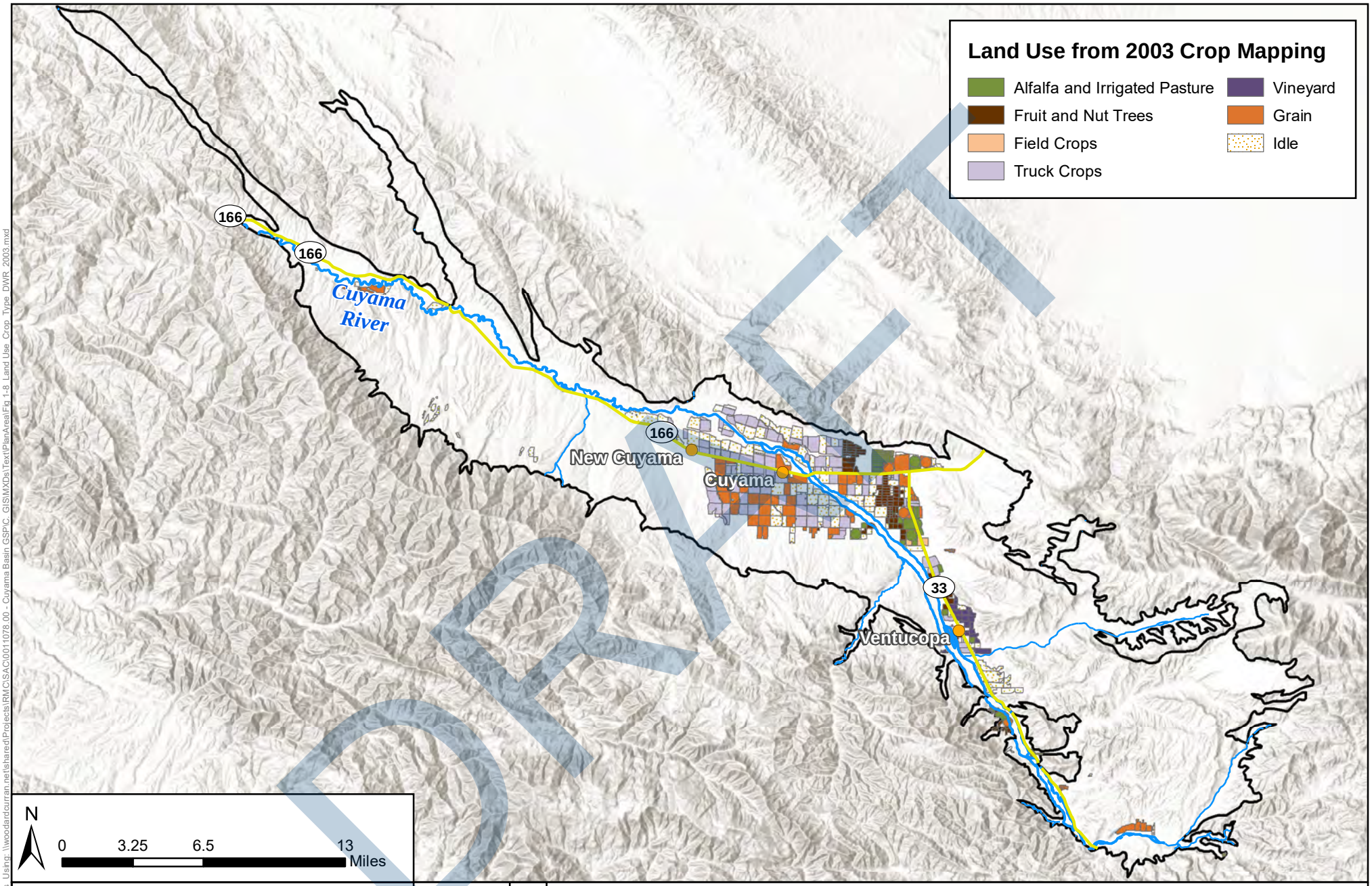

Figure 1-8 - 2003 Land Use

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- Cuyama Basin
- Towns
- Highways
- Cuyama River
- Streams/Creeks

Source: Crop Mapping developed by LandIQ for the Cuyama Basin GSA, 2003 dataset.

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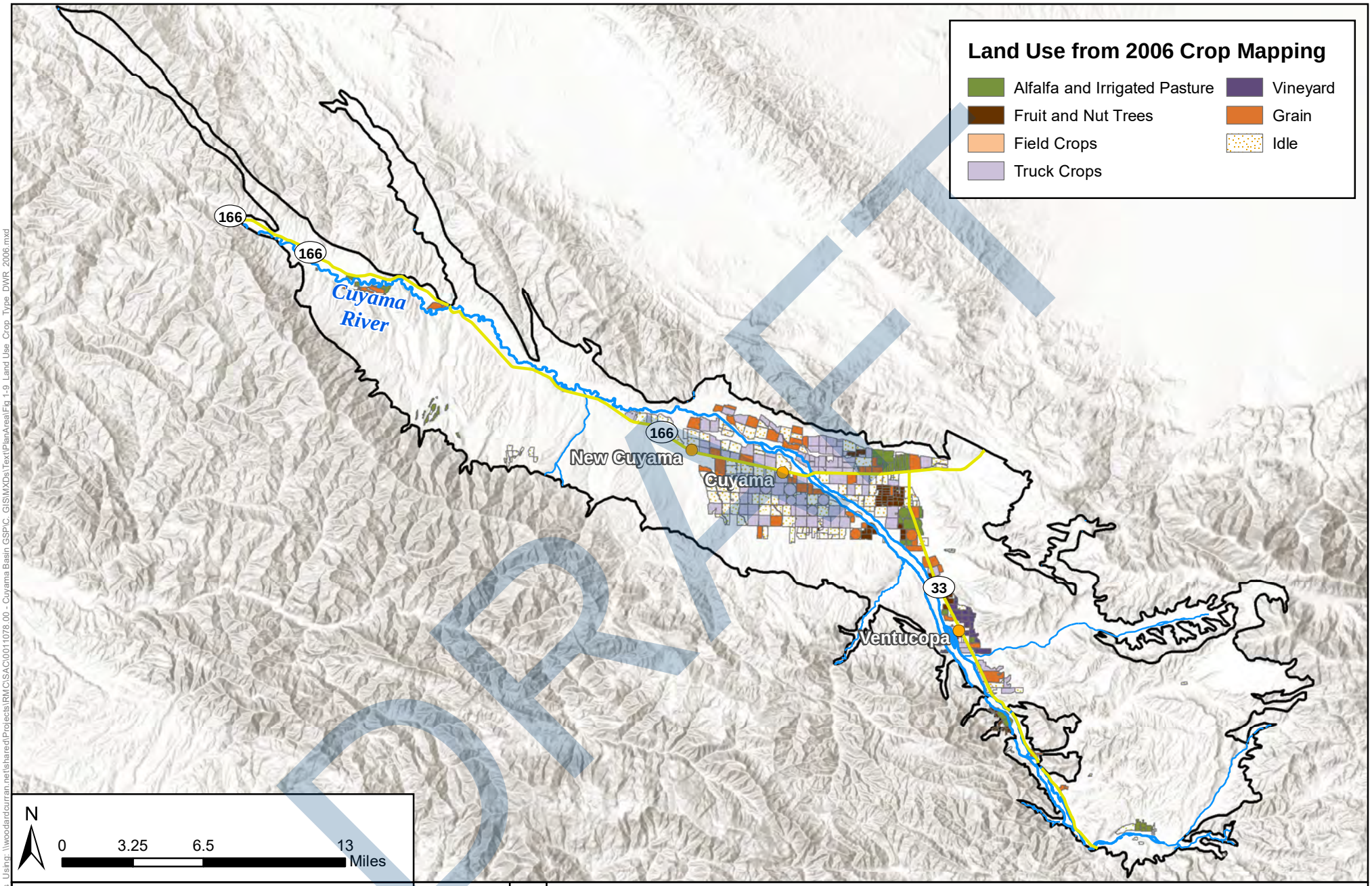

Figure 1-9 - 2006 Land Use

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Legend

- Cuyama Basin
- Towns
- Highways
- Cuyama River
- Streams/Creeks

Source: Crop Mapping developed by LandIQ for the Cuyama Basin GSA, 2006 dataset.

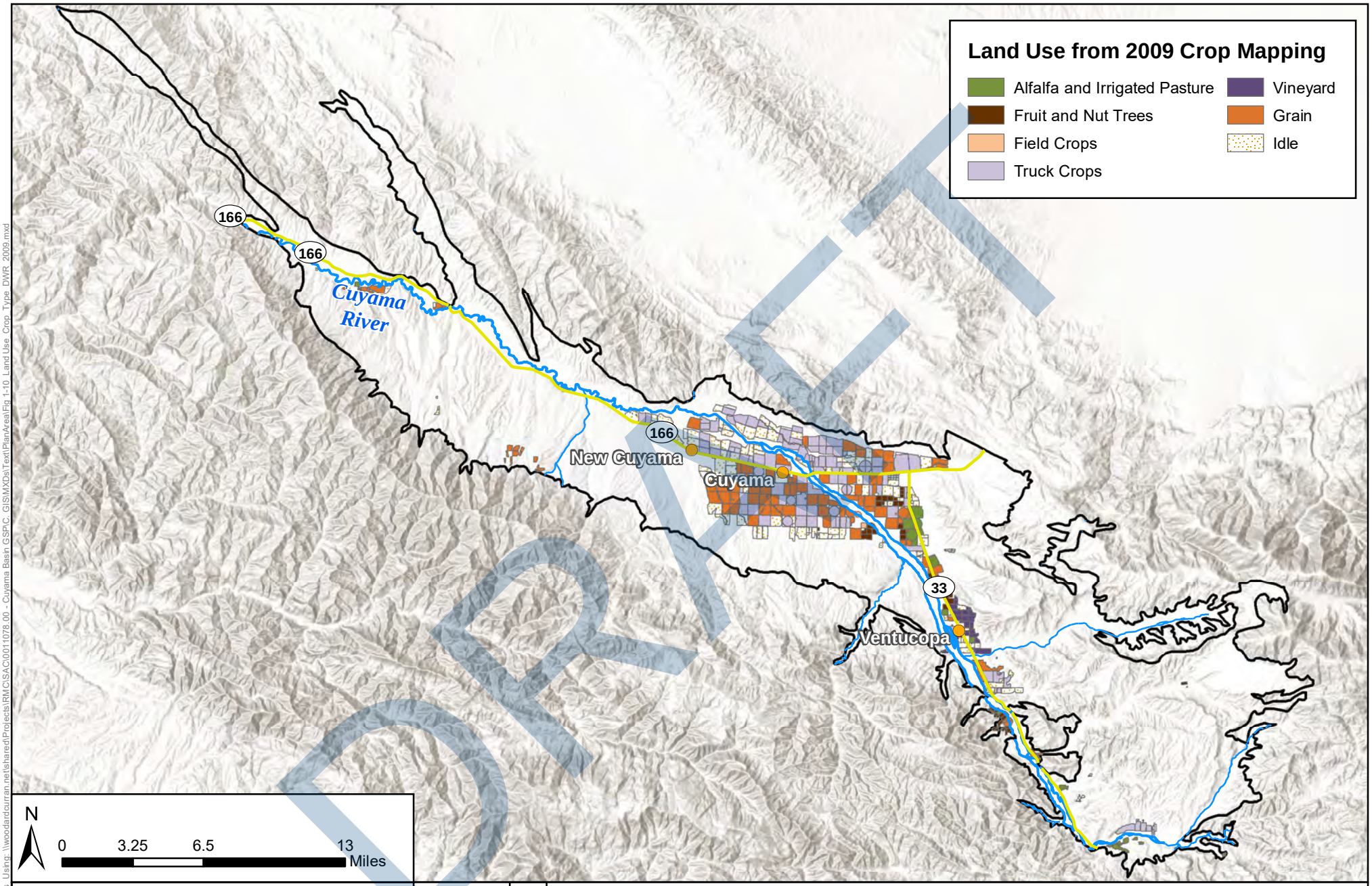

Figure 1-10 - 2009 Land Use

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Legend

- Cuyama Basin
- Towns
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- Cuyama River
- Streams/Creeks

Source: Crop Mapping developed by LandIQ for the Cuyama Basin GSA, 2009 dataset.

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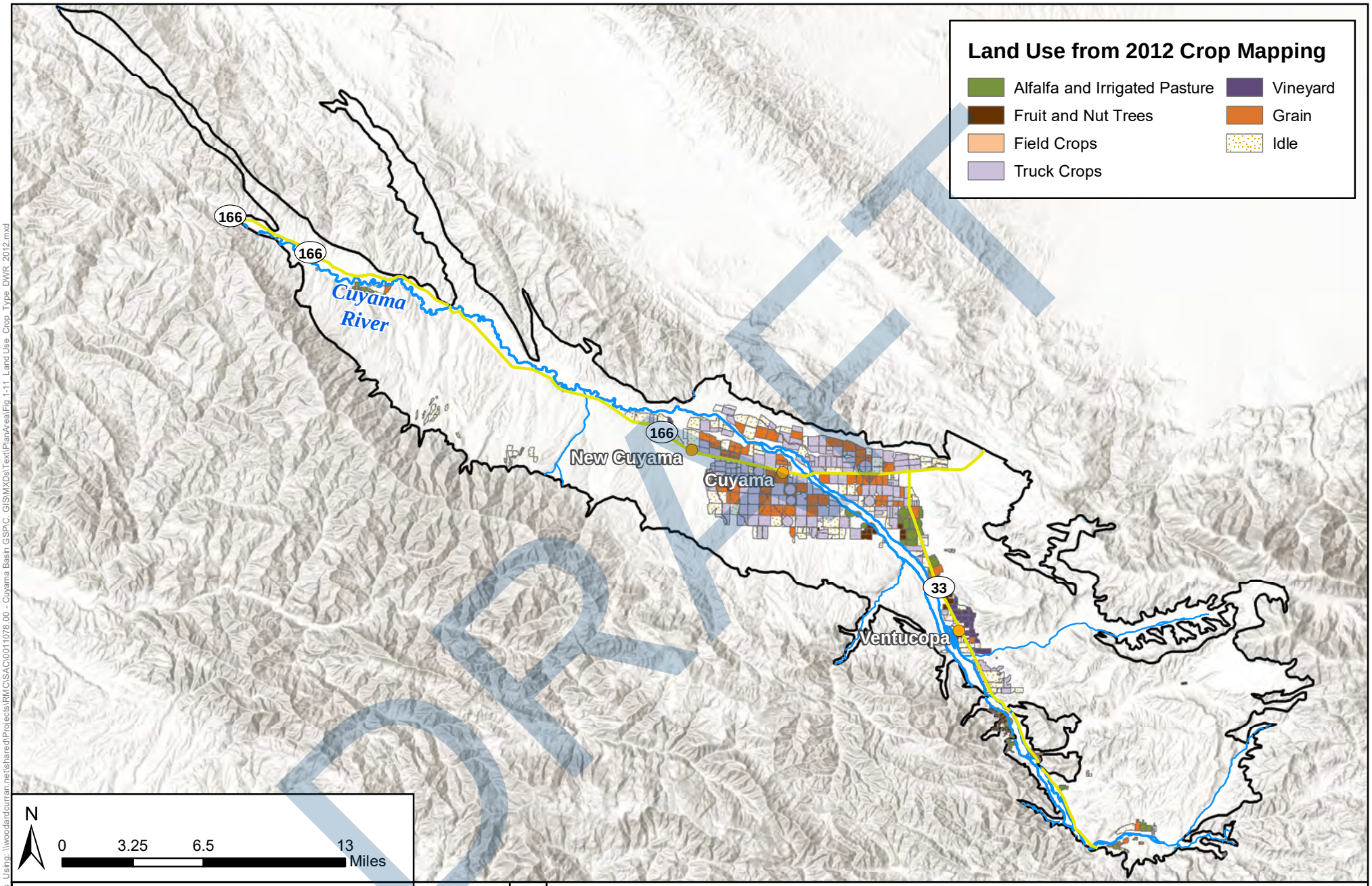

Figure 1-11 - 2012 Land Use

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- Cuyama Basin
- Towns
- Highways
- Cuyama River
- Streams/Creeks

Source: Crop Mapping developed by LandIQ for the Cuyama Basin GSA, 2012 dataset.

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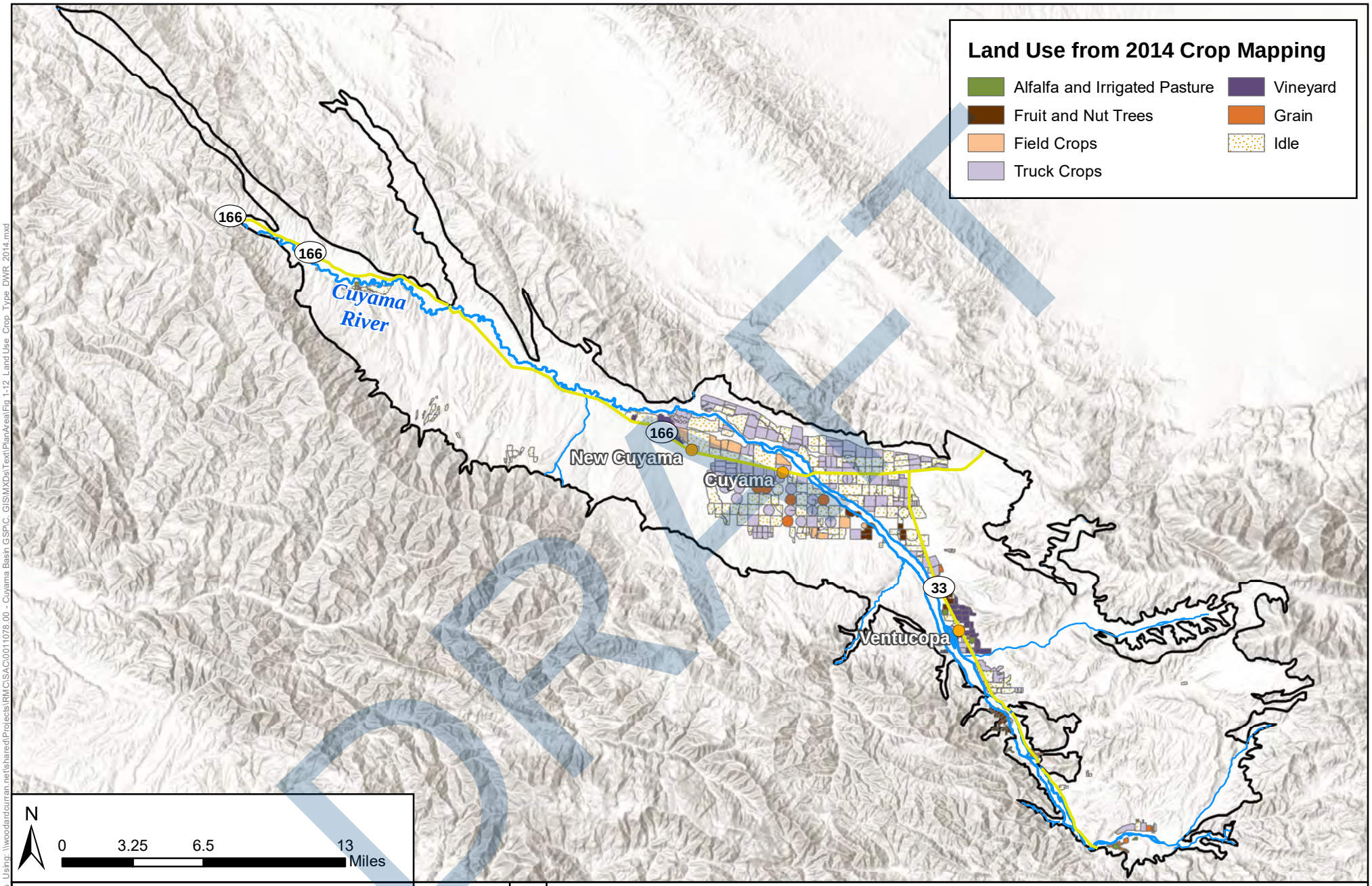

Figure 1-12 - 2014 Land Use

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

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Legend

- Cuyama Basin
- Towns
- Highways
- Cuyama River
- Streams/Creeks

Source: California Department of Water Resources County Land Use Surveys, 2014 dataset. https://gis.water.ca.gov/app/CADWRLandUseViewer/

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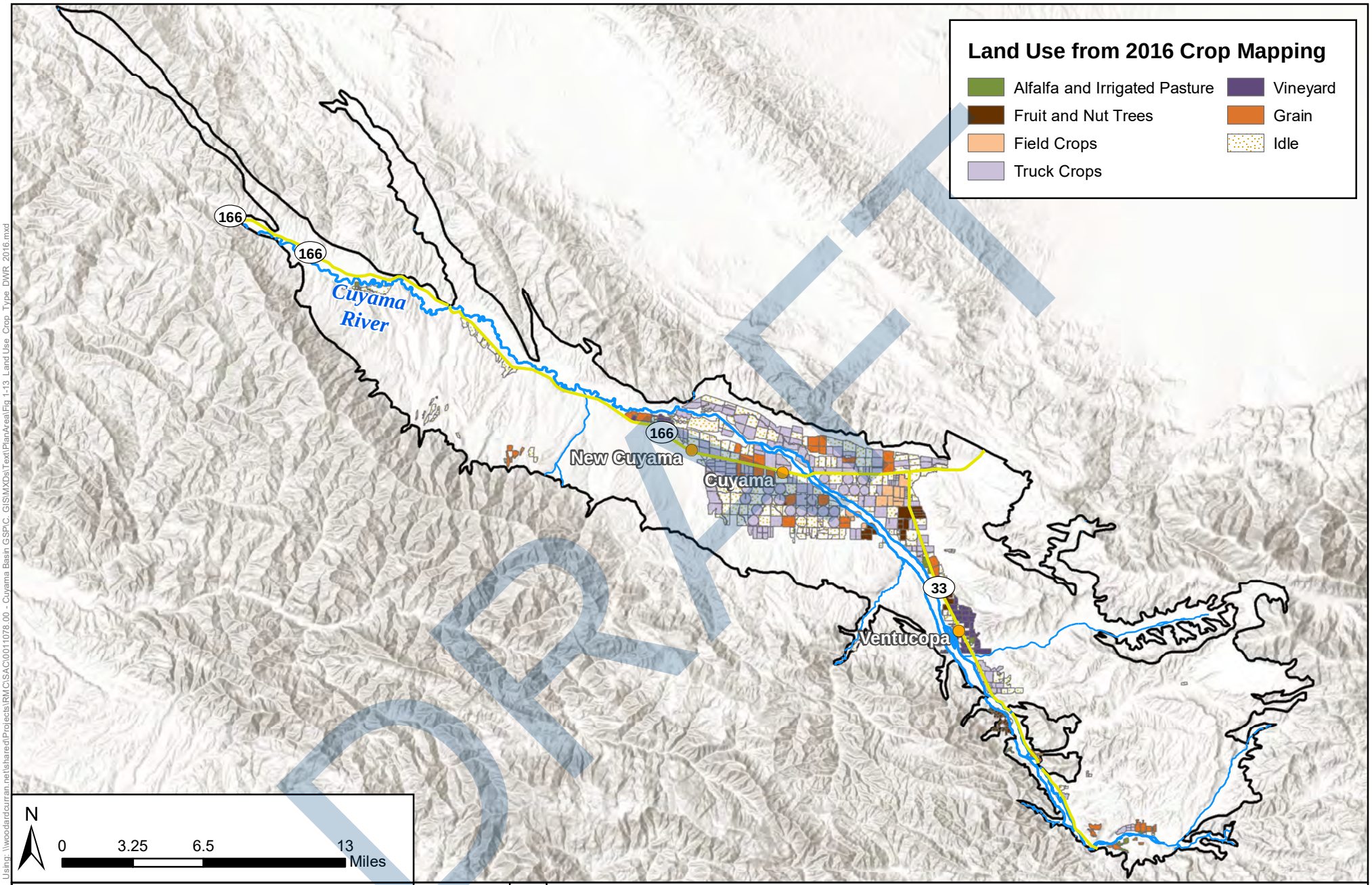

Figure 1-13 - 2016 Land Use

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Legend

- Cuyama Basin
- Towns
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Source: California Department of Water Resources County Land Use Surveys, 2016 dataset. https://gis.water.ca.gov/app/CADWRLandUseViewer/

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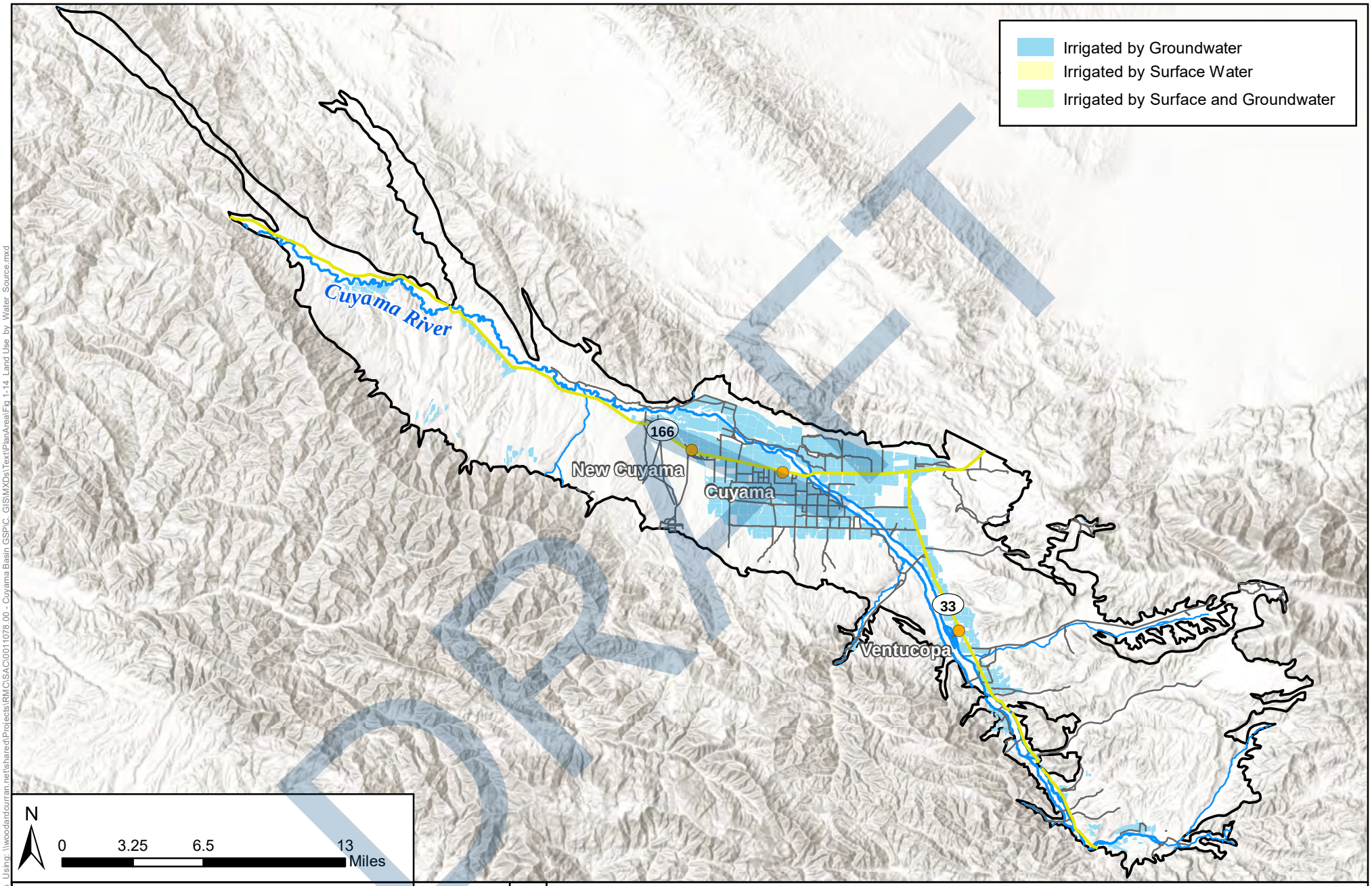

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0 3.25 6.5 13 Miles

Figure 1-14 - Land Use by Water Source

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Legend

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

Source: California Department of Water Resources Statewide Crop Mapping, 2016 dataset. https://gis.water.ca.gov/app/CADWRLandUseViewer/

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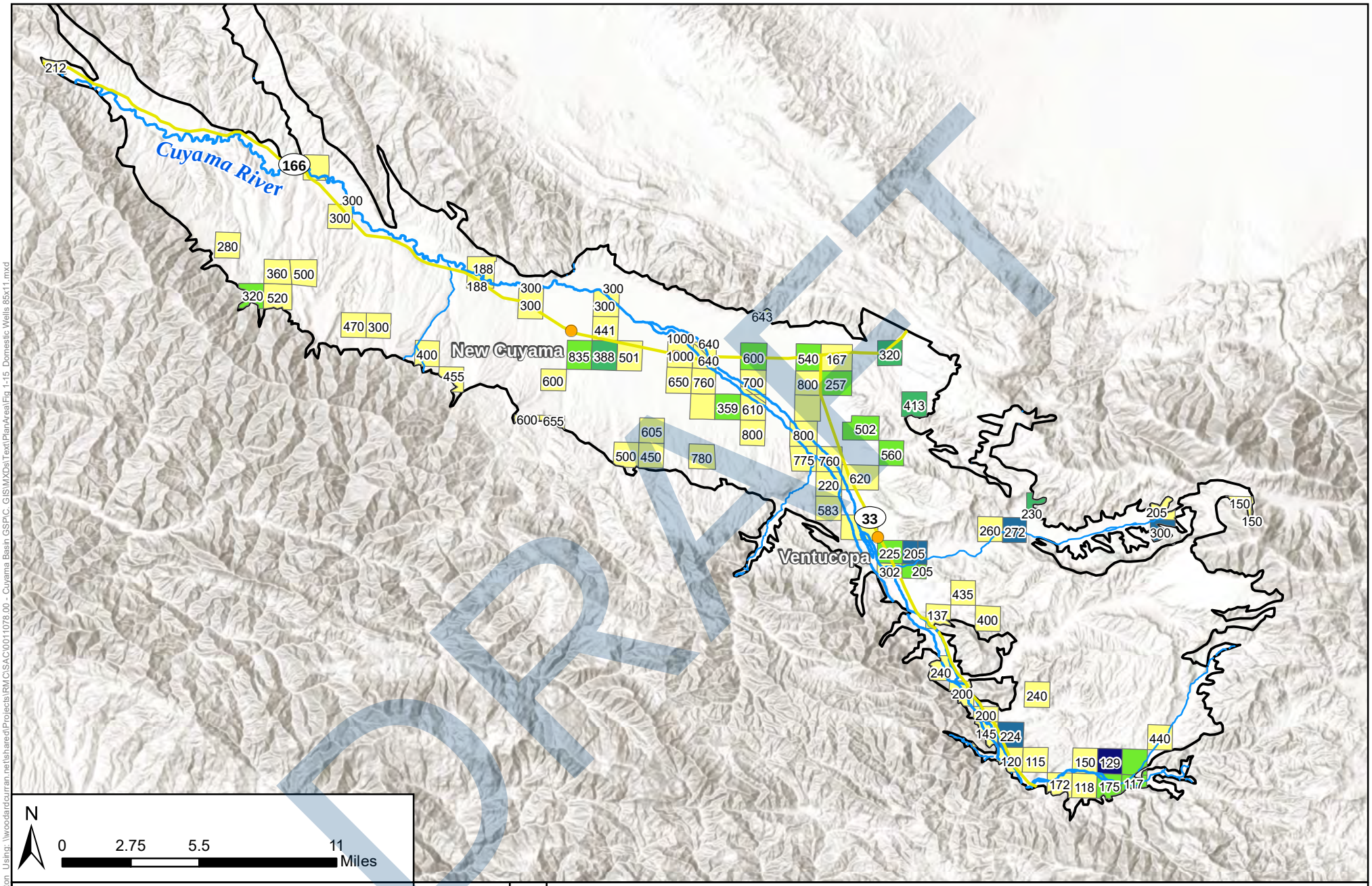

Figure 1-15 - Domestic Well Density and Average Depths

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

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Legend

- Cuyama Basin
- Towns
- Highways
- Cuyama River
- Streams/Creeks

Number of Domestic Wells by Township & Range

- 1 Well
- 2 Wells
- 3 Wells
- 4 Wells
- 6 Wells

Numbers in the township and range grid correspond to the average depth of the wells within that grid. Grids with no number have no associated well depth data. Average well depth is given in feet below the ground surface.

Source: Department of Water Resources, Well Completion Report Map Application. Downloaded on February 6, 2018. <https://dwr.maps.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37>

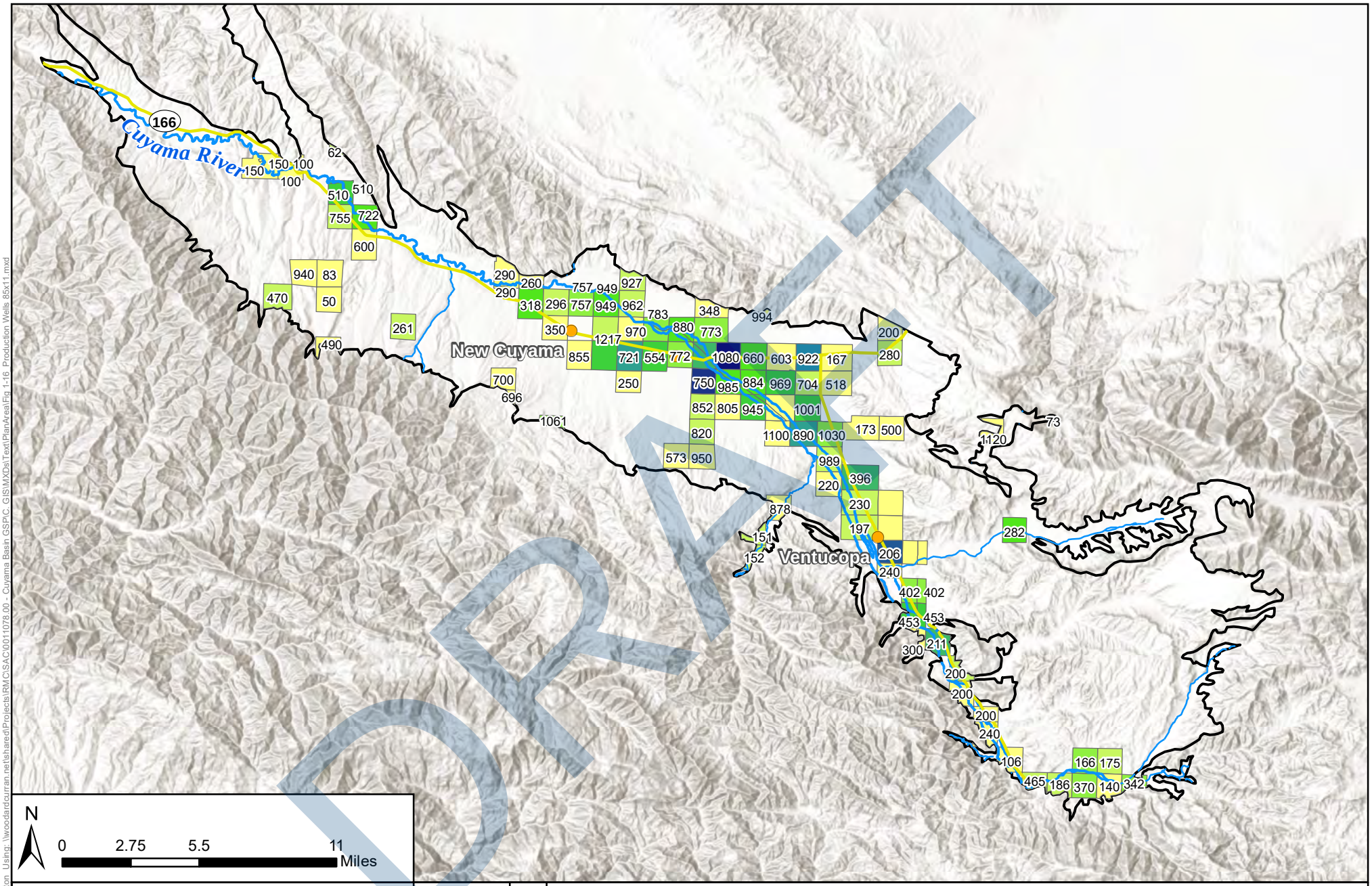

Figure 1-16 - Production Well Density and Average Depths

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

April 2019

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Legend

- Cuyama Basin
- Towns
- Highways
- Cuyama River
- Streams/Creeks

Number of Production Wells by Township & Range

- 1 Well
- 2 Wells
- 3 Wells
- 4 Wells
- 5 Wells
- 6 Wells
- 7 Wells
- 8 Wells
- 9 Wells
- 10 Wells
- 11 Wells

Numbers in the township and range grid correspond to the average depth of the wells within that grid. Grids with no number have no associated well depth data. Average well depth is given in feet below the ground surface.

Source: Department of Water Resources, Well Completion Report Map Application. Downloaded on February 6, 2018. <https://dwr.maps.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37>

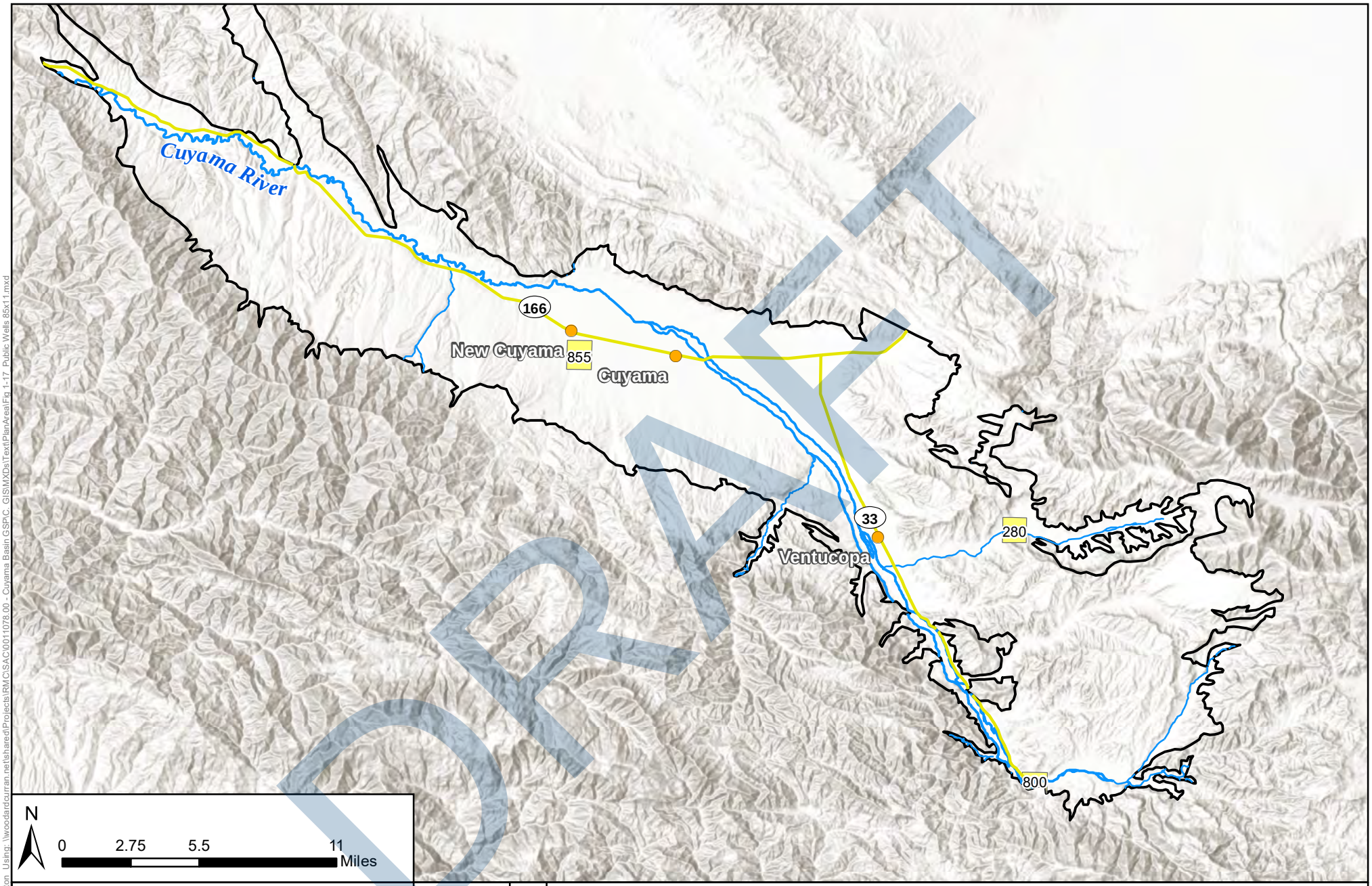

Figure 1-17 - Public Well Density and Average Depths

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Source: Department of Water Resources, Well Completion Report Map Application. Downloaded on February 6, 2018. <https://dwr.maps.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37>

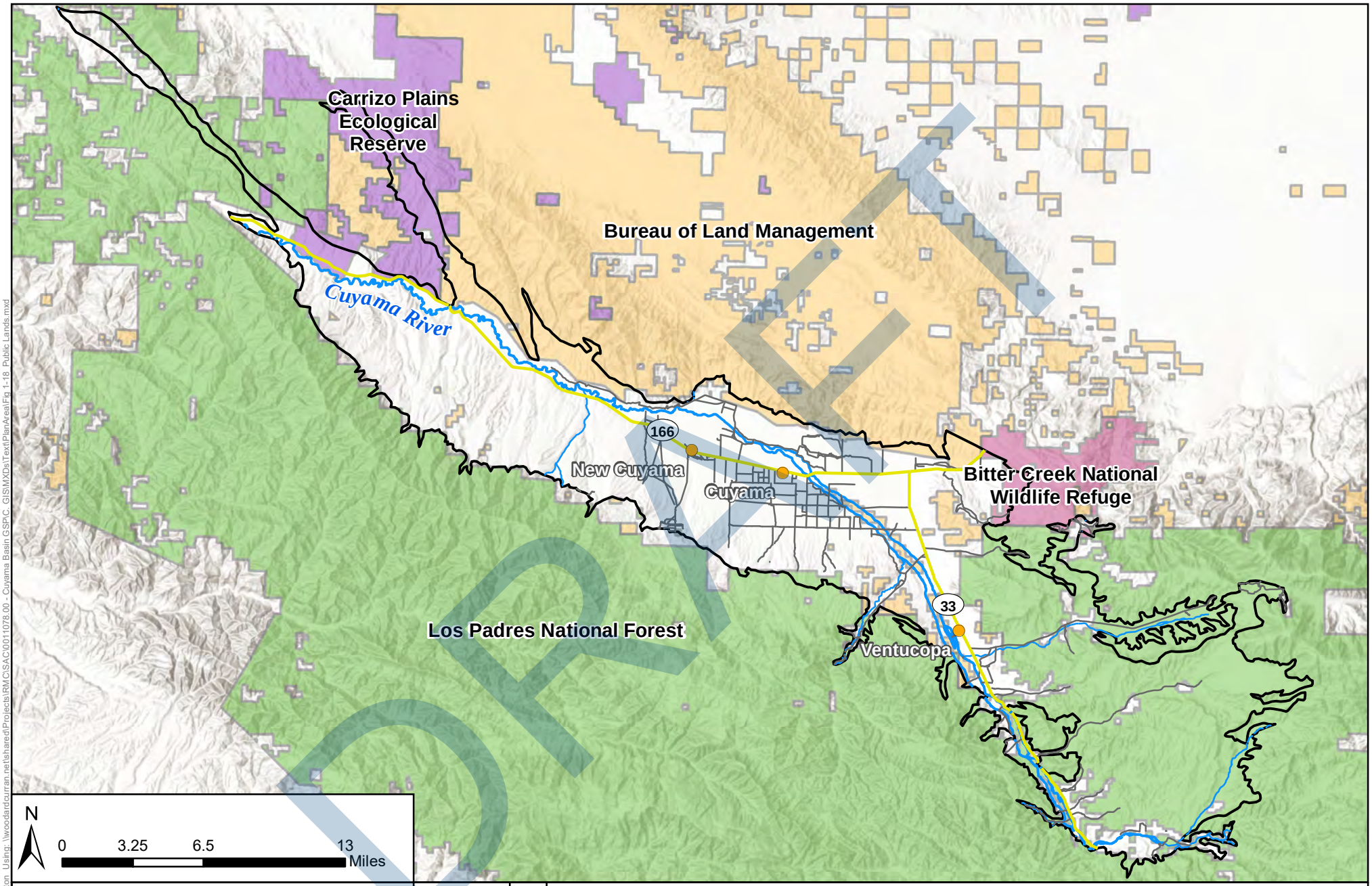

Figure 1-18 - Federal and State Lands

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Figure Exported: 6/19/2018 By: cecgleton Using: \\woodardcurran.net\shared\Projects\RMC\SAC\00111078.00 - Cuyama Basin GSP\C. GIS\MXDs\Text\PlanArea\Fig 1-18 Public Lands.mxd

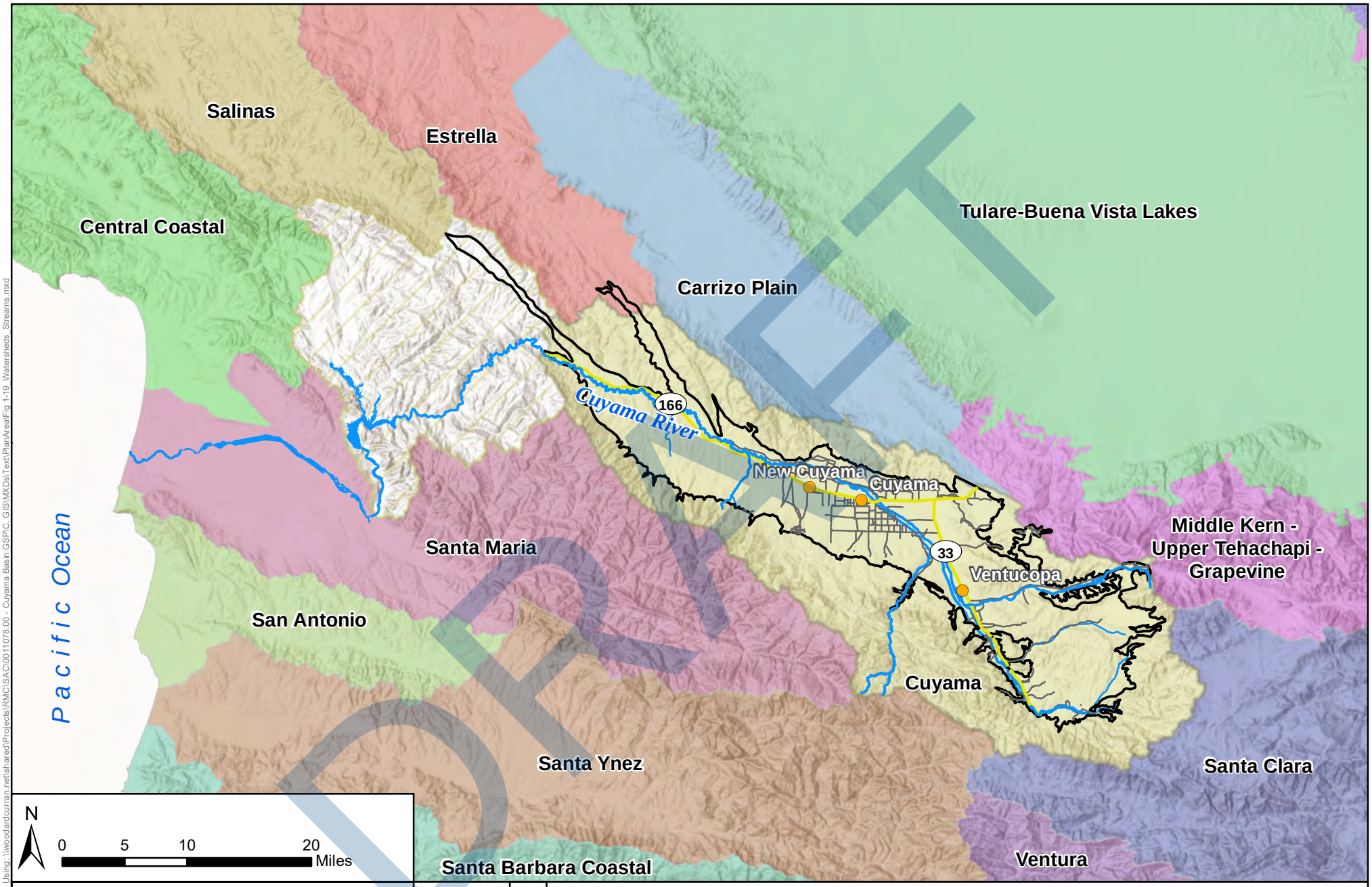

Figure 1-19 - Regional Watersheds

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Legend

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

Cuyama Watershed

- Contributes to Cuyama GW Basin
- Does Not Contribute to Cuyama GW Basin

Watershed Data Source: USGS TNM Hydrography (WBD), U.S. Geological Survey - National Geospatial Program
Watersheds are 8-digit Hydrologic Units

Figure Exported: 7/4/2018 By: mwicks Using: \\woodardcurran.net\shared\Projects\RMC\SAC\00111078.00 - Cuyama Basin GSP\C. GIS\MXDs\Text\PlanAreaFig 1-19 Watersheds Streams.mxd

1.2.3 Existing Surface Water Monitoring Programs

Existing surface water monitoring in the Cuyama Basin is extremely limited. Surface water monitoring in the basin is limited to DWR's California Data Exchange Center program, and monitoring performed by the United States Geological Survey (USGS). The only California Data Exchange Center gage in the Cuyama River watershed 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 1-20). Table 1-1 lists the active and deactivated gages in the Basin.

Table 1-1. USGS Surface Flow Gages in the Cuyama Basin

Gage Number	Location	Status	Years of Record
11136800	Cuyama River below Buckhorn Canyon near Santa Maria	Active	1959-2017
11136650	Aliso Canyon Creek near New Cuyama	Deactivated	1963-1972
11136600	Santa Barbara Canyon Creek near Ventucopa	Active	2009-2017
11136500	Cuyama River near Ventucopa	Deactivated	1945-1958; 2009-2014
11136480	Reyes Creek near Ventucopa	Deactivated	1972-1978
11136400	Wagon Road Creek near Stauffer	Deactivated	1972-1978

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 recorded years of 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 streamflow measurements ranging from 2010 to 2017. Although neither of these stream gages provide a comprehensive picture of surface water flows in the Cuyama Basin, they can be used to help monitor the inflow and outflow of surface water through the Basin.

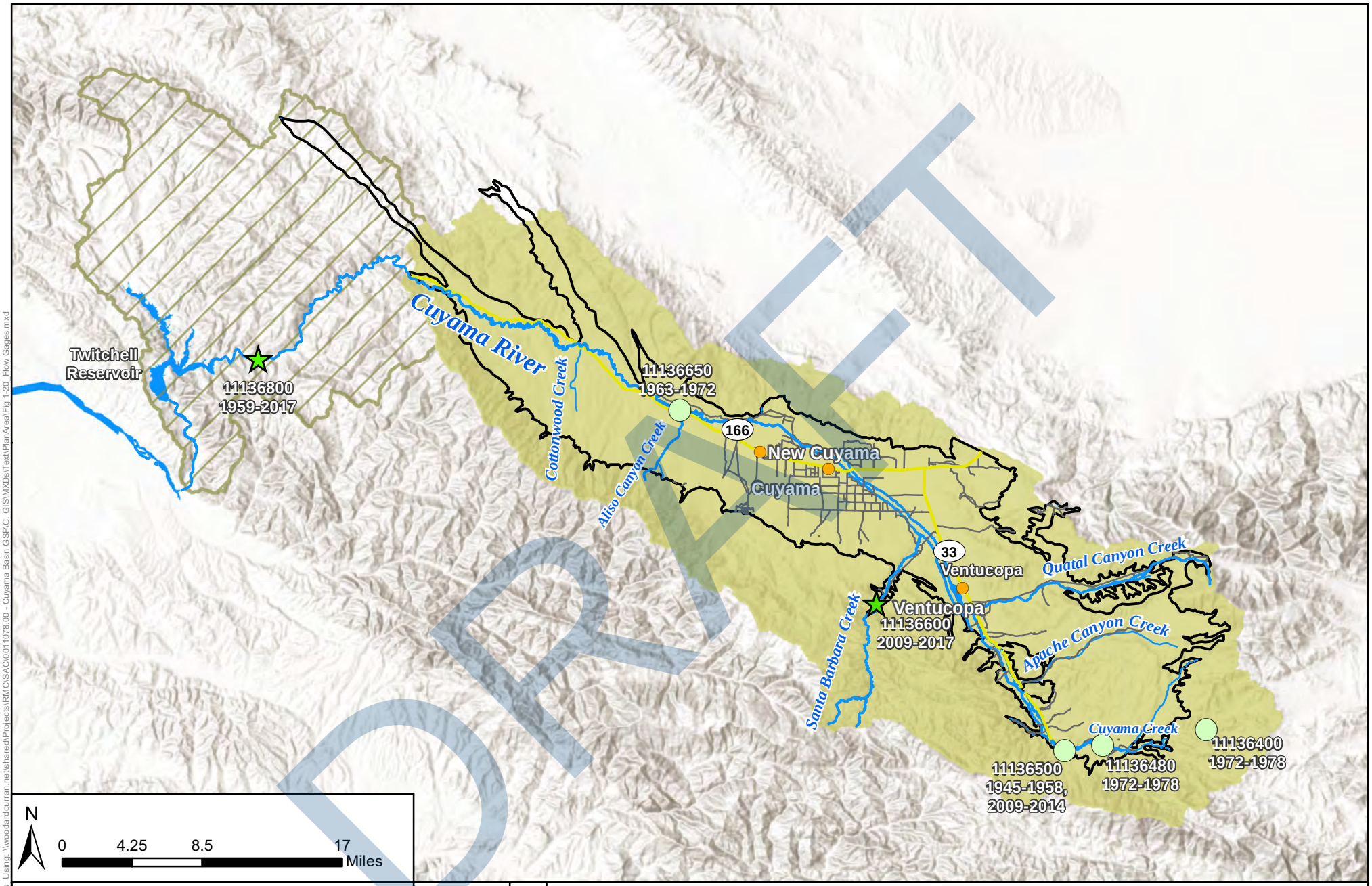

Figure 1-20 - Surface Stream Flow Gages

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1.2.4 Existing Groundwater Monitoring Programs

Existing groundwater monitoring programs in the Basin are primarily operated by regional, state and federal agencies. Local agencies such as the CCSD and CBWD do not conduct routine monitoring. Existing groundwater monitoring programs in the Basin collect data on groundwater elevation, groundwater quality and subsidence at varying temporal frequencies. Each groundwater monitoring program in the Basin is described below, and additional information is provided in Chapter 4.

Groundwater Elevation Monitoring

DWR Water Data Library

DWR's Water Data Library (WDL) is a database that stores groundwater elevation measurements from wells in the Basin measured from 1946 through the present. Data contained in the WDL are from several different monitoring entities, including the Ventura County Watershed Protection District (VCWPD), SBCWA, Santa Barbara County Flood Control and Water Conservation District, and San Luis Obispo County Flood Control and Water Conservation District (SLOCFC&WCD).

USGS – National Water Information System

The USGS's National Water Information System contains extensive water data, including manual measurements of depth to water in wells throughout California. Wells are monitored by the USGS in the Santa Barbara County Flood Control and Water Conservation District's jurisdictional area. Most of the wells that were monitored in 2017 have been monitored since 2008, although a few have measurements dating back to 1983. Groundwater level measurements at these wells are taken approximately once per quarter.

California Statewide Groundwater Elevation Monitoring Program

The California Statewide Groundwater Elevation Monitoring (CASGEM) Program monitors seasonal and long-term groundwater elevation trends in dedicated groundwater basins throughout California. Monitoring entities establish CASGEM dedicated monitoring wells and report seasonal groundwater levels to CASGEM's database. The information below describes sources where CASGEM data can be retrieved.

DWR Groundwater Information Center Interactive Map

DWR's Groundwater Information Center Interactive Map (GICIMA) is a database that collects and stores groundwater elevations and depth-to-water measurements. Groundwater elevations are measured biannually in the spring and fall by local monitoring agencies. Depth-to-water and groundwater elevation data are submitted to the GICIMA by the various monitoring entities including the SLOCFC&WCD, SBCWA, and VCWPD.

SBCWA CASGEM Monitoring Plan

The SBCWA's CASGEM Monitoring Plan discusses the SBCWA's 19-well monitoring network, which includes 16 actively monitored wells and three inactive wells no longer monitored due to accessibility and

permission issues. Initially, SBCWA was the sole monitoring entity for the entire Basin, but in 2014 SBCWA reapplied to CASGEM as a partial monitoring entity to reduce their monitoring activities and grant permission for neighboring counties (San Luis Obispo and Ventura) to monitor their portions of the Basin.

Of the 16 active wells in SBCWA's monitoring network, three are CASGEM dedicated monitoring wells and 13 are voluntary. Wells are monitored by either SBCWA staff or USGS staff. The three CASGEM dedicated monitoring wells are measured biannually in April and October, whereas the 13 voluntary wells are measured annually. All wells are single completion. CASGEM dedicated wells have known Well Completion Reports and perforated intervals.

SLOCFC&WCD CASGEM Monitoring Plan

The SLOCFC&WCD's CASGEM Monitoring Plan identifies two wells in their CASGEM monitoring network. Upon recognition as a CASGEM monitoring entity in 2014, San Luis Obispo County Department of Public Works staff monitored these wells biannually. Static water level measurements are obtained biannually in April and October (corresponding to seasonal highs and low groundwater elevations).

VCWPD CASGEM Monitoring Plan

The VCWPD CASGEM Monitoring Plan identifies the two wells in their CASGEM monitoring network. Upon recognition as a CASGEM monitoring entity in 2014, VCWPD staff have monitored the two wells biannually. Static water level measurements are obtained biannually, due to the remoteness of the area, in April and October (corresponding to seasonal highs and low groundwater elevations). The two wells are in the southernmost portion of the Basin.

VCWPD does not have information beyond location and water elevation measurements for the two wells. There are no well completion reports for either well, and the perforation intervals are unknown. VCWPD identifies the southeastern portion of the Basin as a spatial data gap, given that the area contains no monitoring wells.

Groundwater Quality Monitoring

DWR WDL

DWR's WDL monitors groundwater quality data. Samples are collected from a variety of well types including irrigation, stock, domestic, and some public supply wells. Wells are not regularly sampled, and most wells have only one- or two-days' worth of sampling measurements and large temporal gaps between the results. Constituents most frequently monitored include dissolved chloride, sodium, calcium, boron, magnesium, and sulfate. Measurements taken include conductance, pH, total alkalinity and hardness (more than 1,000 total samples per parameter). Additional dissolved nutrients, metals, and total dissolved solids (TDS) are also sampled but have fewer sample results available (one to 1,000 samples per parameter).

GeoTracker Groundwater Ambient Monitoring and Assessment Program

Established in 2000, the Groundwater Ambient Monitoring and Assessment (GAMA) Program monitors groundwater quality throughout the state of California. The GAMA Program will create a comprehensive groundwater monitoring program throughout California and increase public availability and access to groundwater quality and contamination information. The GAMA Program receives data from a variety of monitoring entities including DWR, USGS, and the State Water Resources Control Board. In the Basin, three agencies submit data from monitoring wells for a suite of constituents including TDS, nitrates and nitrites, arsenic, and manganese.

National Water Information System

The USGS's National Water Information System monitors groundwater for chemical, physical, and biological properties in water supply wells throughout the Basin and data are updated to GeoTracker on a quarterly basis. The majority of wells with groundwater quality data were monitored prior to 2015.

Irrigated Lands Regulatory Program

The Irrigated Lands Regulatory Program, established in 2003, regulates discharges from irrigated agriculture to surface and ground waters and establishes waste discharge orders for selected regions. The Irrigated Lands Regulatory Program focuses on priority water quality issues, such as pesticides and toxicity, nutrients, and sediments. Wells are sampled biannually, once between March and June, and once between September and December.

Division of Drinking Water

The State Water Resources Control Board's Division of Drinking Water, (formerly the Department of Health Services) monitors public water system wells per the requirements of Title 22 of the California Code of Regulations relative to levels of organic and inorganic compounds such as metals, microbial compounds and radiological analytes. Data are available for active and inactive drinking water sources, for water systems that serve the public, and wells defined as serving 15 or more connections, or more than 25 people per day. In the Basin, Division of Drinking Water wells were monitored for Title 22 requirements, including pH, alkalinity, bicarbonate, calcium, magnesium, potassium, sulfate, barium, copper, iron, zinc, and nitrate.

Subsidence Monitoring

In the Basin, subsidence monitoring is performed using continuous global positioning system (CGPS) stations monitored by the University NAVSTAR Consortium's (UNAVCO) Plate Boundary Observatory (PBO) program. There are no known extensometers in the Basin.

UNAVCO PBO

The UNAVCO PBO network consists of a network of about 1,100 CGPS and meteorology stations in the western United States used to monitor multiple pieces of information, including subsidence. There are two stations in the Cuyama Basin: CUHS, located near the city of New Cuyama, and VCST, located

south of the city of Ventucopa. The CUHS station has subsidence data from 2000 through 2017, and the VCST station has subsidence data from 2001 through 2017.

1.2.5 Existing Water Management Programs

Santa Barbara County Integrated Regional Water Management Plan 2013

The *Santa Barbara County Integrated Regional Water Management Plan 2013* (IRWM Plan 2013) is the main integrated regional water management planning document for the Santa Barbara County IRWM Region (County of Santa Barbara, 2013). IRWM Plan 2013 emphasizes multi-agency collaboration, stakeholder involvement and collaboration, regional approaches to water management, water management involvement in land use decisions, and project monitoring to evaluate results of current practices. IRWM Plan 2013 identifies regionally and locally focused projects that help achieve regional objectives and targets while working to address water-related challenges in the region.

The following IRWM Plan 2013 objectives related to groundwater use would potentially influence implementation of the GSP:

- Protect, conserve, and augment water supplies
- Protect, manage, and increase groundwater supplies
- Practice balanced natural resource stewardship
- Protect and improve water quality
- Maintain and enhance water and wastewater infrastructure efficiency and reliability

IRWM Plan 2013 provides valuable resources related to potential concepts, projects and monitoring strategies that can be incorporated into the CBGSA GSP.

San Luis Obispo County 2014 IRWM Plan

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). Much of the IRWM Plan was based on the San Luis Obispo County Water Master Report (SLOCFC&WCD, 2012)

The following 2014 IRWM Plan goals related to groundwater use would potentially influence implementation of the GSP:

- **Water Supply Goal:** Maintain or improve water supply quantity and quality for potable water, fire protection, ecosystem health, and agricultural production needs; as well as to cooperatively address limitations, vulnerabilities, conjunctive-use, and water-use efficiency.
- **Ecosystem and Watershed Goal:** Maintain or improve the health of the Region's watersheds, ecosystems, and natural resources through collaborative and cooperative actions, with a focus on assessment, protection, and restoration/enhancement of ecosystem and resource needs and vulnerabilities.
- **Groundwater Monitoring and Management (Groundwater) Goal:** Achieve sustainable use of the region's water supply in groundwater basins through collaborative and cooperative actions.
- **Water Resources Management and Communications (Water Management) Goal:** Promote open communications and regional cooperation in the protection and management of water resources, including education and outreach related to water resources conditions, conservation/water use efficiency, water rights, water allocations, and other regional water resource management efforts.

The 2014 IRWM Plan provides valuable resources related to potential concepts, projects, and monitoring strategies that can be incorporated into the CBGSA GSP.

Ventura County 2014 IRWM Plan

The Ventura County 2014 IRWM Plan reflects the unique needs of a diverse region in Ventura County, which encompasses three major watersheds, 10 cities, portions of the Los Padres National Forest, a thriving agricultural economy, and is home to more than 823,000 people (County of Ventura, 2014). The 2014 IRWM Plan is a comprehensive document that primarily addresses region-wide water management and related issues.

The following 2014 IRWM Plan goals related to groundwater use would potentially influence implementation of the GSP:

- Reduce dependence on imported water and protect, conserve and augment water supplies
- Protect and improve water quality
- Protect and restore habitat and ecosystems in watersheds

The 2014 IRWM Plan provides valuable resources related to potential concepts, projects and monitoring strategies that can be incorporated into the CBGSA GSP.

Kern County 2011 IRWM Plan

The Kern County 2011 IRWM Plan covers most of Kern County but does not include the portion of the county that includes the Cuyama Basin (Kern County Water Agency, 2011). Therefore, the IRWM Plan is not relevant to the Cuyama GSP and is not addressed here.

1.2.6 General Plans in Plan Area

As illustrated in Figure 2-4, the Cuyama Basin is located within the geographic boundaries of four counties, including Kern, San Luis Obispo, Santa Barbara and Ventura. Implementation of the CBGSA GSP would be affected by the policies and regulations outlined in the General Plans of these counties, given that the Cuyama Basin, and long-term land use planning decisions that would affect the Basin, are under the jurisdiction of these counties.

This section describes how implementation of the various General Plans may change water demands in the Basin, for example due to population growth and development of the built environment, how the General Plans may influence the GSP's ability to achieve sustainable groundwater use, and how the GSP may affect implementation of General Plan land use policies.

Santa Barbara County Comprehensive Plan

The Santa Barbara County Comprehensive Plan is a means by which more orderly development and consistent decision making in the county can be accomplished. The Plan involves a continuing process of research, analysis, goal-setting and citizen participation, the major purpose of which is to enable the County Board of Supervisors and Planning Commission to more effectively determine matters of priority in the allocation of resources, and to achieve the physical, social and economic goals of the communities in the county (County of Santa Barbara, 2016).

Relevant Santa Barbara County Comprehensive Plan Principles and Policies

The following Santa Barbara County Comprehensive Plan Land Use Element policies related to groundwater use would potentially influence implementation of the GSP:

- **Land Use Development Policy 4:** Prior to issuance of a development permit, the County shall make the finding, based on information provided by environmental documents, staff analysis, and the applicant, that adequate public or private services and resources (i.e., water, sewer, roads, etc.) are available to serve the proposed development.
- **Hillside and Watershed Protection Policy 7:** Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste, shall not be discharged into or alongside coastal streams or wetlands either during or after construction.

The following Santa Barbara County Comprehensive Plan Conservation Element, Groundwater Resources Section goals and policies related to groundwater use would potentially influence implementation of the GSP:

- **Goal 1:** To ensure adequate quality and quantity of groundwater for present and future county residents, and to eliminate prolonged overdraft of any groundwater basins.

- **Policy 1.1:** The County shall encourage and assist all of the county's water purveyors and other groundwater users in the conservation and management, on a perennial yield basis, of all groundwater resources.
- **Policy 1.2:** The County shall encourage innovative and/or appropriate, voluntary water conservation activities for increasing the efficiency of agricultural water use in the county.
- **Policy 1.3:** The County shall act within its powers and financial abilities to promote and achieve the enhancement of groundwater basin yield.
- **Goal 2:** To improve existing groundwater quality, where feasible, and to preclude further permanent or long-term degradation in groundwater quality.
- **Policy 2.1:** Where feasible, in cooperation with local purveyors and other groundwater users, the County shall act to protect groundwater quality where quality is acceptable, improve quality where degraded, and discourage degradation of quality below acceptable levels.
- **Policy 2.2:** The County shall support the study of adverse groundwater quality effects which may be due to agricultural, domestic, environmental and industrial uses and practices.
- **Goal 3:** To coordinate County land use planning decisions and water resources planning and supply availability.
- **Policy 3.1:** The County shall support the efforts of the local water purveyors to adopt and implement groundwater management plans pursuant to the Groundwater Management Act and other applicable law.
- **Policy 3.2:** The County shall conduct its land use planning and permitting activities in a manner which promotes and encourages the cooperative management of groundwater resources by local agencies and other affected parties, consistent with the Groundwater Management Act and other applicable law.
- **Policy 3.3:** The County shall use groundwater management plans, as accepted by the Board of Supervisors, in its land use planning and permitting decisions and other relevant activities.
- **Policy 3.4:** The County's land use planning decisions shall be consistent with the ability of any affected water purveyor(s) to provide adequate services and resources to their existing customers, in coordination with any applicable groundwater management plan.
- **Policy 3.5:** In coordination with any applicable groundwater management plan(s), the County shall not allow, through its land use permitting decisions, any basin to become seriously over drafted on a prolonged basis.
- **Policy 3.6:** The County shall not make land use decisions which would lead to the substantial over commitment of any groundwater basin.
- **Policy 3.7:** New urban development shall maximize the use of effective and appropriate natural and engineered recharge measures in project design, as defined in design guidelines to be prepared by the Santa Barbara County Flood Control and Water Conservation District in cooperation with P&D.
- **Policy 3.8:** Water-conserving plumbing, as well as water-conserving landscaping, shall be incorporated into all new development projects, where appropriate, effective, and consistent with applicable law.

- **Policy 3.9:** The County shall support and encourage private and public efforts to maximize efficiency in the pre-existing consumptive M&I use of groundwater resources.
- **Policy 3.10:** The County, in consultation with the cities, affected water purveyors, and other interested parties, shall promote the use of consistent "significance thresholds" by all appropriate agencies with regard to groundwater resource impact analysis.
- **Goal 4:** To maintain accurate and current information on groundwater conditions throughout the county.
- **Policy 4.1:** The County shall act within its powers and financial abilities to collect, update, refine, and disseminate information on local groundwater conditions.

The following Santa Barbara County Comprehensive Plan Agricultural Element goal and policy related to groundwater use would potentially influence implementation of the GSP:

- **Goal 1:** Santa Barbara County shall assure and enhance the continuation of agriculture as a major viable production industry in Santa Barbara Country. Agriculture shall be encouraged. Where conditions allow, (taking into account environmental impacts) expansion and intensification shall be supported.
- **Policy 1F:** The quality and availability of water, air, and soil resources shall be protected through provisions including but not limited to, the stability of Urban/Rural Boundary Lines, maintenance of buffer areas around agricultural areas, and the promotion of conservation practices.

Santa Barbara County Comprehensive Plan's Influence on Water Demand and Groundwater Sustainability Plan's Goals

Review of relevant *Santa Barbara County Comprehensive Plan* goals and policies reveals that the County's goals and policies relative to future land use development and conservation complement the use and conservation of groundwater resources goals anticipated to be included in the CBGSA GSP. The Comprehensive Plan explicitly states as a goal ensuring that adequate quality and quantity of groundwater will be available for present and future county residents, as well as the elimination of prolonged overdraft of any groundwater basins through land use planning decisions and water resources planning.

The county is expected to grow from 428,600 to 520,000 residents between 2015 and 2040 (Santa Barbara County Association of Governments, 2012). These growth estimates are County-wide, and the General Plan does not specify how much growth, if any, is expected to occur within the Basin. Ensuring sustainable management of the Basin through implementation of the GSP will be critical in terms of supporting projected population growth in the county while maintaining sustainable groundwater levels in the Basin.

GSP's Influence on Santa Barbara County Comprehensive Plan's Goals and Policies

Successful implementation of the GSP will help to ensure that the Cuyama Basin's groundwater supply is managed in a sustainable manner. Given the amount of population growth projected in the county in the coming years, it is possible that changes in groundwater management by the GSP will result in changes to the pace, location and type of development that will occur in the county in the future. It is anticipated that

GSP implementation will be consistent with the Comprehensive Plan's goals related to sustainable land use development in the county.

San Luis Obispo County General Plan

The *San Luis Obispo County General Plan* describes official County policy on the location of land uses and their orderly growth and development. It is the foundation upon which all land use decisions are based, guides action the County takes to assure a vital economy, ensures a sufficient and adequate housing supply, and protects agricultural and natural resources (County of San Luis Obispo, 2015).

Relevant San Luis Obispo General Plan Principles and Policies

The following San Luis Obispo General Plan Land Use Element principles and policies related to groundwater use would potentially influence implementation of the GSP:

- **Principle 1:** Preserve open space, scenic natural beauty and natural resources. Conserve energy resources. Protect agricultural land and resources.
- **Policy 1.2:** Keep the amount, location and rate of growth allowed by the Land Use Element within the sustainable capacity of resources, public services and facilities.
- **Policy 1.3:** Preserve and sustain important water resources, watersheds and riparian habitats.

The following San Luis Obispo General Plan Conservation and Open Space Element goals and policies related to groundwater use would potentially influence implementation of the GSP:

- **Goal WR 1:** The county will have a reliable and secure regional water supply.
- **Policy WR 1.2:** Conserve Water Resources. Water conservation is acknowledged to be the primary method to serve the county's increasing population. Water conservation programs should be implemented countywide before more expensive and environmentally costly forms of new water are secured.
- **Policy WR 1.3:** New Water Supply. Development of new water supplies should focus on efficient use of our existing resources. Use of reclaimed water, interagency cooperative projects, desalination of contaminated groundwater supplies, and groundwater recharge projects should be considered prior to using imported sources of water or seawater desalination, or dams and on-stream reservoirs.
- **Policy WR 1.7:** Agricultural Operations. Groundwater management strategies will give priority to agricultural operations. Protect agricultural water supplies from competition by incompatible development through land use controls.
- **Policy WR 1.12:** Impacts of New Development. Accurately assess and mitigate the impacts of new development on water supply. At a minimum, comply with the provisions of Senate Bills 610 and 221.
- **Policy WR 1.14:** Avoid Net Increase in Water Use. Avoid a net increase in non-agricultural water use in groundwater basins that are recommended or certified as Level of Severity II or III for water supply. Place limitations on further land divisions in these areas until plans are in place and funded to ensure that the safe yield will not be exceeded.

- **Goal WR 2:** The County will collaboratively manage groundwater resources to ensure sustainable supplies for all beneficial uses.
- **Policy WR 2.1:** Groundwater quality assessments Prepare groundwater quality assessments, including recommended monitoring, and management measures.
- **Policy WR 2.2:** Groundwater Basin Reporting Programs. Support monitoring and reporting programs for groundwater basins in the region.
- **Policy WR 2.3:** Well Permits. Require all well permits to be consistent with the adopted groundwater management plans.
- **Policy WR 2.4:** Groundwater Recharge. Where conditions are appropriate, promote groundwater recharge with high-quality water.
- **Policy WR 2.5:** Groundwater Banking Programs. Encourage groundwater-banking programs.
- **Goal WR 3:** Excellent water quality will be maintained for the health of the people and natural communities.
- **Policy WR 3.2:** Protect Watersheds. Protect watersheds, groundwater and aquifer recharge areas, and natural drainage systems from potential adverse impacts of development projects.
- **Policy WR 3.3:** Improve Groundwater Quality. Protect and improve groundwater quality from point and non-point source pollution, including nitrate contamination; MTBE and other industrial, agricultural, and commercial sources of contamination; naturally occurring mineralization, boron, radionuclides, geothermal contamination; and seawater intrusion and salts.
- **Policy WR 3.4:** Water Quality Restoration. Pursue opportunities to participate in programs or projects for water quality restoration and remediation with agencies and organizations such as the Regional Water Quality Control Board (RWQCB), California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), and Resource Conservation Districts (RCDs) in areas where water quality is impaired.
- **Goal 4:** Per capita water use in the county will decline by 20% by 2020.
- **Policy WR 4.1:** Reduce Water Use. Employ water conservation programs to achieve an overall 20% reduction in per capita residential and commercial water use in the unincorporated area by 2020. Continue to improve agricultural water use efficiency consistent with Policy AGP 10 in the Agricultural Element.
- **Policy WR 4.2:** Water Pricing Structures. Support water-pricing structures to encourage conservation by individual water users and seek to expand the use of conservation rate structures in areas with Levels of Severity II and III for water supply.
- **Policy WR 4.3:** Water conservation The County will be a leader in water conservation efforts.
- **Policy WR 4.5:** Water for Recharge. Promote the use of supplemental water such as reclaimed sewage effluent and water from existing impoundments to prevent overdraft of groundwater. Consider new ways to recharge underground basins and to expand the use of reclaimed water. Encourage the eventual abandonment of ocean outfalls.

- **Policy WR 4.6:** Graywater. Encourage the use of graywater systems, rainwater catchments, and other water reuse methods in new development and renovation projects, consistent with state and local water quality regulations.
- **Policy WR 4.7:** Low Impact Development. Require Low Impact Development (LID) practices in all discretionary and land division projects and public projects to reduce, treat, infiltrate, and manage urban runoff.
- **Policy WR 4.8:** Efficient Irrigation. Support efforts of the resource conservation districts, California Polytechnic State University, the University of California Cooperative Extension, and others to research, develop, and implement more efficient irrigation techniques.
- **Goal 5:** The best possible tools and methods available will be used to manage water resources.
- **Policy WR 5.1:** Watershed Approach. The County will consider watersheds and groundwater basins in its approach to managing water resources in order to include ecological values and economic factors in water resources development.

The following San Luis Obispo General Plan Agriculture Element goals and policies related to groundwater use would potentially influence implementation of the GSP:

- **Policy AGP10a:** Encourage water conservation through feasible and appropriate "best management practices." Emphasize efficient water application techniques; the use of properly designed irrigation systems; and the control of runoff from croplands, rangelands, and agricultural roads.
- **Policy AGP10b:** Encourage the U.C. Cooperative Extension to continue its public information and research program describing water conservation techniques that may be appropriate for agricultural practices in this county. Encourage landowners to participate in programs that conserve water.
- **Policy AGP11b:** Do not approve proposed general plan amendments or re-zonings that result in increased residential density or urban expansion if the subsequent development would adversely affect: (1) water supplies and quality, or (2) groundwater recharge capability needed for agricultural use.
- **Policy AGP11c:** Do not approve facilities to move groundwater from areas of overdraft to any other area, as determined by the Resource Management System in the Land Use Element.

San Luis Obispo County General Plan's Influence on Water Demand and Groundwater Sustainability Plan

The semi-arid climate in the county is subject to limited amounts of rainfall and recharge of groundwater basins and surface reservoirs. A focus of the County General Plan is that future development should take place recognizing that the dependable supply of some county groundwater basins is already being exceeded. If mining of groundwater continues in those areas without allowing aquifers to recharge, water supply and water quality problems will eventually result, which may be costly to correct and could become irreversible.

The General Plan explicitly encourages preservation of the county's natural resources, and states that future growth should be accommodated only while ensuring that this growth occurs within the sustainable capacity of these resources.

The county was expected to grow between 0.44 and 1 percent per year from 2013 through 2018, an increase of approximately 12,000 persons over the five-year period and is expected to grow by over 41,000 from 2010 to 2030 (County of San Luis Obispo, 2014). These growth estimates are County-wide and the General Plan does not specify how much growth, if any, is expected to occur within the Basin. Ensuring sustainable management of the basin through implementation of the GSP will be critical in terms of supporting projected population growth in the county while maintaining sustainable groundwater levels in the basin.

GSP's Influence on San Luis Obispo County General Plan's Goals and Policies

Successful implementation of the GSP will help to ensure that the Cuyama Basin's groundwater supply is managed in a sustainable manner. Given the amount of population growth projected in the county in the coming years, it is possible that changes in groundwater management by the GSP will impact the location and type of development that will occur in the Basin in the future. It is anticipated that GSP implementation will reinforce the General Plan's goals related to sustainable land use development in the county.

Ventura County General Plan

The Ventura County General Plan consists of the following:

- County-wide Goals, Policies and Programs containing four chapters (Resources, Hazards, Land Use, and Public Facilities and Services)
- Four appendices (Resources, Hazards, Land Use, and Public Facilities and Services), which contain background information and data in support of the Countywide Goals, Policies and Programs
- Several Area Plans which contain specific goals, policies and programs for specific geographical areas of the county

Relevant Ventura County General Plan Principles and Policies

The following Ventura County General Plan (Resources Chapter, Water Resources Section, 1.3.1 Goals, 1.3.2 Policies) goals and policies related to groundwater use would potentially influence implementation of the GSP:

- **Goal 1:** Inventory and monitor the quantity and quality of the county's water resources.
- **Goal 2:** Effectively manage the water resources of the county by adequately planning for the development, conservation and protection of water resources for present and future generations.
- **Goal 3:** Maintain and, where feasible, restore the chemical, physical and biological integrity of surface and groundwater resources.
- **Goal 4:** Ensure that the demand for water does not exceed available water resources.

- **Goal 5:** Protect and, where feasible, enhance watersheds and aquifer recharge areas.
- **Goal 6:** Promote reclamation and reuse of wastewater for recreation, irrigation and to recharge aquifers.
- **Goal 7:** Promote efficient use of water resources through water conservation.
- **Policy 1:** Discretionary development which is inconsistent with the goals and policies of the County's Water Management Plan (WMP) shall be prohibited, unless overriding considerations are cited by the decision-making body.
- **Policy 2:** Discretionary development shall comply with all applicable County and State water regulations.
- **Policy 3:** The installation of on-site septic systems shall meet all applicable State and County regulations.
- **Policy 4:** Discretionary development shall not significantly impact the quantity or quality of water resources in watersheds, groundwater recharge areas or groundwater basins.
- **Policy 5:** Landscape plans for discretionary development shall incorporate water conservation measures as prescribed by the County's Guide to Landscape Plans, including use of low water usage landscape plants and irrigation systems and/or low water usage plumbing fixtures and other measures designed to reduce water usage.
- **Policy 10:** All new golf courses shall be conditioned to prohibit landscape irrigation with water from groundwater basins or inland surface waters identified as Municipal and Domestic Supply or Agricultural Supply in the California Regional Water Quality Control Board's Water Quality Control Plan unless either: a) the existing and planned water supplies for a Hydrologic Area, including interrelated Hydrologic Areas and Subareas, are shown to be adequate to meet the projected demands for existing uses as well as reasonably foreseeable probable future uses in the area, or b) it is demonstrated that the total groundwater extraction/recharge for the golf course will be equal to or less than the historic groundwater extraction/recharge (as defined in the Ventura County Initial Study Assessment Guidelines) for the site. Where feasible, reclaimed water shall be utilized for new golf courses.

The following Ventura County General Plan (Land Use Chapter, 3.1.1 Goals) goal related to groundwater use would potentially influence implementation of the GSP:

- **Goal 1:** Ensure that the county can accommodate anticipated future growth and development while maintaining a safe and healthful environment by preserving valuable natural resources, guiding development away from hazardous areas, and planning for adequate public facilities and services. Promote planned, well-ordered and efficient land use and development patterns.

The following Ventura County General Plan (Public Facilities Chapter, Water Supply Facilities section 4.3.1 Goals and 4.3.2 Policies) goals and policies related to groundwater use would potentially influence implementation of the GSP:

- **Goal 1:** Ensure the provision of water in quantities sufficient to satisfy current and projected demand.

- **Goal 2:** Encourage the employment of water conservation measures in new and existing development.
- **Goal 3:** Encourage the continued cooperation among water suppliers in the county in meeting the water needs of the county as a whole.
- **Policy 1:** Development that requires potable water shall be provided a permanent potable water supply of adequate quantity and quality that complies with applicable County and State water regulations. Water systems operated by or receiving water from Casitas Municipal Water District, the Calleguas Municipal Water District or the United Water Conservation District will be considered permanent supplies unless an Urban Water Management Plan (prepared pursuant to Part 2.6 of Division 6 of the Water Code) or a water supply and demand assessment (prepared pursuant to Part 2.10 of Division 6 of the Water Code) demonstrates that there is insufficient water supply to serve cumulative development in the district's service area. When the proposed water supply is to be drawn exclusively from wells in areas where groundwater supplies have been determined by the Environmental Health Division or the Public Works Agency to be questionable or inadequate, the developer shall be required to demonstrate the availability of a permanent potable water supply for the life of the project.
- **Policy 2:** Discretionary development as defined in section 10912 of the Water Code shall comply with the water supply and demand assessment requirements of Part 2.10 of Division 6 of the Water Code.
- **Policy 3:** Discretionary development shall be conditioned to incorporate water conservation techniques and the use of drought resistant native plants pursuant to the County's Guide to Landscape Plans.

Ventura County Plan's Influence on Water Demand and Groundwater Sustainability Plan's Goals

Review of relevant Ventura County General Plan goals and policies reveals that the County's goals and policies relative to future land use development and conservation complement the use and conservation of groundwater resources goals included in the CBGSA GSP. The General Plan explicitly states as a goal ensuring that adequate quality and quantity of groundwater will be available for present and future county residents, as well as accommodating anticipated future growth and development while maintaining a safe and healthful environment by preserving valuable natural resources, including groundwater.

The county is expected to grow from 865,090 to 969,271 residents between 2018 and 2040 (Caltrans, 2015). These growth estimates are County-wide and the General Plan does not specify how much growth, if any, is expected to occur within the Basin. Ensuring sustainable management of the basin through implementation of the GSP will be critical in terms of supporting projected population growth in the county while maintaining sustainable groundwater levels in the Basin.

GSP's Influence on Ventura County General Plan's Goals and Policies

Successful implementation of the GSP will help to ensure that the Cuyama Basin's groundwater supply is managed in a sustainable manner. Given the amount of population growth projected in the county in the coming years, it is possible that changes in groundwater management by the GSP will result in changes to

the pace, location and type of development that will occur in the county in the future. It is anticipated that GSP implementation will reinforce the General Plan's goals related to sustainable land use development in the county.

Kern County General Plan

Because of the close interrelationship between water supplies, land use, conservation, and open space issues, the Land Use, Conservation, and Open Space Element sections of the Kern County General Plan are the most relevant elements for development of the GSP. These elements provide for a variety of land uses for future economic growth while also assuring the conservation of Kern County's agricultural, natural, and resource attributes (County of Kern, 2009).

Relevant Kern County General Plan Goals and Policies

The following Land Use, Conservation, and Open Space Element goals and policies related to groundwater use would potentially influence implementation of the GSP:

- **Goal 1.4.5:** Ensure that adequate supplies of quality water (appropriate for intended use) are available to residential, industrial, and agricultural users in Kern County.
- **Policy 1.4.2:** The efficient and cost-effective delivery of public services and facilities will be promoted by designating areas for urban development which occur in or adjacent to areas with adequate public service and facility capacity.
- **Policy 1.4.2.a:** Ensure that water quality standards are met for existing users and future development.
- **Goal 1.6.6:** Promote the conservation of water quantity and quality in Kern County.
- **Goal 1.6.7:** Minimize land use conflicts between residential and resource, commercial, and industrial land uses.
- **Policy 1.6.11:** Provide for an orderly outward expansion of new urban development so that it maintains continuity of existing development, allows for the incremental expansion of infrastructure and public service, minimizes impacts on natural environmental resources, and provides a high-quality environment for residents and businesses.
- **Policy 1.9.10:** To encourage effective groundwater resource management for the long-term economic benefit of the county, the following shall be considered:
- **Policy 1.9.10.a:** Promote groundwater recharge activities in various zone districts.
- **Policy 1.9.10.c:** Support the development of groundwater management plans.
- **Policy 1.9.10.d:** Support the development of future sources of additional surface water and groundwater, including conjunctive use, recycled water, conservation, additional storage of surface water and groundwater and desalination.
- **Goal 1.10.1:** Ensure that the county can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous economy by preserving valuable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

- **Policy 1.10.6.39:** Encourage the development of the county's groundwater supply to sustain and ensure water quality and quantity for existing users, planned growth, and maintenance of the natural environment.
- **Policy 1.10.6.40:** Encourage utilization of community water systems rather than the reliance on individual wells.
- **Policy 1.10.6.41:** Review development proposals to ensure adequate water is available to accommodate projected growth.

Kern County General Plan's Influence on Water Demand and Groundwater Sustainability Plan's Goals

Review of relevant Kern County General Plan goals and policies reveals that the County's goals and policies relative to future land use development and conservation complement the use and conservation of groundwater resources goals that are anticipated to be included in the CBGSA GSP. The General Plan explicitly encourages development of the county's groundwater supply to ensure that existing users have access to high quality water, and states that future growth should be accommodated only while ensuring that adequate high-quality water supplies are available to existing and future users.

GSP's Influence on Kern County General Plan's Goals and Policies

Successful implementation of the GSP will help to ensure that the Cuyama Basin's groundwater supply is managed in a sustainable manner. Given the small portion of the Cuyama Basin that lies in Kern County, it is anticipated that GSP implementation will have little to no effects on the General Plan's goals related to sustainable land use development in the county.

1.2.7 Plan Elements from CWC Section 10727.4

The plan elements from California Water Code Section 10727.4 require GSPs to address or coordinate the addressing of the components listed in Table 1-1. As noted in the table, several components of California Water Code Section 10727.4 address issues that are not within the CBGSA's authority, and are coordinated with local agencies.

Table 1-2. Plan Elements from CWC Section 10727.4

Element	Location
(a) Control of saline water intrusion	Not applicable
(b) Wellhead protection areas and recharge areas.	To be coordinated with counties
(c) Migration of contaminated groundwater.	Coordinated with Regional Water Quality Control Board (RWQCB)
(d) A well abandonment and well destruction program.	To be coordinated with counties
(e) Replenishment of groundwater extractions.	Chapter 7, Projects and Management Actions
(f) Activities implementing, opportunities for, and removing impediments to, conjunctive use or underground storage.	Chapter 7, Projects and Management Actions
(g) Well construction policies.	To be coordinated with counties
(h) Measures addressing groundwater contamination cleanup, groundwater recharge, in-lieu use, diversions to storage, conservation, water recycling, conveyance, and extraction projects.	Chapter 7, Projects and Management Actions, and coordinated with RWQCB
(i) Efficient water management practices, as defined in Section 10902, for the delivery of water and water conservation methods to improve the efficiency of water use.	Coordinated with Cuyama Basin Irrigation District
(j) Efforts to develop relationships with state and federal regulatory agencies.	Chapter 8, Plan Implementation
(k) Processes to review land use plans and efforts to coordinate with land use planning agencies to assess activities that potentially create risks to groundwater quality or quantity.	To be coordinated with counties
(l) Impacts on groundwater dependent ecosystems.	Chapter 2, Basin Settings, Section 2.2. Groundwater Conditions

1.3 Notice and Communication

In accordance with the SGMA regulations in Section 354.10, Notice and Communication, this section provides the following information:

- Description of the beneficial uses and users of groundwater in the Basin, including the land uses and property interests potentially affected by the use of groundwater in the Basin, the types of parties representing those interests, and the nature of consultation with those parties.
- List of public meetings at which the GSP was discussed or considered by the CBGSA.
- Comments regarding the GSP received by the CBGSA and a summary of any responses made by the CBGSA (Appendix D).
- Explanation of the CBGSAs decision-making process.
- Identification of opportunities for public engagement and a discussion of how public input and response will be used.
- Description of how the CBGSA encourages the active involvement of diverse social, cultural, and economic elements of the population within the Basin.
- Methods the CBGSA used to inform the public about progress implementing the GSP, including the status of projects and actions.

1.3.1 Description of Beneficial Uses and Users of Groundwater

Beneficial uses and users of groundwater in the Basin include the following interests (as listed in California Water Code Section 10723.2):

- Holders of overlying groundwater rights, including agricultural users and domestic well owners. There are approximately 475 agricultural and domestic wells identified to date in the Basin.
- Public water systems/municipal well operators are CCSD, the Cuyama Mutual Water Company, and the Ventucopa Water Supply Company.
- Disadvantaged communities: There are two disadvantaged communities in the Cuyama Basin, Cuyama and New Cuyama. The census block groups for the Santa Barbara and San Luis Obispo county portions of the Basin are considered disadvantaged.
- Local land use planning agencies are San Luis Obispo, Santa Barbara, Ventura, and Kern counties.
- Entities that monitor and report groundwater elevations are CCSD, San Luis Obispo County, SBCWA, and Ventura County.

Potential interests (listed in California Water Code Section 10723.2) that are not present in the Cuyama Basin include:

- Environmental users of groundwater
- Surface water users, if there is a hydrologic connection between surface and groundwater bodies
- Federal government, including, the military and managers of federal lands
- California Native American tribes

The types of parties representing Cuyama Basin interests and the nature of consultations with these parties are summarized below.

Standing Advisory Committee

The Standing Advisory Committee (SAC) was established in September 2017 to encourage active involvement from diverse social, cultural, and economic elements of the population within the Basin. The SAC membership reflects this diversity. The members represent large and small landowners and growers from different geographic locations in the Basin, longtime residents of New Cuyama including Hispanic community members, and a manager of an environmentally-centric non-profit organization. SAC's role is described in Section 1.3.4.

Technical Forum

A technical forum was established to allow for technical input from interested parties within the Cuyama Basin. The forum had no decision-making authority. Monthly conference calls were held with representatives from the following organizations to review and seek input on technical matters:

- CBWD and consultants EKI and Provost & Pritchard
- CCSD and consultants Dudek
- Grapevine Capital Partners, North Fork Vineyard and consultants Cleath-Harris Geologists
- San Luis Obispo County
- Santa Barbara Pistachio Company
- SBCWA

Additional Consultations

The GSP team conducted additional consultations regarding GSP matters via email, telephone, or via in-person meetings with representatives from the following groups:

- Bolthouse Farms
- Community representatives from the Family Resource Center and Blue Sky Center
- Duncan Family Farms

- DWR
- Grimmway Farms
- Individual landowners in the Cuyama Basin
- Kern County
- Santa Barbara County Fire Department, New Cuyama Station
- Santa Barbara County Public Works Department
- Santa Barbara IRWM Program
- United States Department of Agriculture's Forest Service Mount Pinos Ranger District, Los Padres National Forest
- University of California at Santa Barbara
- USGS
- Ventura County
- Wellntel Network

The following agencies and organizations were notified by mail about GSA-hosted community workshops:

- Cachuma Resource Conservation District in Santa Maria, CA 93454
- California Department of Fish and Wildlife, Headquarters in Sacramento, CA 94244
- California Natural Resources Agency in Sacramento, CA 95814
- California Wildlife Conservation Board in Sacramento, CA 95814
- Kern County, Cooperative Extension in Bakersfield, CA 93307
- Leadership Council for Justice and Accountability in Bakersfield, CA 93301
- Los Padres Forest Watch in Santa Barbara, CA, 93102
- Morro Coast Audubon Society in Morro Bay, CA 93443
- San Luis Obispo County, Cooperative Extension in San Luis Obispo, CA 93401
- United States Department of Agriculture's Natural Resource Conservation Service in Fresno, CA 93711
- United States Fish and Wildlife Service in Ventura, CA 93003
- United States Fish and Wildlife Service, Attention Friends of California Condors Wild and Free in Ventura, CA 93003
- United States Forest Service, Bitter Creek National Wildlife Refuge, Refuge Manager, Debora Kirkland in Ventura, CA 93003
- United States Forest Service, Los Padres National Forest, Headquarters in Goleta, CA 93117
- Ventura County Audubon Society Chapter in Ventura, California 93002
- Ventura County, Cooperative Extension in Ventura, CA 93003

The CBGSA developed a stakeholder engagement strategy to ensure that the interests of all beneficial uses and users of groundwater in the Basin were considered. Multi-organization planning processes can be complex. It can be challenging for community members to understand required decision-making steps, and where and how stakeholder issues and concerns are considered. Groundwater management as a practice is also complex. Educating and engaging groundwater stakeholders and the community about complex issues while simultaneously meeting deadlines established by SGMA, required an organized stakeholder engagement strategy.

An additional challenge to the engagement strategy is that the Basin area is rural, and has no news media outlets serving the area. The combined population per the 2010 Census of the three disadvantaged communities is 666 (Ventucopa 92, Cuyama 57, and New Cuyama 517). The engagement strategy relied primarily on mail and email communications about community workshop and GSA meetings. Mailings were sent to 675 parcel owners. Additionally, the CBGSA sent 185 emails stakeholders, engaged with counters who distributed notices, and word of mouth.

In January 2018, and to inform development of stakeholder engagement strategy, the CBGSA conducted 22 phone interviews with members of the CBGSA Board of Directors, SAC, CBGSA staff, staff from each of the four counties, and community representatives from the New Cuyama Family Resource Center and the Blue Sky Center, which are both located in New Cuyama. Several common themes emerged, which were used to form the basis for constructive stakeholder engagement and planning for the GSP. The prevailing ideas expressed included the following outreach and planning objectives:

- Provide a fair, balanced, and transparent public process that builds trust and understanding towards the common goal of a GSP that can best benefit everyone in the Basin.
- Provide a public meeting environment that is inclusive of all perspectives and all stakeholders.
- Provide education on a range of topics, at key milestones throughout the planning process, beginning with education about SGMA and what a GSP includes.
- Provide education and outreach specifically inclusive of smaller farmers/ranchers and the Hispanic community.
- Develop a GSP that is fair for all stakeholders in the Basin.

The stakeholder engagement strategy was developed to support the themes listed above, and in March 2018, the strategy was approved by the CBGSA Board. The strategy can be found online at: http://cuyamabasin.org/assets/pdf/CBGSP-Engagement-Strategy_May2018.pdf

1.3.2 List of Public Meetings Where the GSP was Discussed

Below is a list of the public meetings where the GSP was discussed. The following includes the public meetings held from June 2017 through April 2019.

CBGSA Board Meetings

In 2017, meetings were held on June 30, August 2, September 6, September 27, October 4, October 9, November 1, and December 6.

In 2018, meetings were held on January 3, January 10, April 4, May 2, July 11, August 1, September 5, October 3, and November 7.

In 2019, meetings were held on January 9, February 6, and April 3.

Joint Meetings of CBGSA Board and Standing Advisory Committee

In 2018, joint meetings were held on February 7, March 7, June 6, September 5, and December 3.

In 2019, one joint meeting was held on March 6.

CBGSA Standing Advisory Committee Meetings

In 2017, standing Advisory Committee meetings were held on October 16, and November 30.

In 2018, standing Advisory Committee meetings were held on January 4, February 1, March 1, March 29, April 26, May 31, June 28, July 26, August 30, September 27, November 1, and November 29.

In 2019, standing Advisory Committee meetings were held on January 8, January 31, February 28, and March 28.

Community Workshops

In 2018, community workshops conducted in both English and Spanish were held on March 7, June 6, September 5, and December 3.

In 2019, an additional community workshop, also conducted in English and in Spanish, was held March 6.

1.3.3 Comments Regarding the GSP Received by the CBGSA, Response Summary

Public comments received and CBGSA responses provided are in Appendix D.

1.3.4 1.3.4 GSA Decision Making Process

On June 30, 2017, the CBGSA Board of Directors met for the first time. The 11-member board is the designated decision-making entity for GSP development, and is subject to the Brown Act.[1] According to the requirements of the act, all meetings were noticed 72 hours in advance, were open to the public and included a public comment period. Board membership and meeting agendas, minutes, and materials are available online at http://cuyamabasin.org/cuyama-gsa-board.html. Meeting agendas were also posted at the meeting location, the Family Resource Center, in New Cuyama.

In September 2017, the CBGSA Board appointed the seven-member SAC as the primary body for providing advice and input to the CBGSA Board on GSP development and implementation, and assisting with stakeholder engagement throughout the Cuyama Basin. In March 2018, the CBGSA Board expanded the SAC membership to nine members, including representatives from the Hispanic community in the Basin. One member resigned in March 2019, and the CBGSA Board of Directors is currently considering a replacement process. According to the requirements of the Brown Act, all SAC meetings were noticed 72 hours in advance and were open to the public. SAC membership, agendas, minutes, and meeting materials are available at http://cuyamabasin.org/standing-advisory-committee.html.

The CBGSA decision-making process included developing agenda for each meeting of the CBGSA Board and for each SAC meeting. The CBGSA Executive Director developed the agendas in concert with the technical team, outreach team, and the respective chairs of the CBGSA Board and SAC. Agenda items were either educational, informational, or required direction or decision. Agenda items were presented to the SAC, and then the SAC chair would provide an overview of SAC discussion and recommendations at the subsequent CBGSA Board meeting. Figure 2-21 depicts the overall topics and decision process for developing the GSP.

[1] http://ag.ca.gov/publications/2003_Intro_BrownAct.pdf

Figure 1-21. Topics and Decision Process for GSP Development

1.3.5 Opportunities for Public Engagement and How Public Input was Used

Community input was encouraged and received at all CBGSA Board meetings, SAC meetings, and community workshops. This GSP was shaped by community input, SAC input, and CBGSA Board direction and decisions.

Opportunities for Public Engagement

Regular opportunities for public engagement were available throughout GSP development. The CBGSA Board, SAC, and CBGSA staff encouraged public input throughout the development of the GSP in the following ways described below.

Meetings and Direct Engagement

- Public meetings and community workshops (detailed in Section 1.3.2)
- Direct contact with CBGSA staff. The public was encouraged to contact the CBGSA staff by phone, email, or mail with questions and comments. CBGSA contact information was distributed at all meetings and is available on the CBGSA website at http://cuyamabasin.org/contact-us.html.
- An informal briefing was hosted by the technical team at The Place, a restaurant in Ventucopa. The technical team met with interested growers and residents to update them and answer questions about the GSP.

GSP Section Review and Comment Periods

When draft sections of the GSP section became available for review and comment, the CBGSA Board, SAC members, stakeholders were notified. A list of the dates drafts were available online are listed below. Draft GSP sections are available online at: http://cuyamabasin.org/resources.html#gsp.

- February 21, 2019: Chapter 5, Sustainability
- February 21, 2019: Chapter 2, Water Budget
- November 28, 2018: Chapter 2, Groundwater Conditions Draft
- November 28, 2018: Chapter 2, Groundwater Conditions Draft: Appendix X Hydrographs
- November 28, 2018: Chapter 2, Groundwater Conditions Draft: Appendix Y – Groundwater Contours
- November 28, 2018: Chapter 2, Groundwater Conditions Draft: Appendix Z – Subsidence White Paper
- November 16, 2018: Chapter 6, Data Management System Chapter Draft
- October 3, 2018: Chapter 2, Updated Hydrogeologic Conceptual Model Draft
- September 24, 2018: Chapter 4, Monitoring Networks Section Draft
- September 24, 2018: Chapter 4, Monitoring Networks Section - Appendices
- September 21, 2018: Chapter 2, Updated Hydrogeologic Conceptual Model Draft
- August 24, 2018: Chapter 2, Groundwater Conditions Draft
- August 24, 2018: Chapter 2, Groundwater Conditions Draft: Appendix X – Hydrographs
- August 24, 2018: Chapter 2, Groundwater Conditions Draft: Appendix Y – Groundwater Contours
- August 24, 2018: Chapter 2, Groundwater Conditions Draft: Appendix Z – Subsidence White Paper
- July 27, 2018: Draft Undesirable Results Narrative
- July 27, 2018: Management Framework Matrix
- June 22, 2018: Draft Hydrogeologic Conceptual Model
- April 20, 2018: Draft Description of Plan Area

How Public Input and Response was Used in the Development of the GSP

Public input was used to help shape the GSP development. The input was also used to develop context and content for CBGSA meetings, SAC meetings, community workshops, CBGSA newsletters, and for contend posted to the CBGSA website.

All CBGSA-hosted public meetings were designed to encourage input, discussion, and questions from both the CBGSA Board of Directors and SAC members as well as public audience members. The minutes of CBGSA Board and SAC meetings reflect the questions and comments raised by members and the general public. For each community workshop, public comments were summarized and provided to the CBGSA staff and technical team, the CBGSA Board of Directors, and SAC for further consideration.

Examples of how public input helped shape the GSP are described below.

During the development of the GSP, community input was valuable in identifying and closing groundwater data gaps. Residents and agricultural businesses provided additional data about groundwater levels, historical pumping, and cropping patterns.

During discussion of projects and management actions, several community members and CBGSA Board members expressed concern about unreliable community water supplies in New Cuyama, Cuyama, and Ventucopa. The GSP's list of projects was revised to include construction of new wells for these communities.

Community input also shaped other actions carried forward for further analysis in the GSP. Two projects to improve water resources in the basin came from public input: cloud seeding and rangeland management. The technical team evaluated each approach and discussed benefits and impacts with the CBGSA Board, SAC, and the community. Cloud seeding as a project is included in the GSP for further evaluation. Rangeland management was not carried forward in the GSP due to concerns about the potential impacts of vegetation management, and institutional concerns about coordination with the United States Forest Service.

Appendix D includes a summary of public comments and responses.

1.3.6 How GSA Encourages Active Involvement

Establishment of the SAC in September 2017 was a intended to encourage active involvement from diverse social, cultural, and economic elements of the population in the Basin. All meetings of the CGBSA Board and SAC were open to the public and included a public comment period. Community members participated in the public meetings. Community workshops were held in both English and Spanish, provided time for discussion of each topic presented, and provided comment forms for written comments. Workshop materials were also available in English and Spanish. The quarterly CBGSA newsletter was available in English and Spanish and described GSP planning status and opportunities for participation. Notices for community workshops were available in both English and Spanish. Distribution channels included email, hand-delivered postings throughout the Cuyama Valley, and postcard mailings to parcel owners within Basin boundaries. A website (www.cuyamabasin.org) was designed and made available early in the GSP process to assist in keeping stakeholders informed and up to date.

1.3.7 Method of Informing the Public

To inform the public about GSP progress and to seek public input, the following methods were used:

- Notice of public meetings, including CBGSA Board meetings, SAC meetings, and community workshops (in both English and Spanish)
- Website (www.cuyamabasin.org)
- Email distribution via a stakeholder email list was maintained throughout the process and grew to 185 contacts

- Postcards were mailed to 675 parcel owners in the Basin to announce community workshops and provide a link to the website to follow the progress of GSP development
- A quarterly, four-page CBGSA newsletter was mailed to all New Cuyama, CA post office box holders as a part of the Cuyama Recreation District Newsletter. The newsletter was also distributed via the stakeholder email list.
- Volunteers at the Family Resource Center distributed community workshop notices to locations throughout the Cuyama Basin.
- A member of the SAC posted community workshop notices in some of the finger areas in the west part of the Cuyama Basin.

The development of the mailing list and email list was informed by SGMA Section 10723.2, which calls for consideration of interests for all beneficial uses and users of groundwater. The initial email list of approximately 80 stakeholders grew to 185 stakeholders by March 2019. Additionally, a conventional mailing list was used that included 675 parcel owners in the Cuyama Basin identified by each of the four counties and the 17 agencies and organizations listed above in Section 1.3.1.

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Appendix A

Preparation Checklist for Groundwater Sustainability Plan Submittal

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Cuyama Basin Groundwater Sustainability Plan - Preparation Checklist for GSP Submittal

GSP Regulations Section	Water Code Section	Requirement	Description	GSP Section and Status
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 - Appendix A*
Article 5. Plan Contents, Subarticle 1. Administrative Information				
354.4		General Information	• Executive Summary • List of references and technical studies	*Executive Summary*
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 Section 1.1 *Introduction and Agency Information*
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 Section 1.2 *Plan Area*

GSP Regulations Section	Water Code Section	Requirement	Description	GSP Section and Status
Article 5. Plan Contents, Subarticle 1. Administrative Information (Continued)				
354.8(b)		Description of the Plan Area	• Summary of jurisdictional areas and other features	Chapter 1 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 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 Section 1.2 *Plan Area*

GSP Regulations Section	Water Code Section	Requirement	Description	GSP Section and Status
Article 5. Plan Contents, Subarticle 1. Administrative Information (Continued)				
354.8(g)	10727.4	Additional GSP Contents	**Description of Actions related to:** • 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	Chapter 8. *Implementation Plan*
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 8 *Implementation Plan*

GSP Regulations Section	Water Code Section	Requirement	Description	GSP Section and Status
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* 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* Section 2.3 *Water Budget*
	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* Section 2.3 *Water Budget*
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 • Land subsidence conditions • Identification of interconnected surface water systems • Identification of groundwater-dependent ecosystems	Chapter 2 *Basin Settings* Section 2.2 *Groundwater Conditions*
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* 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* Section 2.3 *Water Budget*

GSP Regulations Section	Water Code Section	Requirement	Description	GSP Section and Status
Article 5. Plan Contents, Subarticle 2. Basin Setting (Continued)				
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 7 *Projects and Management Actions* 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* 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*

GSP Regulations Section	Water Code Section	Requirement	Description	GSP Section and Status
Article 5. Plan Contents, Subarticle 3. Sustainable Management Criteria (Continued)				
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*
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, measureable objective, and interim milestone	Chapter 4 *Monitoring Networks*

GSP Regulations Section	Water Code Section	Requirement	Description	GSP Section and Status
			(Monitoring Networks Continued) • 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	
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*

GSP Regulations Section	Water Code Section	Requirement	Description	GSP Section and Status
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 • Measureable 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 water shall be included. • Legal authority required • Estimated costs and plans to meet those costs • Management of groundwater extractions and recharge	Chapter 7 *Projects and Management Actions*
354.44(b)(2)	10727.2(d)(3)		• Overdraft mitigation projects and management actions	Chapter 7 *Projects and Management Actions*

GSP Regulations Section	Water Code Section	Requirement	Description	GSP Section and Status
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 Basin does not need a coordination agreement because the basin is using a single GSP

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

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

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 Califomia 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

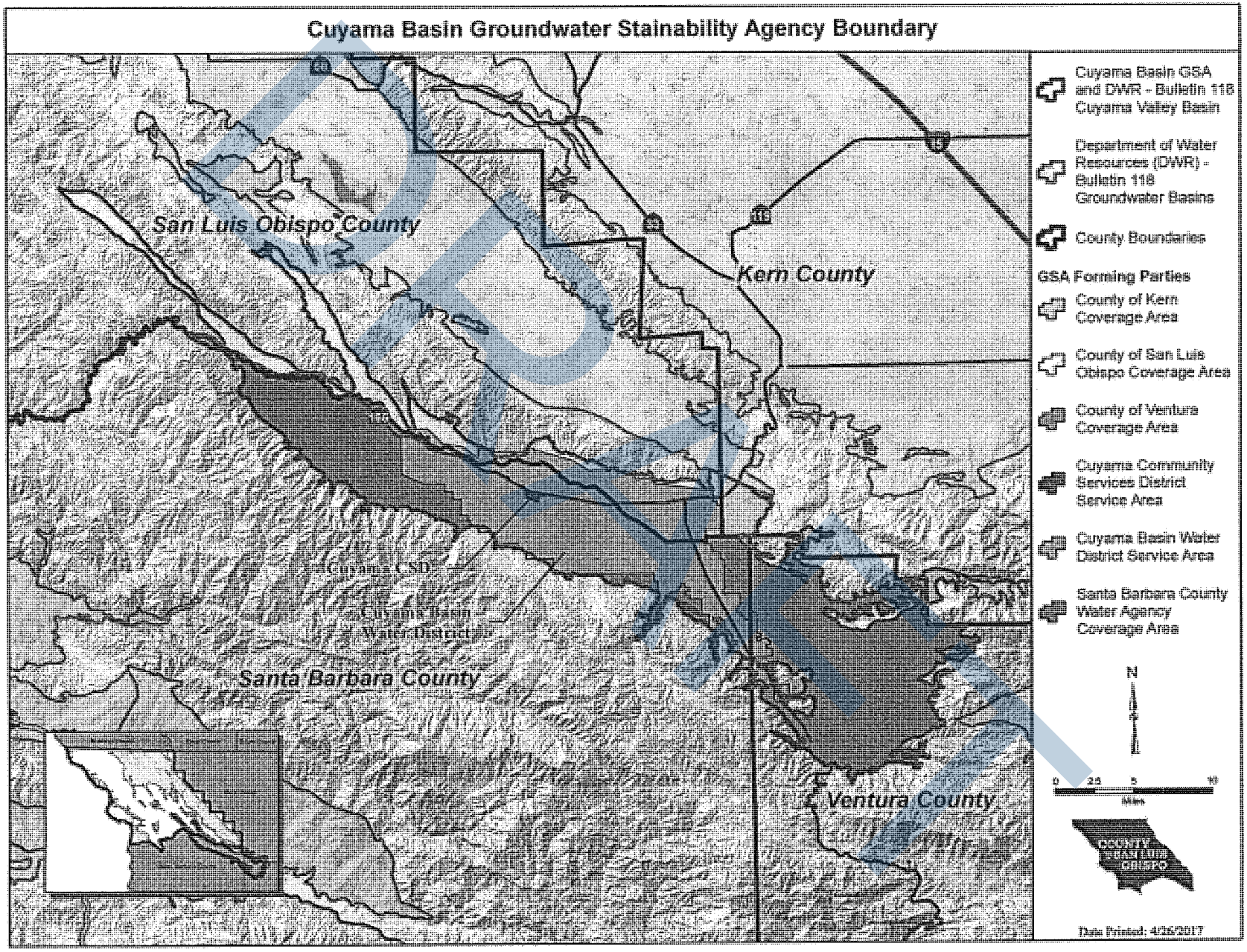
Address:

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)

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 public 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% 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% 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 March 2019, five 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%. 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% 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% overdraft?

Answer: The rationales are intended to develop the minimum thresholds to monitor against undesirable results. 30% 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.

Community Workshops March 6, 2019

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.

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

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Attachment D-1

Pre-Public Draft
Comments and Responses

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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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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "…	Comment	Proposed Response
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. Thus, 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. **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 *terminology; overdraft has been replaced with "usage greater than replenishment"	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.

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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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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 as such and flagged in 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 list of all non-public agencies 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	Further comment 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 predominantely…."	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 paragrapl	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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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "…	Comment	Response to Comment
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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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.

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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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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.

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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

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163	General				Areas with known data gaps. Very few wells were selected for the Monitoring Network within the southeastern part of the basin (near and upstream of Ventucopa). Ventura County Watershed Protection District maintains 51 wells in the area (Table 4-11, Figure 4-12), and private landowners have indicated they provided data to WC for additional wells in this area. It may be useful to reconsider inclusion of some of these wells into the network, to obtain better representation in this area of the basin. A pre-existing well with known construction data and some measurements is preferable to nothing, as long as the well is in acceptable condition.	Additional wells have been added to the monitoring network in these region.
164	General				Field confirmation of selected Network wells. Anecdotally, some older historically gauged wells under consideration for inclusion within the network may have failed, allowing annular or aquifer materials into the casing, and altering their effective screened intervals. We recommend field-confirmation of total depths and general condition of wells selected for the network, particularly in areas of sparse well data density where each well represents large areas of the basin.	Comment noted. This can be addressed when the monitoring network is finalized during the GSP implementation phase.
165	General				Surface water monitoring. Discussion of interconnected surface water monitoring is deferred until after numerical modeling is complete.	Comment noted.
166	Pg. 4-14				Places where the relationships between sets of wells and databases is confusing: The distinction between California State Groundwater Elevation Monitoring (CASGEM) and other Department of Water Resources (DWR) wells is confusing. The text refers to Figure 4-3 as CASGEM wells, but the map labels say "DWR Database Wells." There appear to be 222 wells on the map, not 113. Terminology between text, table, and figure is inconsistent.	The text has been revised for clarity.
167	Pg. 4-28				Places where the relationships between sets of wells and databases is confusing: "IRLP [sic] water quality measurements are sampled from surface locations." Why are Irrigated Lands Regulatory Program (ILRP) sites included in the groundwater quality database (see label and caption for Figure 4-10)? It is unclear whether all the sites in Table 4-9 are groundwater sites.	ILRP stations were utlized in the quality monitoring because surface flows within the basin, except during signifincantly high flow events, percolate into the groundwater system. These water qulaity measurements may be useful to provide information to the GSA as to the quality of water that enters the groundwater system.
168	Pg. 4-29				Places where the relationships between sets of wells and databases is confusing: The relationship between databases from ILRP, California Environmental Data Exchange Network (CEDEN), U.S. Geological Survey (USGS), and National Water Quality Monitoring Council (NWQMC) is confusing. We suggest clarifying this point, perhaps using a Venn diagram or a similar graphic.	The text has been revised for clarity.
169	Pg. 4-40				Monitoring network selection issues: Proposed Monitoring Network tiers reflect priorities in the following order: (i) recent data, (ii) frequent data, (iii) known construction information. This is reasonable if monitoring is limited only to acquisition of data from existing programs. However, if the network is selected to meet SGMA requirements and monitor specifically for the GSA, then construction information and future well access is more important than frequency of past measurements and (to an extent) more important than the date of the most recent measurement. Additionally, no discussion was provided of data by which the wells were determined to be representative of the basin.	There is not adequate information on well construction and well access to base well selection on these criteria. These will need to be considered as the monitoring program is developed during the GSP implementation phase.
170	Pg. 4-35				Monitoring network selection issues: How were private landowner TDS values obtained? What was the context of the monitoring? Will landowners be enlisted to continue monitoring? How will this be accomplished if so?	Comment noted. This can be addressed when the monitoring network is finalized during the GSP implementation phase.
171	Pg. 4-45				Monitoring network selection issues: "Wells with multiple depths…" The vertical distribution of representative wells is not discussed. It appears here as a goal, but there is no indication of the depth distribution of the representative network.	Criteria Updated.
172	Pg. 4-53				Monitoring network selection issues: "…Established to monitor for salinity." What about other constituents from the groundwater conditions GSP chapter?	The text has been revised to describe the rationale for establishing the monitoring network only for salinity.

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173	Pg. 4-53				Monitoring network selection issues: "…Unlikely to be monitored again by that monitoring agency." Will the GSA rely on the agencies to continue monitoring? Will the GSA attempt to share monitoring activity with the agency, ensure the network is monitored through their own funding?	Comment noted. This can be addressed when the monitoring network is finalized during the GSP implementation phase.
174	Pg. 4-58				Monitoring network selection issues: "Well/measurement depths for three-dimensional constituent mapping." Was this considered in the section discussing groundwater level data gaps?	Not directly. We anticipate that the GSA will first need to focus on filling spatial data gaps in the monitoring network.
175	Pg. 4-37				Text issues: Section 4.3.4 discusses CGPS stations on Figure 2.2-22. The Monitoring Networks section needs its own figure showing subsidence monitoring stations, including CGPS stations. Also, on the same page an unreferenced "subsidence white paper" is attributed to Appendix Z, which likely is a placeholder. The paper needs a complete reference.	The figure in Chapter 2 is sufficient. The white paper is an appendix to the Groundwater Conditions chapter - the reference has been revised for clarity.
176	Pg. 4-39				Text issues: Section 4.5.1, discussing Management Areas, may be out of date. Several other sections discussing Management Areas also may no longer be accurate.	This section will be developed when the Board provides direction on management areas in the Basin.
177	Pg. 4-62				Text issues: The subsidence monitoring network section should at least mention critical or subcritical infrastructure likely to be affected by subsidence. If none exists, it may be helpful to state this and cite as the reason that limited subsidence monitoring will be required.	The data gaps section identifies areas that may be critically affected by subsidence.
178	Pg. 4-18				Table issues: Shouldn't "Number of SBCWA wells included in the Monitoring Network" be less than "Number of SBCWA wells"? The distinction between these categories is unclear. There is no discussion of why some are included, and others are not.	The text has been revised for clarity.
179	Pg. 4-24				Table issues: CCSD well table shows two wells with longest period of record 37 years and median 11 years. This is not possible given only two wells.	Table has been updated
180	Pg. 4-47 - 4-49				Table issues: Suggest adding a table number and identification on each page of the multi-page table.	The table format has been revised
181	General				Figure issues: When map figure discussions in the text name geographic features, those features should be shown and labeled on the map (e.g., Pages 4-14, 4-18).	The text has been revised for clarity.
182	Figure 4-2				Figure issues: Are all the hydrograph wells within this oval? Why focus on such a small part of the basin? This cannot be the extent of agriculture. Wells shown on hydrographs should be labeled on the map.	Yes. A single area was selected for presentation purposes as using all wells within the central basin would create a hydrograph that would not be useful or legible.
183	Figure 4-15				Figure issues: As discussed above, the selection scheme values a monthly monitoring record over knowledge of critical well construction data (screened or perforated interval). We rather suggest swapping the criteria for Tier 2 and Tier 3. Also, text explaining the criteria for each tier needs to be increased in size for readability.	Suggestion noted but not included. Every well with data from 2017-2018 was included in the montioring network regaurdless of well construciton information or frequency of measurement.
184	Figure 4-17				Figure issues: Faults should be included on this figure (and on most if not all water level monitoring network figures), especially since they were discussed in the monitoring well selection rationale.	Faults have been added to 4-16 and 4-17
185	Figure 4-19				Figure issues: What are "Non-Groundwater Quality Monitoring Network Wells"? This should be explained in the text.	Wells have been removed from figure.
186	Figure 4-20				Figure issues: This map distinguishes between Representative Wells and Active Groundwater Quality Monitoring Network Wells. The text says that all water quality network wells are representative wells.	Figurue and text has been updated.
187	Pg. 4-20				Misc/Minor: "East of Highway 33" should be "west of Highway 33."	This has been fixed.
188	Figure 4-2				Misc/Minor: Data series labels on the plot should be clearer or larger.	This has been fixed.
189	Pg. 4-26				Misc/Minor: "Landowners have provided data on 99 wells." Needs discussion of how the data were requested and obtained.	The text has been revised for clarity.
190	Pg. 4-28				Misc/Minor: Throughout the document, Irrigated Lands Regulatory Program is abbreviated as "IRLP" rather than "ILRP."	This has been fixed.
191	Pg. 4-44				Misc/Minor: "Proximity to other prominent features such as faults…" Based on this statement it is unclear - should monitoring wells be near or far from faults?	The text has been revised for clarity.

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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "…	Comment	Response to Comment
	Comments on DMS Section					
1	General				The GSP chapter and DMS appear to fulfill the basic requirements of GSP Regulation § 352.6 - Data Management System.	Comment noted. No change required in document.
2	Table 6-2				All data types within the DMS are listed in Table 6-2, but it is unclear which data are minimum required information (e.g., latitude and longitude) and which are optional parameters (e.g., casing perforations).	The table and text have been revised to indicate required fields.
3	6.3	3	2	In many cases …	The chapter states "In many cases, there were discrepancies between ground surface elevation (GSE) of the well from different sources. In these cases, the ground surface elevation of the well was updated using the USGS digital elevation model." This might cause problems with calculation of water-level elevations, as the USGS DEM is less precise than surveyed GSE values, and based on a 30 meter by 30 meter horizontal resolution. DEM elevation values are interpolated and averaged within each model element. The use of DEM elevation data could affect assumed groundwater flow directions in areas with shallow groundwater gradients. More information should be provided to demonstrate the adequacy of this approach over evaluating and selecting the most likely of the elevations published in original data sources for the wells. At the least, wells with groundwater elevations calculated using DEM values should be flagged clearly in hydrographs, piezometric surface maps, and other interpretations.	Comment noted. The data used in the model can be re-evaulated in the future as the monitoring network is implemented and more data is available.
4	General				For "more detailed" instructions on DMS use, the user is referred to a sparse one-page user guide. Some pertinent details of user interaction and function limits could be provided, for example restrictions on data downloads for review of well construction details.	Comment noted. The Opti User Guide is a 17 page user manual for data managers and is provided separately from the 1 page Opti Quick Start Guide. The User Guide will be linked to the DMS Section upon finalization.
5	6.2.1 User and Data Access…			Private data is monitoring data…	Please clarify, it is unclear if private data can be edited by ANY private user. Also, how is this performed? For example, is the private data associated to the user type with parcel/well id	The text has been revised for clarity. Sites (wells, gages, etc.) and their associated data (whether private, shared, or published) may only be edited by Administrators and Power Users associated with the Managing Entity.
6	6.2.2 Data Entry and Validation	1	3	The data is validated using…	Please clarify -Who is performing and verifying the quality control checks?	The text has been revised for clarity. The system runs some validation checks to alert users to potential data quality issues. The data is validated by the Managing Entity's Administrators or Power Users.
7	6.2.2 Data Entry and Validation - Data Collection…	1	2	In the Data Entry tool, new sites may be added by…	Please explain who is verify the data entry? Is the data being flagged as new, so it can be reviewed later by the GSA Board?	The text has been revised for clarity to match the existing conditions. If process changes are required for GSA Board review, the DMS can be configured to meet those needs during the implementation phase.
8	6.2.2 Data Entry and Validation - Monitoring Data…			Quality Flag	Please explain the term "Quality Flag" and how is it used and by whom	The text has been revised for clarity. Quality flags are associated with individual measurements and include quality assurance descriptions (e.g., "Pumping", "Can't get tape in casing", etc.). The quality flags should be documented by the person taking the measurement.
9	6.2.2 Data Entry and Validation - Data Validation	3	2	Users may access partially completed…	Consider adding a note to the bottom of the page to reference that this is a partially completed import validation, in case of data discrepancies.	The text has been revised for clarity. Partially completed logs are currently identified as incomplete in the DMS import logs.
10	6.3 Data Included in the Data…	2		Groundwater Elevation (2 parameters)…	Please list these parameters. The GSA Board may need this information to resolve any data discrepancies. Can the list of parameters grow?	The text has been revised to list parameters. The list of parameters can grow as the needs of the GSA change over time.
11	6.2 Functionality of the Data…	2	3	For more detailed instructions on …	Provide a hyperlink to the user's guide here	Comment noted. Hyperlink will be included upon finalizing and posting the User Guide.
12	6.2.2 Data Entry and Validation	1	1	To encourage agency and user participation…	This possibly helps maintain consistency but how do these tools improve data quality? Data quality is a function of training, following protocols, and equipment calibrations combined to create defensible data. It even mentions below in Data Validation that these data may not be accurate.	Comment noted. The text has been revised for clarity.
	Comments on topics separate from the DMS Section					
13	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.	This was accounted for in the selection of wells included in the Representative Monitoring Network, and will be addressed in the Sustainability Thresholds GSP section.
14	General				A number of properties including well construction details and measuring-point (MP) and ground surface (GS) elevations cannot be queried in the public "Opti" interface. Some of the data can be viewed on a well-by-well basis, but the use of tables and queries is very limited. This lack of transparency makes quantitative evaluation by outside parties difficult.	Comment noted. No change required in document. Will evaluate as enhancements to Opti query tool during implementation phase.
15	General				Queries seem to hang without producing consistent results depending on the browser used to access the website. For example, the Opti system seems to produce better results using Google Chrome than Mozilla Firefox, and Microsoft Internet Explorer is stated as not compatible at all.	Comment noted. No change required in document. Will evaluate Opti query tool performance.

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16	General				A few queries to test the site's functions revealed some potential structural problems with the DMS. In one example, a query for all wells with Managing Agency = Cuyama Basin GSA returns an extensive list of wells but when the data are downloaded to an Excel format file, only subsidence data for two sites (not wells, apparently) are produced. In another example, a query for Reference ET > 0 appears to be coded into the menu system but running the query produces no records.	Could not reproduce results described. A query for all wells with Managing Entity = "Cuyama Basin GSA" and subsequent Excel export produced expected results. More information is needed to try and identify the issue described. The system is coded for more data types (e.g., Reference ET) than are currently collected for future expansion of data efforts.
17	6.2 Functionality of the Data…				Please clarify - Does the GSA need agreements with well owner for the information they are supplying? For example, if someone is adding a new well to the DMS, can the board use the well data in their monitoring network? What is the GSA process to approve a new groundwater well for the DMS?	These issues will be addressed during the GSP implementation phase.
18	6.2.1 User and Data Access…				Please clarify - Does the DMS track what data was changed and by what user?	The data record and user associated with measurement data entry/modification is stored in the DMS but not currently viewable in the tabular data output.
19	6.2.1 User and Data Access…			System Administrator users manage,,,	Please clarify - Who is the system administrator? Does the GSA need to designate someone?	Currently, the Consultant team is the System Administrator. The GSA can designate a System Administrator as desired.
20	6.2.1 User and Data Access…			The Cuyama Basin GSA is…	Please clarify term "Cuyama Basin GSA" – Do you mean GSA Board members, Executive Director, or both? Do you need the Board to address this and list who is the managing entity(ies)?	It is currently the Executive Director and GSA consultants. The GSA Board will decide on the appropriate party for managing the DMS in the future.
21	Table 6-2			Data Collection Site Information	Is there a way to rank the groundwater well locations/elevations on accuracy? For example, rank (1) – accurate with little risk to location/ elevation to rank 3 – not as accurate, considering surveying the groundwater well to verify location/elevation	That ranking does not currently exist in the DMS, but can be added is needed during the implementation phase.
22	6.2.2 Data Entry and Validation - Monitoring Data…	1	1	Monitoring data including but not limited to…	Would Land Use data be included in this data set?	Land use is currently not included in this dataset. Additional data needs can be evaluated and potentially included during the implementation phase.
23	6.2.2 Data Entry and Validation - Data Validation				To help address data questions, is there a column to note who revised or entered the data?	The data record and user associated with measurement data entry/modification is stored in the DMS but not currently viewable in the tabular data output.
24	6.2.2 Data Entry and Validation - Data Validation	1	2	The entities that maintain the monitoring data…	Who will keep the DMS maintained and updated?	DMS maintenance and update will be determined by the Cuyama Subbasin GSA Board.
25	6.2.2 Data Entry and Validation - Data Validation	1	2	The entities that maintain the monitoring data…	Please list all assumptions made for the database, such as locations of each well and how they were verified, such as by a GPS survey, lats/logs, google maps, and etc. Consider approaching the GSA Board with a disclaimer on the DMS for data and accuracy.	Comment noted. A disclaimer window has been added upon logging into the DMS.
26	6.2.2 Data Entry and Validation - Data Validation	2	1	Upon saving the data in the data entry interface…	Can the GSA Board increase the list of data validation checks?	Comment noted. No change required in document. Will work with Cuyama Subbasin GSA to evaluate need for additional data validation checks during implementation phase.
27	6.2.3 Visualization and Analysis	1	1	Transparent visualization and analysis	Can it be incorporated into their own DMS system?	There are many options for integrating different DMS systems and functionalities. These options and the exact requirement would need to be identified and evaluated for inclusion during the implementation phase.
28	6.3 Data Included in the Data…	5	2	Using the DMS data viewing capabilities…	Consider asking the GSA Board, if they would like a list of recommendations to this chapter, such as below. 6.4 RECOMMENDATIONS Recommendation to survey each groundwater well, as discussed on Page 7 of the DWR BMP Groundwater Monitoring Protocols, Standards, and Sites Best Management Practice, December 2016. •The elevation of the Reference Point (RP) on the well casing of each well must be surveyed to the North American Vertical Datum of 1988 (NAVD88), or a local datum that can be converted to NAVD88. The elevation of the RP must be accurate to within 0.5 foot. It is preferable for the RP elevation to be accurate to 0.1 foot or less.	Comment noted. This can be addressed by the GSA Board during the implementation phase.
29	General				The Data Management System has been developing with steady improvements being made over time. However, several issues with functionality and the need for more complete data inputs still persist. The wells in the Monitoring Network are not in a viewable layer. And a search by State ID #s is not cross referenced with the Opti ID #s, challenging the users ability to find a particular well.	Comment noted. The DMS will be updated to display wells in the Monitoring Network once the Monitoring Network has been finalized. State Well Numbers and Opti IDs (Site Name) are cross referenced in the Site List. Consultant team will evaluate updating the Query tool to reflect the cross reference and update functionality as needed during the implementation phase.

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30	6.2.2 Data Entry and Validation, page 6-2				Although some of the critically important data has be entered, many of the data parameters on table 6-2 are completely blank throughout the DMS. The fields that are most important to understanding the aquifer a particular well might represent is the depth and casing perforation intervals. None of this is available in Opti, yet. I'm told much of this data is in W&C's hands, but are not able to be input due to time & budget. Why can't the wells selected for the Groundwater Level Monitoring Network be viewed as a subset or a seperate layer? Same for any of the other sites in the Monitoring Network? Which wells are the representative Groundwater Quality Monitoring wells? If "The data is validated using a number of quality control checks prior to inclusion in the DMS." What are the QC/QA checks? As we move forward, in order to help promote user confidence in the data stored and published in the DMS, some ground truthing and well site canvassing will be required by a licensed hydrogeologist to verify and complete the understanding of the Monitoring Network wells and their data.	Comments noted. Additional data may be added during the implementation phase. The DMS will be updated to display wells in the Monitoring Network once the Monitoring Network has been finalized. The QC/QA checks performed by the DMS are listed in Section 6.2.2 and include: • Duplicate measurements: The database checks for duplicate entries based on the unique combination of site, data type, date, and measurement value. • Inaccurate measurements: The database 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.
31	6.2.4 Query and Reporting, page 6-5				The query tool does not allow a well to be searched by the various other ID#s like the State Well ID, USGS Code, or CASGEM ID, even when this data is present. This is unnecessarily cumbersome. A cross reference table should be made available if the DMS can't search for it. The Analysis Tools and the toolbox mentioned sounds very helpful but it is not part of the DMS. Will the DMS ever actually offer any of these analysis tools, including contouring, total water budget visualization, and management area tracking?	Enhancements to the Query tool will be evaluated and implemented as needed during the plan implementation phase. The tools discussed in the DMS section of the GSP are currently available for non-public users. Access will be granted for Monitoring Entities and their associated users to these tools. Additional tools will be made available as needed during the implementation phase.
32	6.1 Overview of the Cuyama Basin….	2	3	The site may be accessed here:	Where will this site ultimately reside? It shouldn't be in the system of W&C, nor should their name be part of this URL. Does the GSA own the DMS and will it have access once W&C's contract ends?	To be determined by the Cuyama Subbasin GSA Board. W&C can direct the DMS to a domain of the GSA's choosing.
33	6.2.2 Data Entry and Validation - Data Collection…	1	2	In the Data Entry tool, new sites may be added by…	May not want to provide access to create new sites to too many users. This could create issues with overlap.	Comment noted. Access will be determined by Cuyama Subbasin GSA Board.
34	6.2.2 Data Entry and Validation - Data Collection…	1	3	Existing sites may be updated using the Edit Site…	A feature should be added (similar to the CASGEM portal) which automatically tracks ALL edits to data and site information to include date/time/user/edit.	Comment noted. Will evaluate feasibility and address during implementation phase.
35	6.2.2 Data Entry and Validation - Data Collection…	2	1	The information that is collected for sites…	Many of these items could use additional clarification for the user and entity inputting these data. Examples include……. 1)-Lat/Long-accuracy and how was the information obtained. Cell phone, GPS, DGPS, etc. NAD27 or NAD83, or…….? 2)-Accuracy of GSE and how was the information obtained? NAVD29 or NAVD88 or….?	Comment noted. Will evaluate feasibility and address during implementation phase.
36	6.2.2 Data Entry and Validation - Monitoring Data…				Can we add a function to upload photos and measurement field notes? Storing this original data and viewing changes to the well head over many years will be useful. I can't tell if these are options, but additional things to add to this list are…… 1)-Time of measurement. 2)-Status (pumping, nearby pumping, dry, flowing, etc) 3)-Accuracy of measurement 4)-Equipment used to make the measurement (steel tape, electric tape, etc.) and was this equipment calibrated? Calibration paperwork should be loaded to this data portal for reference. 5)-Things noted in Supplemental Info are mentioned in Table 6.2 and linked to the well. These shouldn't be changed during measurements unless the reference point changed as a result of breaking or modification.	Comment noted. Will evaluate feasibility and address during implementation phase.
37	6.2.2 Data Entry and Validation - Data Validation	1	1	Quality control helps ensure the integrity….	Data validation is a huge issue in the basin, but we understand this section is strictly related to the DMS. Possibly a footnote explaining this issue with data quality should be provided to the user. Possibly verification/statement that certain protocols were followed when making the measurement? Additionally, data quality can be better verified by adding entries which……. 1)-indicate data accuracy (0.01 ft, 0.1 ft, 0.5 ft, to the nearest foot, etc). 2)-equipment calibration 3)-where two consecutive measurements completed? 4)-availability of field notes	Comment noted. Will evaluate feasibility and address during implementation phase.
38	6.2.2 Data Entry and Validation - Data Validation	2		Inaccurate measurements: The database…	Many of the historical data were collected by private entities with no QA/Q processes in place. In addition, in a declining basin, one would expect to continually see entries outside the historical minimum values.	Comment noted. No change required in document.
39	6.2.2 Data Entry and Validation - Data Validation	3	3	This allows a second person to also access the…	There should be confirmation that 2 individuals reviewed these data. Possibly an option for a second user to login and initial that the data have been visually confirmed.	Comment noted. Will evaluate feasibility and address during implementation phase.
40	General				Where there are multiple data sources for one site that the most negative data be assumed as the most accurate pending implementation of the monitoring system	Comment noted. Will evaluate feasibility and address during implementation phase.

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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "…	Comment	Response to Comment
1	2.3.4 Water Budget…Current and Projected	1		Because there is no basis to assume any changes in Cuyama Basin	Consider adding projects to the projected water budget.	The Water Budget section on sustainable yield now includes an analyses that incorporates potential projects.
2	General Comments				"As defined by the Groundwater Sustainability Plan (GSP) regulations promulgated by the California Department of Water Resources (DWR), the water budgets section is intended to quantify the following: (5) If overdraft conditions occur, a quantification of overdraft over a period of years during which water year and water supply conditions approximate average conditions." These are the only two times the word "overdraft" is used in this whole chapter, yet the data indicates that of the 60 TAF extracted every year from the Cuyama Groundwater Basin for agriculture, 23 to 26 TAF of it is in excess of available recharge, otherwise known as "overdraft". That's 44% overdraft, almost ½ the amount that is being extracted. That is before climate change or GDEs are factored into the budget. Yet there is not one mention of the word overdraft! Change in Storage is an unclear euphemism that must be qualified with another disassociating term, such as positive/negative or gain/loss. In a basin that is designated by DWR as critically overdrafted, the GSP should not be hiding the problem behind misleading terminology that downplays the issue. Call it by its real name; Overdraft.	A note has been added that reduction in storage is overdraft.
3	2.3.5 Water Budget Estimates				The terms used for the components of the surface and groundwater budgets should be clearly defined in a Useful Terms section. What is specifically meant by these terms and how are they calculated,estimated or measured; Evapotranspiration, Deep Percolation, Applied Water, Runoff, Stream Seepage, Subsurface inflow, Reduction in storage	A Useful Terms section has been added
4	2.3.6 Historical Water Budget			The Basin average annual historical groundwater budget has greater	This sounds like chronic overdraft. To accurately quantify it would be to compare it to the total pumping demand. 23 TAF/Y has no reference to the basin as a whole. 44% overdraft is a quantification. The decision makers who are charged with balancing this basin are not well served when the problem is not clearly stated.	Required pumping reductions to eliminate overdraft are now quantified in the sustainable yield section.
5	2.3.7 Current and Projected Water Budget				The water budget considers native vegetation within the surface water system of the water budget. Native vegetation evapotranspiration (174,000 AFY) is a significant portion (60%) of the average annual surface water budget. Because the section of the report related to Groundwater Dependent Ecosystems is not yet available for review, it is unknown if some portion of the native vegetation could be utilizing groundwater as its water source. It is also recognized that this is one of the many real data gaps, as this Basin's hydrologic connection to the native ecosystems is poorly understood. The Project of Rangeland Management fits in here with a possible win/win between ecological services and a water Budget. Fire, as a management strategy for maintaining a more mature natural ecosystem, can augment groundwater recharge in the main basin. Where is the Data Gap section to help refine this understanding to help improving these Thresholds into the future.	GDEs are now discussed in the Groundwater Conditions section. The rangeland management project is not included in the GSP per direction from the Board
6	2.3.7 Current and Projected Water Budget				The text incorrectly identifies Figure 2.3-9 and Figure 2.3-10 as historical when they are current and projected numbers. The text also fails to quantify the overdraft of 42% by only stating that the "budget has greater outflows than inflows, leading to an average annual decrease in groundwater storage of 25,000 AF" By presenting only the value of the imbalance, the degree of overdraft is not conveyed and the severity of the situation is avoided and misrepresented. This is an unacceptable disservice to contextual understanding, which misleads and decontextualized the situation to decision-makers and stakeholders.	The text has been corrected. Required pumping reductions to eliminate overdraft are now quantified in the sustainable yield section.
7	Table 2.3-4: Current and Projected				What is meant by these Water Year Types? How many inches of rain per type of water year? This table could be informative if it had more reference or context. What is the % of normal or average?	Water year types were developed for the Cuyama Basin based on historical Basin precipitation.
8	2.3.8 Sustainable Yield Estimate				DWR requires an estimate of sustainable yield for the basin. Why is this incomplete? This section can be developed without the projects and management actions modeling analysis. Why not estimate the Sustainable Yield for the baseline condition before projects and management actions? Some amount less than the sum of Deep Percolation + Stream Seepage + Subsurface Inflow would be a Sustainable Yield. That's < 35,000 AF or 56% of currant pumping. Quantify what we do already know.	Sustainable yield information is now included in the section.
9	General Comments				It is disingenuous to present alarming data without reference or context for the understanding of its severity. DWR requires the quantification of the overdraft. W&C has not only failed to clearly quantify the degree of overdraft, but they refrained from even using the term at all. For the sake of stakeholder understanding and effective decision making it is critical that all information is presented in full context. Complex issues need their significance and their implications explained clearly.	A note has been added that reduction in storage is overdraft.
10	2.3.1 Water Budget Information	3			It would be useful to be more specific which regulations are binding than the entire California Code of Regulations.	A footnote has been added as suggested below.
11	Figure 2.3-2				Please double-check the cumulative departure calculations. Based on visual inspection, the calculations appears to be off in places (e.g., 2003 received 12 inches below average precip, but the cumulative departure only drops about 8 inches)	The figure has been updated
12	2.3.4 Water Budget…Current and Projected	1		This baseline uses current land and water use	This is not accurate based on previously presented information in the Technical Forum. It was previously understood that you are varying assumed land use going forward to match historical changes in annual crops.	The text has been revised for clarity.
13	General Comments				There does not appear to be a placeholder for a projected groundwater budget considering climate change.	A section on climate change has been added.
14	2.3.1 Water Budget Information	3		In this document, consistent with the	Suggest citing in footnote: California Code of Regulations, Title 23. Waters, Division 2. Department of Water Resources, Chapter 1.5. Groundwater Management, Subchapter 2. Groundwater Sustainability Plans	This has been added.
15	Figure 2.3-2				Align and standardize vertical scales to allow direct comparison for a given year or set of years.	The figure has been updated

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16	General Comments				The IWFM was calibrated for the period 1995-2015. The historical budget is for the period 1998-2017. Presumably the 2016 and 2017 periods are predicted by the model. Where is the post audit of those results?	These can be made available to the Tech Forum members
17	2.3.4 Water Budget…Historical	1	2	The hydrologic period of 1998	This results in cumulative removal of 18 inches of water relative to the long-term average.	Comment noted. No change required in document.
18	2.3.5 Water Budget Estimates			The following components are included in the groundwater budget	Are spring flows negligible/ignored?	Spring flows are negligible compared to the overall water budget.
19	Table 2.3-2			Average Annual Land Surface Water Budget	Incorporate "20-yr" and "50-yr" in table title	These have been added as footnotes to the table
20	Table 2.3-3			Average Annual Land Surface Water Budget	Move tables closer to text where they are discussed.	The section has been re-formatted
21	Table 2.3-4			"Runoff" cell	Is this flow out of the basin?	Yes
22	Table 2.3-3			Cell with 25,000 value in 3rd column for Deep Percolation	Rounding error? Why not 26,000 AFY as with land surface deep percolation?	Yes, this difference is due to ronding.
23	Figure 2.3.4			Historical Land Surface Water Budget	Need to be rigorous about land surface and groundwater budgets; do not refer to basin budget components.	The text has been revised as recommended.
24	2.3.6 Historical Water Budget			The Basin experiences about 285,000 AF	"Basin" - The unsaturated soil zone, not the basin; groundwater is part of the basin water budget.	The text has been revised as recommended.
25	2.3.6 Historical Water Budget			The Basin experiences about 285,000 AF	"inflows" - Land surface inflows	The text has been revised as recommended.
26	2.3.6 Historical Water Budget			About 225,000 AFY is consumed as evapotranspiration	These amounts make sense?	Yes, the evapotranspiration estimates are reasonable given the available land use data. The stream seepage and deep percolation estimates are reasonable given the data that is available.

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Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "…	Comment	Response to Comment
1	5.1 Useful Terms			Sustainability Goals – The culmination	The definitions are almost verbatim from the regs but could use some translation for a general audience, esp Sustainability Goals	To make sure that we are consistent with the Regulations, we have kept the definitions as is.
2	5.2.1 Threshold Regions…Southeastern Threshold			The northern boundary of this region is the narrows at the Cuyama river,	"and the eastern boundary" - You mean western boundary?	Although correct, the intention was to say the "eastern" because to the west of the boundary of the Basin and to the west is the Badlands Management Area. The intention was to destinguish the boundary between the two management areas.
3	5.2.1 Threshold Regions…Eastern Threshold			The Eastern Threshold Region lies just east of the central part of the	…lies just southeast?	Text has been updated
4	5.2.1 Threshold Regions…Eastern Threshold			Hydrographs in this region indicate that groundwater	Mention other aspects of Eastern Region: More variability in water levels? Locally important shallow production wells?	Text has been updated to provide more clarity to destinguish this region from the Central Region by discussing differences in water level. Also mentioned in this section is the Santa Barabara Canyon Fault, which is discussed in more detail in the HCM.
5	5.2.1 Threshold Regions…Western Threshold			The eastern boundary is defined by the Russell Fault,	Brief explanation of which land uses are differentiated	Text has been updated
6	5.2.1 Threshold Regions…Northwestern Threshold			The southeastern border was drawn to differentiate between the	Suggest "southern border" or border with the western region"; also, which land uses differentiated?	Text has been updated
7	Figure 5-1: Cuyama GW Basin Level			Map	Suggest text callout labels on the map to make it easier to tell which region is which	The figure has been updated
8	Figure 5-1: Cuyama GW Basin Level			Map	Change Legend to say "Representative well with OPTI well ID number"	The figure is clear enough without this change.
9	5.2.2 Minimum Thresholds…Southeastern Threshold			Placeholder for IM calculation	Show and reference example hydrograph (use real one) with example of trend and MT & MO calculation	Since the document has been changed to make all IMs equal to MTs, this is not needed
10	5.2.2 Minimum Thresholds…Southeastern Threshold			Levels will be measured using	An embedded table to summarize monitoring frequency would be useful	Monitoring frequency is discussed in the Monitoring Networks chapter
11	5.2.2 Minimum Thresholds…Eastern Threshold			The MT for this region intends to protect	Suggest combined hydrograph with multiple wells to illustrate trend	Hydrographs with thresholds are provided in an appendix
12	5.2.2 Minimum Thresholds…Eastern Threshold			This 20% of the range was then added below	State period of historical range used (1995-2014, or entire range of data?)	Updated text for clarity
13	5.2.2 Minimum Thresholds…Eastern Threshold			The MT values calculated by the two methods were then compared, and	Update method of setting MT & MO per 3/6/2019 GSA Board Meeting	Text has been updated. Board provided final approval for update to MTs and MOs at the 4/5/2019 meeting
14	5.2.2 Minimum Thresholds…Central Threshold			If no measurement was taken during this 4-month period	State period used to evaluate range	Updated text for clarity
15	5.2.2 Minimum Thresholds…Western Threshold			The MT was calculated by taking the difference between the total well depth and the value closest to mid-February, 2018	2018 or 2015? Explain reason for change in assumed baseline	Updated text for clarity
16	5.2.2 Minimum Thresholds…Northwestern Threshold			This value was then set as the MT.	In other words, an allowable loss of 15% of the estimated saturated thickness of the aquifer was proposed.	This is correct.

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17	Table 5-1 - Representative Monitoring			2030 IM	IM???	IM = Interim Milestone
18	Table 5-1 - Representative Monitoring	OPTI well 77, Final MO 400			How do the MT's agree across the Basin? Table shows significant difference in parameter ranges in different Threshold Regions. Are we going to have some agreement across the Basin or will it bust? The Central Region has a range of 600 feet, Western 130 feet, and Eastern 70 feet.	Thresholds have been calculated to be protective of certain areas of the Basin and the conditions within those portions of the Basin while also considering beneficial uses of GW. In other regions, they have been calculated to achieve sustainability over the planning horizon. While threshold levels may differ across regions, these thresholds will 1) help move the
19	Table 5-1 - Representative Monitoring	OPTI well 324, Final MT 311			Suggest using a contour or symbolic post map to illustrate overall basin MTs and MOs. May show some discontinuities that you will want to address in the text.	Spatial density of wells may not be sufficient to provide a map that is accurate to represent the MOs across the entire basin. When more data is available, this may be an option.
20	5.3 Reduction in Groundwater	2	1	Reduction of groundwater storage is not a concern for the Basin	I kinda thought this was the main concern, actually. Might want to re-word this a little. Maybe something like "Separate monitoring of groundwater storage changes apart from groundwater levels is not proposed..."	Text has been updated for clarity
21	5.3 Reduction in Groundwater	3	1	Second, because the primary aquifer in the Basin is not confined	Storage also is linear with water levels in confined systems, you just have a much smaller storage coefficient.	Comment noted. No change needed.
22	5.5 Degraded Water Quality	3	1	Because the undesirable result for degraded water quality	Suggest clarifying this. Maybe "Because undesirable water quality results are defined under SGMA only as those chemical constituents which are influenced by SGMA-related groundwater management activities, not all chemicals of concern in Cuyama Basin groundwater will be monitored or regulated by the GSA. Total dissolved solids (TDS) will..."	Text has been updated for clarity
23	Table 5-2: MOs	Table		MO column	Suggest making a symbolic post map, color "heat map" or contours to illustrate the basin as a whole, or maybe by threshold region, even though you aren't using those for WQ. Still people have gotten used to them and now think along those lines.	Spatial density of wells may not be sufficient to provide a map that is accurate to represent the MOs across the entire basin. When more data is available, this may be an option.
24	5.6.3 Minimum Thresholds	1	1	Because current subsidence rates are not believed to be significant and	P521 is outside the basin. VCST is in the basin.	Updated text for clarity
25	5.6.3 Minimum Thresholds	2	2	Thus, the MO for subsidence is set for zero	Isn't CUHS subsidence ~11 inches? More than zero...	Text has been updated for clarity. Although approximatly 295 mm of subsidence has occurred in the last 14.5 years (estimated by taking -5mm around mid 2002 ti -300 around Jan 2017), the rate of subisdence has been about 0.8 inches per year.
26	5.7 Depletions of Interconnected	2	2	In January 1, 2015 surface flows infiltrated into the groundwater	Are you talking about a single 1-day flood event? This sentence is unclear if you are describing general conditions or a specific event.	Updated the text for clarity
27	5.7 Depletions of Interconnected	2		Conditions have not changed since January 1, 2015	How does this correspond to the water budget showing significant surface water outflows?	Updated the text for clarity
28	General Comment				No explanation is offered for the absence of Interim Milestones. How and when will these be calculated? Placeholders for these important sustainability goals represent a critical gap in this chapter and need some explanation as to the timing and process for their completion.	The updated draft sets all IMs for water levels and water qualities to equal MTs
29	General Comment				Minimum Thresholds for the Eastern Region are being reconsidered and adjusted by the GSA and are not accurately reflected in this draft for review.	Text has been updated. Board provided final approval for update to MTs and MOs at the 4/5/2019 meeting
30	General Comment				The sustainability criteria of subsidence, loss of storage, water quality and the depletion of interconnected surface waters are underemphasized to the point of misrepresenting the undesirable results that are currently being experienced by beneficial users and uses other than agriculture in the basin.	Comment noted. No change needed.
31	General Comment				There is a dismissive approach to addressing the undesirable results of the Sustainability Criteria and to the setting of MTs. All the available data indicates conditions of overdraft in the basin but many MTs allow for continued declines in groundwater elevations and groundwater quality. The perspective towards sustainability appears to be coming from the viewpoint of the commercial agricultural beneficial user and dismissive of the needs of others, such as domestic and environmental users. Many water quality issues are avoided, such as arsenic and nitrates and domestic supply needs. Subsidence is dismissed and increasingly tolerated. Interconnected surface waters and GDEs are assumed to be irrelevant without the responsibility for protection. This is unexceptable to this stakeholder and I would hope and expect that the DWR would agree	Comment noted. No change needed.
32	5.2 Chronic Lowering				Of the six Threshold Regions that were defined for specific MT/MO/IMs, only two specifically note protection of environmental uses: Southeastern Threshold Region, and Eastern Threshold Region. However, W&C has defined likely GDEs in the Northwestern region and parts of the Central region. Without the associated maps and GDE report, it was unclear if these wells with MTs and MOs are protective of these likely GDEs. Most MTs/MOs in these wells (Table 5-1) are really deep; a few wells have MTs < 100ft and MOs <50 ft. It would be important for be able see where those wells overlay with the potential GDEs (both original NC dataset potential GDEs and the W&C likely GDEs). How is it demonstrated that the lowering of groundwater levels with these thresholds won't adversely impact these beneficial uses?	Well locations relative to GDEs can be assessed when Monitoring Network data gaps are addressed during the GSP implementation phase.

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33	5.2.1 Threshold Regions				This subsection does not discuss the strategies used to calculate the MOs, MTs, and Milestones for each Threshold Region, as stated in the text, but only describe the characteristics and location of the regions. Strategies are presented in subsection 5.2.2.	Text has been updated for clarity
34	5.2.2 Minimum Thresholds…Southeastern Threshold				The MT is intended to be "protective of domestic, private, public, and environmental uses", yet for one of the only two monitoring wells in this region the MT is set only one foot above the bottom of the well (Opti well #2). How is that being protective?	MT is set at levels determined and approved by the GSA Board. If levels drop below MTs, the Board can take action in the future.
35	5.2.2 Minimum Thresholds…Eastern Threshold				It has been noted that these rationales do not work well for this region and that the monitoring wells are not representative of the wells in this region. The rationales for this region need to be reconsidered by the GSA and then this subsection rewritten before review.	Text has been updated. Board provided final approval for update to MTs and MOs at the 4/5/2019 meeting
36	5.2.2 Minimum Thresholds…Western Threshold				This sentence makes no sense; "This would allow users in this Threshold Region to utilize their groundwater supply without increasing the risk of running a dry well beyond acceptable limits, and this methodology is responsive to the variety of conditions and well depths in this region." A well running dry would surely constitute an Undesirable Result.	Text has been updated for clarity
37	5.2.2 Minimum Thresholds…Western Threshold				OPTI Well 474 is not in this region, why is it mentioned here?	Well 474 is in the western region
38	5.2.2 Minimum Thresholds…Northwestern Threshold				Very little publicly verified information is available for this region which until recently had never been developed for irrigation. Only two years of data exists from the new wells in the region. How was the "total average saturated thickness for the primary storage area of the region" determined with any validity? With such limited historical data available, how was 50 feet determined to be 5 years of storage? Local landowner input is suspect to be biased in the interest of their recent commercial development and is therefore questionable at best. In the case of such uncertainty it seems imprudent and risky to set MTs so far below current conditions in a critically overdrafted basin. Were the "Far-west Northwestern" wells put into a newly designated Threshold Region, moved into the "Western" region, or just "reclassified" because the rational is inappropriate? Is this an appropriate solution? This was never discussed by the SAC or GSA.	Information about this region was provided in two memorandums emailed to the Cuyama mailing list on 12/13/2018. The GSA Board was able to take this information into account when setting MTs for this region.
39	5.3 Reduction in Groundwater				Reduction of groundwater storage is certainly a concern for the Basin for obvious reasons. A lack of sufficient monitoring data in several areas of the Basin (western, northwestern, far west northwestern, eastern, and southeastern) inadequately represent conditions of groundwater storage. Chronic groundwater elevation declines in many areas of the Basin indicate significant reduction in storage. The historic and current condition of overdraft (-26 TAF/Y) has reduced groundwater storage in the basin by well over 1,000,000 AF, and is projected to continue until some substantial changes are made to the management of this resource. The reduction of groundwater storage caused by continued overdraft is an undesirable result experienced by every beneficial user in the basin	The text has been revised to just note that direct measurement of storage is not needed, while removing reference to storage not being a concern.
40	5.5 Degraded Water Quality				Because of the causal nexus between excessive groundwater extraction and degrading groundwater quality, the GSA is responsible for monitoring the changes in concentrations of any constituent that would represent an undesirable degradation of water quality due to groundwater extraction. These include Arsenic, Nitrates and TDS. Limiting the GSP to monitoring TDS alone is not sufficient and does not satisfy the requirements of SGMA with regards to monitoring groundwater quality.	Direction was provided by the GSA Board (through approval of the Monitoring Networks GSP section) to only include TDS for monitoring and sustainability in the GSP. As stated in the text, other contamination sites are regulated by the RWQC, nitrates are unde the jurisdiction of the ILRP, and the GSA does not possess land use authroity to incluence fertlizer use. Additionally, Arsenic occurs at specific depths in the Basin and is not managed a the GSA regional scale.
41	5.5.3 Minimum Thresholds				TDS levels in the groundwater detrimentally impact the agricultural economy of the Basin because crops like potatoes, beets and leafy greens, formerly a much larger part of local production, are no longer commercially viable. Carrots may tolerate the high TDS, but they suffer in quality, taste and sweetness. It should be noted that to defend poor water quality and tasteless produce does not serve the local agricultural economy well and the GSP should not include this sort of language. Further, there is no mention made of the undesirable effect experienced by domestic and livestock users due to the poor water quality. It should be noted that carrot production is not the only beneficial user of groundwater in the basin. Disadvantaged communities in the valley are not well resourced to treat drinking water sources or redrill domestic wells.	High TDS in the Basin, as stated in the text (Sustainability Thresholds Sectio nand Groundwater Conditions) is naturally occuring within the Basin. The GSA has voted to monitor TDS, but may only influece TDS concentrations through groundwater levels, through additional inputs. These inputs travel through highly saline rock, contributing to additional TDS in the groundwater. Per SGMA regulations, the GSA is also only required to maintain water quality conditions that exist as of January 1, 2015. The GSA may choose to refine these thresholds later as more data is collected.
42	Table 5-2: MOs				How is it that all the Interim Milestones set for TDS have progressively higher concentrations over time? For example Opti well 99, with a MT of 1562, has an IM of 1490 - 1508 mg/L for 2025, 1490 - 1526 mg/L for 2030, and 1490 - 1544 mg/L for 2035. This appears to be getting worse not better! Why is it that many wells in the table (all of the last 17) have MO the same as the MTs, with IMs that have no range or change? For example; Opti well 845 has an MO of 1250 and an MT of 1250, and all three IMs are 1250 - 1250 mg/L. This data table implies worsening TDS concentrations over time and needs further clarification.	Interim Milestone calculations have been updated such that IMs equal the MTs at all intervals.
43	5.6 Subsidence				With the current accelerating rate of subsidence of approximately 0.5 inches per year, what is the rationale of a MT of 2 inches per year? This is far too permissive and clearly allows for up to 10 inches of collapse in 5 years at four time the current rate. Ground surface instability and associated storage loss of this caliber is not achieving sustainability and would constitute a significant undesirable result. There needs to be a clearer explanation of why this undesirable result is allowable	No undesirable result has been identified for subsidence of up to 2 inches per year
44	5.7 Depletions of Interconnected				Riparian habitat and phreatophytes in the Cuyama River have been drying up and dying since long before January 1, 2015, as groundwater levels decline and the river bank storage is lost. Conditions continue to degrade with the depletion of interconnected surface water as less of the river experiences surface flows due to declining groundwater elevations. Deforestation and riparian habitat loss is an undesirable result due to the adverse effects of continued overdraft. Groundwater dependent ecosystems are similarly adversely impacted by this undesirable result. SGMA requires GSAs to identify, quantify and manage these beneficial uses to avoid any undesirable results. This GSP fails to recognize that requirement or manage for these undesirable results.	Comment noted. Please review the GDE report for additoinaly information.
45	5.7 Depletions of Interconnected				Without the baseline information in the Groundwater Conditions, especially in the newly developed Northwestern region, it is difficult to justify the decision to allow for the continued decline of groundwater levels with these MT/MO.	Comment noted. The MTs and MOs reflect the values approved by the Board.

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46	5.2.1 Threshold Region... Southeastern Threshold				I believe it is inaccurate to describe this Region as having groundwater levels that are "generally high in this area, with levels around 50 feet or less below the ground surface which indicates that this region is likely in a 'full' condition." If the GSP is going to characterize this region like that, then it needs to point out that it is based on limited history from two wells in the southern headlands half of the region, and that little or no data exists for the areas north toward the narrows. Data does, however, exist, and I think it should inform our understanding and description of the region. At the request of staff, I have twice sent 3rd party documentation in the form of various well drilling reports as well as additional information about the significant fluctuations in static water levels that have occurred historically within this region. Those documents , well videos and air-line measurements show that static water levels in this region have fluctuated significantly during drought periods to at least as low as 108' bgs. I believe there needs to be a recognition of the historical fluctuation of water levels in this region, and that this section should include something like the following wording: "Groundwater is generally high in this area with levels around 100 feet or less below ground surface. Groundwater levels in this region are subject to significant declines during drought periods but have typically recovered to within 50' or less of ground surface during historically wet periods."	Text has been updated to add additional language.
47	5.2.1 Threshold Region...Eastern Threshold				The Eastern Threshold Region description should include a little more information: It only mentions conditions during the past 20 years, whereas our understanding of the reliability and availability of water in this region relates to a much longer time horizon. Our historical modeling is informed by 50 years of data, and I think we should at least descriptively recognize what's happened in this region over a longer history. I think we should include wording to the effect that "Hydrographs in this region indicate that groundwater levels have ranged widely and repeatedly over the past 50 years. Hydrographs in the Ventucopa area indicate that groundwater levels have been, in general, declining for the past 20 years.	Example is OPTI Well 85. Text has been updated for clarity.
48	5.2.2 Minimum Thresholds…Southeastern Threshold				Although the charts and thresholds are all good, I believe the threshold description rationale is in error. It reverses the use of the terms MO and MT.	Text has been updated to correct this error.
49	5.2.2 Minimum Thresholds…Southeastern Threshold	2	1	The MT for the Southeastern Threshold Region…	It should read: "The MO for Southeastern Region…."	Text has been edited
50	5.2.2 Minimum Thresholds…Southeastern Threshold	3	1	To provide an operational flexibility range, the…	Sentence should read "To provide an operational flexibility range, the MT was calculated by adding 5-years of groundwater storage to the MO."	Text has been edited
51	5.5.3 Minimum Thresholds				The section seems to say that the TDS levels in the water need to be better measured and understood, and that we can't do much about them, and they're not necessarily impacting the economy that much, but then goes on to set Minimum Thresholds at very strict levels sometimes just above a recent historical level. At least some of the OPTI wells in the DMS have very limited data associated with the TDS, or even just two data points, sometimes with the same date (OPTI 83) and have a falsely narrow range of readings. Under the MT formula, this results in an exceptionally strict MT such as in OPTI 83 where the MT is set at just 6 ppm over the only reading on the well which was August of 2011. TDS levels vary broadly over short distances, and can vary significantly from year to year. My own sampling results show TDS results varying by as much as 800 ppm from one well to the next and by similar amounts on an individual well over time. If water quality readings that violate MTs will be an issue, then I believe the proposed MTs should be rethought and not expressed in terms of historical ranges, but rather as a percentage factor over recent values.	Comment noted. The Board can reassess the thresholds in the future as more data is collected.
52	5.1 Useful Terms	Final			Typo in use of MI instead of IM.	Text has been updated
53	5.2.1 Threshold Regions	1		These conditions are influenced by geographic…	This sentence is confusing and needs revision	Text has been updated
54	5.2.1 Threshold Regions…Southeastern Threshold				Typo "southeaster"	Text has been updated
55	5.2.1 Threshold Regions…Southeastern Threshold				Describing groundwater levels is sufficient, no need to editorialize about "full" condition", or at least state that it is currently in a full condition.	Text has been updated
56	5.2.1 Threshold Regions…Central Threshold			Hydrographs in this region indicate that groundwater levels have been…	Should note that the levels have been substantially declining, or give a sense of the average rate of decline.	Comment noted. This is shown in the Groundwater Conditions section.
57	5.2.1 Threshold Regions…Western Threshold				Mention types of land use to distinguish it from NW Region Also, describing groundwater levels is sufficient, no need to editorialize about "full" condition", or at least state that it is currently in a full condition.	Text has been updated

Cuyama Basin Sustainability Section
Summary of Public Comments and Responses
April 22, 2019

Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "…	Comment	Response to Comment
58	5.2.1 Threshold Regions…Northwestern Threshold			The Northwestern Threshold Region is the bottom of the Cuyama…	Please be more specific and revise to something like: " The Northwestern Threshold Region is at the western edge of the Cuyama Basin and has undergone changes in land use from grazing to irrigated crops over the past 4 years." Also, describing groundwater levels is sufficient, no need to editorialize about "full" condition", or at least state that it is currently in a full condition.	Text has been updated
59	5.2.1 Threshold Regions…Badlands Threshold			There is no monitoring in this region, and this	Revise to "… and no sustainability criteria were developed for this region."	Text has been updated
60	5.2.2 Minimum Thresholds	General Comment			MTs were established for wells, not regions. So the text should state that MTs were calculated for wells in a given region.	Text has been updated
61	5.2.2 Minimum Thresholds	General Comment			Include additional reasoning why the various threshold rationales were chosen.	Comment noted. This will be included in the Undesirable Results Narrative.
62	5.2.2 Minimum Thresholds…Central Threshold			The MT for the Central Threshold Region	Typo "The MT for the Central Threshold Region was calculated by taking finding…"	Text has been updated
63	5.2.2 Minimum Thresholds…Central Threshold			OPTI Wells 74, 103, 114, 568, 609, and	Please explain the reason for this in the text (e.g., "Because OPTI Wells 74, 103, 114, 568, 609, and 615 did not have sufficient measurements…")	The text has been updated. These wells did not have measurements to within the specified time range to represent January 1, 2015 conditions and thus utlized a linear trendline to extroplate and estimated value.
64	5.2.2 Minimum Thresholds…Western Threshold			OPTI Well 474 utilizes a modified MO calculation	Please explain why in the text.	Text has been updated
65	5.3 Reduction in Groundwater	2		Reduction of groundwater storage is not a concern for the Basin for two reasons.	Reduction of groundwater storage may be able to measured using levels as a proxy, but it is inaccurate to say that it is not a concern. Even areas that may be currently "full" may suffer reductions in groundwater storage going forward. Suggest deleting this discussion.	The text has been revised to just note that direct measurement of storage is not needed, while removing reference to storage not being a concern.
66	5.5 Degraded Water Quality	3		Because the undesirable result for degraded	Explain in text why TDS will be monitored. Current discussion is only about constituents not to be monitored.	Text has been updated
67	5.5 Degraded Water Quality	3		Arsenic occurs at specific depths in the basin, but the location	If arsenic increases with depth, then managing declines in groundwater levels would manage arsenic concentrations.	Text has been updated
68	5.5.3 Minimum Thresholds	3	1	Due to these factors the MT for representative well sites are set	Please give an example of how this is calculated with an example well for clarity in the text. Also provide the calculations in Table 5.2 or in an appendix. Columns with the total range and the 90th percentile of measurements would be useful.	Text and Table has been updated
69	Table 5-2: MOs				Table should state that these concentrations are for TDS. Include units for MO and MT as they are for the IMs. For ease of table reading, could move units to the header.	Table has been updated
70	5.6.2 Representative Monitoring				It's not just water-related infrastructure that is impacted by land subsidence. It can be roads, bridges, etc.	Text has been updated
71	Figure 5-4				Needs to be referenced	Text has been updated
72	5.7 Depletions of Interconnected	2	2	In January 1, 2015 surface flows infiltrated into the groundwater	This statement, and this whole section is confusing and should be revised. I think that the intent is to say that there has been no change in surface water depletion since 2015, but the wording is quite awkward and would not be coherent to a reader without significant background knowledge.	Text has been updated
73	General Comment				In general, the Central Coast Water Board recommends that the number of chemical constituents included in the Minimum Thresholds (MT), Measurable Objectives (MO), and Interim Milestones (IM) be increased. The Central Coast Water Board agrees that MTs, MOs and IMs should be established for total dissolved solids (TDS), however, including only that single constituent is insufficient for determining whether a groundwater basin is being managed sustainably with respect to water quality or for determining if undesirable results are being addressed. Land use in the Cuyama Valley is dominated by commercial agriculture, an industry that utilizes a variety of chemicals and practices that pose threats to groundwater quality. Therefore, the Central Coast Water Board recommends expanding the list of chemical constituents in the MT, MO, and IM to include nitrate, arsenic, and major dissolved ions. The reasoning for this recommendation is described in detail below.	Direction was provided by the GSA Board (through approval of the Monitoring Networks GSP section) to only include TDS for monitoring and sustainability in the GSP. Therefore, this Section will only include water quality sustainability indicators for TDS, unless alternate direction is provided by the Board.

Cuyama Basin Sustainability Section
Summary of Public Comments and Responses
April 22, 2019

Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "…	Comment	Response to Comment
74	General Comment				Nitrate: Nitrate contamination of groundwater from agricultural activities is widely documented in the Central Coast region, including within the Cuyama Valley. Approximately 9% of on-farm domestic wells in the Cuyama Valley exceed the human health standard for nitrate concentration in drinking water1. The draft chapter states that the Cuyama Valley groundwater sustainability agency (GSA) does not have the authority to influence fertilizer use, and we are not suggesting the GSA should undertake such a regulatory role. However, the GSPs are required to implement thresholds and monitoring that can identify when undesirable results are occurring. Given the current impairment from nitrate in the basin and ongoing agricultural activity, it is appropriate to require thresholds and monitoring for nitrate in the Cuyama Valley groundwater basin. Nitrate monitoring is not unusual in agriculturally-dominated basins; for example, the Salinas Valley GSA is recommending an expanded suite of chemical constituents for its thresholds and monitoring. The recommendation in their most recent draft includes up to 25 different chemical constituents, including nitrate and arsenic. Finally, we recommend that nitrate be reported as nitrogen (nitrate as N), because this convention allows for easy comparison and summation (e.g., calculation of total nitrogen).	Direction was provided by the GSA Board (through approval of the Monitoring Networks GSP section) to only include TDS for monitoring and sustainability in the GSP. Therefore, this Section will only include water quality sustainability indicators for TDS, unless alternate direction is provided by the Board.
75	General Comment				Arsenic: Arsenic is a toxic chemical compound that occurs naturally in relatively high concentrations in many of the sediments that form California groundwater basins, including those of the Central Coast. Groundwater data from the Water Board's GeoTracker GAMA website indicates that 12% of the wells in the Cuyama Valley groundwater basin exceed the maximum contaminant level (MCL) for arsenic in drinking water. The highest concentration recorded in the basin occurred in 2011 and was more than six times greater than the MCL. Furthermore, recent studies in the Central Valley of California and the Mekong Delta in Thailand have demonstrated that ground subsidence associated with groundwater over-pumping can mobilize arsenic by 'squeezing' it out of subsurface clay layers. The resulting mobilized arsenic can then enter groundwater and increase arsenic concentrations in nearby water supply wells. Because there is documented overdraft and subsidence in the Cuyama Valley, there is the potential risk of anthropogenically-induced arsenic contamination of groundwater due to arsenic mobilization from clay layers in the Cuyama Valley basin. Lastly, in addition to sediment related sources, arsenic is a component in many pesticides commonly used on various crops. These factors suggest that arsenic should be included in the MTs, MOs, and IMs for the Cuyama Valley basin.	Direction was provided by the GSA Board (through approval of the Monitoring Networks GSP section) to only include TDS for monitoring and sustainability in the GSP. Therefore, this Section will only include water quality sustainability indicators for TDS, unless alternate direction is provided by the Board.
76	General Comment				Major Dissolved Ions: Major dissolved cation and anion composition in groundwater reflects the source of recharge water, lithological and hydrological properties of the aquifer, groundwater residence time, and chemical processes within the aquifer. As such, major dissolved ions are valuable for identifying different groundwater types (via Piper or Stiff diagrams) and for "fingerprinting" source water from individual wells. In addition, ionic charge balance provides quality assurance that all the major ions are actually included in the analysis and that TDS concentrations are accurate. Finally, collection and analysis of major dissolved ion samples is easy and inexpensive, and the cost of the analysis is well worth the data provided, particularly if the well is already being sampled for other constituents.	Direction was provided by the GSA Board (through approval of the Monitoring Networks GSP section) to only include TDS for monitoring and sustainability in the GSP. Therefore, this Section will only include water quality sustainability indicators for TDS, unless alternate direction is provided by the Board.
77	5.1 Useful Terms				Suggest that the GSA Board is aware that the representative wells are theoretical until an agreement between the GSA and well owner is executed. Does the Consultant have a list of other potential representative wells in case a well is not operational, or an agreement cannot be executed?	All the wells that could be used as representatives wells are included, and thus no alternative list is available. The text has been updated for clarity
78	5.2.1 Threshold Regions…Southeastern Threshold	1	1	The Southeaster Threshold Region	Spelling	Text has been updated
79	5.2.1 Threshold Regions…Southeastern Threshold	1	2	Groundwater is generally high	Consider adding a timeframe or date to when this area was defined as full.	Text has been edited for clarity
80	5.2.1 Threshold Regions…Southeastern Threshold	1	3	The northern boundary of this region is the	Consider defining all four boundary directions for the Southeastern Threshold Region.	Text has been updated
81	5.2.1 Threshold Regions…Eastern Threshold	1	4	The northern boundary of this region	Consider defining all four boundary directions for the Eastern Threshold Region.	Text has been updated
82	5.2.1 Threshold Regions…Central Threshold	1	3	The south-eastern boundary is defined by	Consider defining all four boundary directions for the Central Threshold Region.	Text has been updated
83	5.2.1 Threshold Regions…Western Threshold	1	1	The Western Threshold Region is characterized	Consider adding a timeframe or date to when this area was defined as full.	The text has been updated.
84	5.2.1 Threshold Regions…Western Threshold	1	3	The eastern boundary is defined by	Consider defining all four boundary directions for the Western Threshold Region.	Text has been updated
85	5.2.1 Threshold Regions…Northwestern Threshold	1	2	Hydrographs in this portion of the	Consider adding a timeframe or date to when this area was defined as full.	The text has been updated.
86	5.2.1 Threshold Regions…Northwestern Threshold	1	3	The southeastern border was drawn to	Consider defining all four boundary directions for the Northwestern Threshold Region.	Text has been updated
87	5.2.1 Threshold Regions…Eastern Threshold	1	3	The northern boundary of this region is	Consider defining all four boundary directions for the Eastern Threshold Region.	Text has been updated

Cuyama Basin Sustainability Section
Summary of Public Comments and Responses
April 22, 2019

Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "...	Comment	Response to Comment
88	5.2.1 Threshold Regions…Central Threshold	1	3	The south-eastern boundary	Consider defining all four boundary directions for the Central Threshold Region.	Text has been updated
89	5.2.1 Threshold Regions…Western Threshold			The Western Threshold Region is characterized	Consider adding a timeframe or date to when this area was defined as full.	The text has been updated.
90	5.2.1 Threshold Regions…Western Threshold			The eastern boundary is defined by the	Consider defining all four boundary directions for the Western Threshold Region.	Text has been updated
91	5.2.1 Threshold Regions…Northwestern Threshold	1	2	Hydrographs in this portion of the Basin	Consider adding a timeframe or date to when this area was defined as full.	The text has been updated.
92	5.2.1 Threshold Regions…Northwestern Threshold	1	3	The southeastern border	Consider defining all four boundary directions for the Northwestern Threshold Region.	Text has been updated
93	5.2.1 Threshold Regions…Badlands Threshold	1	2	There are few active wells and little	Consider removing the word little and adding an estimated value of groundwater from the groundwater model.	The text has been edited.
94	5.2.1 Threshold Regions…Badlands Threshold	1	3	There is no monitoring in this region	Consider defining the geology of the Badlands area, such as adding Ballinger, Quatal, and Apache Canyons. This will help explain why this area has few active wells	This is in the HCM section.
95	5.2.2 Minimum Threhsolds	1	1		Consider adding a summary of why each region may have a different MT and MO.	This information is provided in the text
96	5.2.2 Minimum Thresholds…Southeastern Threshold				Consider adding a hydrograph figure to help explain each threshold region for MO & MT.	Hydrographs with thresholds are provided in an appendix
97	5.2.2 Minimum Thresholds…Eastern Threshold				Consider adding a hydrograph figure to help explain each threshold region for MO & MT.	Hydrographs with thresholds are provided in an appendix
98	5.2.2 Minimum Thresholds…Central Threshold				Consider adding a hydrograph figure to help explain each threshold region for MO & MT.	Hydrographs with thresholds are provided in an appendix
99	5.2.2 Minimum Thresholds…Western Threshold				Consider adding a hydrograph figure to help explain each threshold region for MO & MT.	Hydrographs with thresholds are provided in an appendix
100	5.2.2 Minimum Thresholds…Northwestern Threshold				Consider adding a hydrograph figure to help explain each threshold region for MO & MT.	Hydrographs with thresholds are provided in an appendix
101	5.2.2 Minimum Thresholds…Badlands Threshold			The Badlands Threshold Region has no	Page 5-8 states that the area has few active wells, please clarify or correct.	Text has been updated
102	5.2.3 Selected Minimum Thresholds				Consider adding a summary table for MO / MT, such as the one shown in the GSA Board agenda packet on March 6th.	Summary table is provided - Table 5-1
103	5.5.3 Minimum Thresholds	2	3	Much of the crops grown	Consider referencing the crop types or adding a figure on crop types to support this statement.	This information would be inlcuded in the plan in the Basin Settings section
104	General Comment				Consider adding adaptive management as a section in this chapter to provide flexibility to the GSA Board for MO, MT, and interim milestones. Revisions to the MO, MT, and interim milestones could be based on the data collected and analyzed from the GSP monitoring and overall plan effectiveness.	Addaptive management will be included in the Projects and managmeent action section.
105	Refernces			California Department of Water Resources (DWR),	Wrong agency?	Text has been updated
106	Refernces			rrigated Land Regulatory Program (IRLP),	Correction - ILRP	Text has been updated

Cuyama Basin Placeholder Sections
Summary of Public Comments and Responses
April 22, 2019

Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "…	Comment	Response to Comment
1	1.2.8 Plan Elements from CWC Section 10727.4	1	1	The plan elements from…	Suggest revising language in 1.2.8 - first sentence	The text has been revised
2	2.2.4 Change in Groundwater Storage	1	5	The color of bar…	Consider revising the river name	The year type index has been clarified.
3	2.2.10 Data Gaps	1			Consider adding a table on all the data gaps mentioned below in 2.2.10, including data gaps required by DWR GSP regulations.	This is not needed
5	General				Overdraft continues to be hidden within confusing language. Clarity with this issue is paramount and should not be at all ambiguous.	The text has been revised to note that negative change in storage is overdraft
6	General				Some shake up in classifying GDEs has made two unrealistic elimination of either 56% or 82% potential GDEs.	Comment noted. A more detailed analysis of GDEs can be performed during implementation if the Board chooses to do so.
7	General				Additional Data Gaps for the Groundwater Conditions we noted.	The data gaps section has been edited.
8	General				Due to the absence of any stream gauges in the Cuyama in the basin the model is calculating all the amounts and the relationships between the surface and groundwater. This interpreted Interconnectivity of surface waters with the groundwater in not well reflected from the model onto the Figure. More inter-relativity in the presentation is needed.	Comment noted.
9	2.1.10 Hydrogeologic Conceptual Model Data Gaps				It has been recognized that the interconnectivity between Groundwater and surface water is poorly understood, and represents a significant Data Gap in the HCM and throughout this GSP. Many historic seeps, springs and wetlands indicate a complex cascading basin in the three main aquifers with perched groundwater elevations on top of clay layered aquitards. This affects the Groundwater Dependent Ecosystems across the basin and needs further understanding.	Comment noted. A more detailed analysis of GDEs can be performed during implementation if the Board chooses to do so.
10	2.2.4 Change in Groundwater Storage	1	4	Average annual use over the twenty-year period was...	The text does not express the degree or severity of the overdraft. The sentence is incorrect and misinforming. It does not even use the euphemism “change in storage”, the word “use” should read “overdraft”.	The text has been revised to note that negative change in storage is overdraft
11	2.2.4 Change in Groundwater Storage	1	1	Historical change in storage in the Cuyama Basin…	The text does not express the degree or severity of the overdraft. In this sentence, at least the first “change in storage” could be replaced for clarity with “overdraft”. At the very least quantify it as “negative change in storage”.	The text has been revised to note that negative change in storage is overdraft
12	2.2.4 Change in Groundwater Storage				The water year type should be correlated to a Cuyama Basin type of water year, not the central valley. Please define what is designated by the water year type as a percent of deviation from an average or normal year.	The year type index has been clarified.
13	2.2.8 Interconnected Surface Water Systems				Is this the same Appendix X as the GDE Report Appendix X?	The text has been revised to clarify that this is referring to the IWFM model appendix.
14	2.2.8 Interconnected Surface Water Systems				Presumably, the Cuyama Basin IWFM Model can be used to analyze groundwater interactions between all the surface water flows in the Basin. Figure 2.2 only represents the Cuyama River, and four of the creeks. Are these the only reaches being analyzed from the model? And can we get more analysis of this data? Show amounts and percentages of gain and loss by reach.	While runoff from all watersheds is simulated in the model, these are the only reaches explicitly simulated as creeks in the model.
15	2.2.8 Interconnected Surface Water Systems				As is noted in the Section 4-10 below, this modeling is being done without any stream gauge data points, because there are no stream gauges, yet.	Comment noted.
16	Table 2-1				This table needs a couple of additional rows on the bottom for Totals & Averages by Reach. This would illustrate the patterns better than the Total column does and it would be helpful to overlay on Figure 2-2 (which needs relabeling). Range of data and the % of Total would also be informative additional rows to this chart	An average annual row has been added.
17	2.2.9 Groundwater Dependent Ecosystems				How and why did we go from reducing to 497 acres from the 2700 acres of GDEs in the DWR’s Natural Communities Commonly Associated with Groundwater (NCCAG) dataset, to these 123 “probable GDEs” and 275 “probable non-GDEs”? What happened to acreage? It is not reasonable to eliminate such a large % (82% & 56% respectively) of possible GDE acres from a desktop analysis of aerial imagery and such little field study (1 & ½ days and only six discreet sites). All of the GDEs up Santa Barbara Canyon are on public land and are full of seeps, springs & wetlands. You just have to walk in to verify them, not drive. Why are they classified as non-GDEs? Figure 2-5 misspelled “Likely Wetlands” and shows no discernable wetlands at all. This report drastically underrepresents the remaining GDEs and risks the continued loss of this important beneficial use of the groundwater resources.	Comment noted. A more detailed analysis of GDEs can be performed during implementation if the Board chooses to do so.
18	2.2.9 Groundwater Dependent Ecosystems	2	2	The NCCAG dataset was compiled by the Nature Conservancy…	Is this true? I thought it was CWDR. The text and Figure 2-3 should credit DWR, not The Nature Conservancy. And that is all the more reason to ground truth verify the data before tossing it out	The text has been revised.
19	2.2.10 Data Gaps				Additional Data Gaps in the Groundwater Conditions include the following: All the major faults are not well understood with regard to the degree they represent a barrier to flow and at what depth below the surface.	The data gaps section has been edited.
20	2.2.10 Data Gaps				Additional Data Gaps in the Groundwater Conditions include the following: The wells in the database and in the Monitoring Network are not well known and must be canvassed to verify well depth, perforation interval and current status.	The data gaps section has been edited.
21	2.2.10 Data Gaps				Additional Data Gaps in the Groundwater Conditions include the following: The size of the Basin with regard to groundwater in storage is not well known and after 40 years of chronic overdraft and the loss of over 1 MAF, what remains in storage?	The data gaps section has been edited.

Cuyama Basin Placeholder Sections
Summary of Public Comments and Responses
April 22, 2019

Comment #	Section	Section Paragraph #	Paragraph's Sentence #	Sentence Starts with, "…	Comment	Response to Comment
22	4.10 Depletions of Interconnected Surface Water Monitoring Network			Monitoring Networks for depletions of surface water cannot …	It is appreciated by this reviewer that the lack of any surface water gage stations on the Cuyama River in the Basin is recognized as an impediment to accurate modeling. No amount of numeric estimating can make up for the lack of real data points. When can we see these new stream gages installed?	Comment noted.
23	Appendix X				This Technical Memorandum could have been more informative with a brief Publication Review. Historical reference with field verification and local experience would have yielded different conclusions. With only six actual field sites visited, this was not a significant field verification and the aerial imagery analysis was inadequate to identify the many existing GDEs that were disqualified in this report.	Comment noted. A more detailed analysis of GDEs can be performed during implementation if the Board chooses to do so.

Attachment D-2

Technical Forum
Meeting Memoranda

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 5/4/2018

MEETING: Technical Forum Conference Call

ATTENDEES: Matt Young (Santa Barbara County Water Agency)
Cathy Martin (San Luis Obispo County)
Matt Klinchuch (Cuyama Basin Water District)
Dennis Gibbs (Santa Barbara Pistachio Company)
Jeff Shaw (EKI)
Neil Currie (Cleath-Harris Geologists)
John Fio (HydroFocus)
Brian Van Lienden, Lyndel Melton, Ali Taghavi, John Ayres & Sercan Ceyhan (Woodard & Curran)

1. AGENDA

- Model grid update
- Hydrogeology
- Hydrology
- Land and water use
- Data collection update
- Next steps

2. DISCUSSION ITEMS

The following table summarizes discussion items raised at the meeting and the plans for resolution identified for each item.

Item No.	Discussion Item	Plan for Resolution
1	The updated model grid was provided for review on April 19, 2018.	Since no comments were provided, the W&C team is moving forward with the current grid.
2	The technical analysis needs to account for an unnamed fault near Cottonwood Canyon.	Neil Currie will provide information related to this fault. W&C will review this information and incorporate it into the hydrogeologic conceptual model (HCM). No change needed to the model grid as it appears to be of sufficient resolution to allow incorporation, as appropriate, into the model.

3	The HCM should use Delong's mapping of terrace outcrops.	W&C will review this information and incorporate it into the HCM.
4	We need to make clear in reporting where data came from, how it was validated and how it was used	Once the data collection effort is complete, W&C will report to the CBGSA and Technical Forum the sources of data and the approach used for data validation..
5	Materials should be sent out for review prior to the call. Technical forum members would like to see a draft HCM document prior to the next call.	Presentation materials will be sent out prior to each call, with documents provided as available. The W&C team will attempt to provide a draft HCM document prior to the next call.
6	Why has work begun on the numerical model before completion of the HCM? Don't we need a water budget before we can develop the numerical model?	Work on the numerical model needs to be done in parallel with the HCM to meet the aggressive project schedule. Information from the HCM will still be incorporated into the numerical model. W&C will develop a rough water budget for review; however, the numerical model will be the primary source of water budget information.
7	The upper and lower Morales formations have different anisotropy and need to be treated differently in the HCM and numerical model	This is consistent with the W&C team's understanding. Assessment of these formations will be primarily based on the USGS representation.
8	How is daily precipitation data developed? How are PRISM block data mapped to the numerical model grid?	PRISM includes daily data back to 1981; prior to that daily data will be developed by matching similar years. PRISM block data will be mapped to the model grid using spatial interpolation.
9	Will stakeholders be able to review groundwater level and hydrograph information?	Groundwater level information will be provided as part of the Groundwater Conditions portion of the GSP. Additional groundwater level information will be accessible to stakeholders through the Opti data management system once it is developed.

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 6/8/2018

MEETING: Technical Forum Conference Call

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

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1. AGENDA

- Hydrogeologic Conceptual Model (HCM) Development Update
- Groundwater Level Monitoring
- Next steps

2. DISCUSSION ITEMS

The following table summarizes discussion items raised prior to and during the conference call and the plans for resolution identified for each item.

Item No.	Discussion Item	Plan for Resolution
1	The draft HCM GSP section is under development and will be provided to the Technical Forum members for review	A draft HCM document will be provided to the Forum members on Wed June 13, with comments due by Mon June 18.
2	What is the role of the Technical Forum in the GSP development process – is its purpose to provide an update on progress or a more robust "Technical Advisory Committee" that provides formal input?	The Technical Forum was formed to provide information and receive feedback on the development of technical products to technical experts representing different parties within the Basin. While the feedback provided by Technical Forum members is valuable and will be incorporated when possible, the Technical Forum does not have a formal role in the GSP development process.
3	We should show a cross-section along the Cuyama River that shows the Santa Barbara County fault.	This will be developed and considered for inclusion in the HCM document.

4	We should consider extending the model calibration period earlier than the mid-1990's so as to not exclude extensive dewatering in the 1970's and 1980's and to capture historic climatic cycles	The current calibration period of 1996-2015 was set based primarily on the availability of historical data, particularly related to land use and groundwater elevations. W&C will review the data and extend the calibration period further back if the data warrants it. For current and future level runs, the plan is to incorporate hydrology back to October 1959, corresponding with available data from USGS gage 11136800.
5	The figures of the model layering do not show the small outcrops in the vicinity of the Russell Fault.	Aquifer hydraulic conductivities at model nodes in these areas will be adjusted to account for outcrops as part of the development of the model.
6	Are there enough model nodes to adequately represent the White Rock and Rehoboth faults?	The model grid has been reviewed and the model nodes provide reasonable density to represent those faults, as necessary.
7	We should develop maps showing faults compared to monitoring points and to the model grid.	These figures will be considered during development of the model.
8	Is the SAGBI data shown during the presentation from the modified or unmodified dataset?	This figure has been modified to note that it is showing the modified dataset.
9	Questions raised regarding the modeling approach: (a) The model is planned to have large areas of very small model-element discretization (gridding). The model elements generally are on a much finer scale than the available input data. This presents an issue of false precision, where the model runs the risk of producing easily-misinterpreted output on a cell-by-cell basis. (b) The model is planned to run at a daily time-step, which contrasts with the available input data for pumping, streamflow, and other factors that will have nowhere near that level of detail. (c) The combination of fine grid dimensions and short time-steps will greatly increase the model run time, potentially adding significant time and expense to each iteration. This will limit the overall time available to calibrate the model and quantify its deficiencies, and generally reduce the usefulness of the model as a management tool.	The model grid elements have been developed so as to adequately represent important characteristics of the groundwater basin including the Cuyama River, irrigated areas and faults and to ensure a numerical representation of the physical system, to the extent that the data allows. Similarly, the daily time step was selected to adequately capture the hydrologic variability of Cuyama river streamflow and tributaries runoff within the Basin. While developing the spatial and temporal discretization, maintaining a reasonable model runtime was a criteria that was considered. Based on our experience developing and using IWFM models throughout the state, it is not anticipated that the spatial and/or temporal scales would be a barrier to successfully calibrating and applying the model for the GSP. When reporting model outputs, presentations of data will be developed to report data at appropriate spatial and temporal scales for understanding and interpreting the results.

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 7/13/2018

MEETING: Technical Forum Conference Call

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

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1. AGENDA

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

2. DISCUSSION ITEMS

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

Item No.	Comment	Commenter	Response/Plan for Resolution
1	What is the basis for saying that there is a 90% concurrence between DWR/LandIQ land use and Boltouse/Grimmway data	John Fio	This is based on a parcel by parcel comparison of the available data
2	Can the comparison between DWR/LandIQ and Bolthouse/Grimmway land use data be used to improve the data available for the GSP	Anona Dutton	The LandIQ data will be used to supplement parcels/years where data is not available from Bolthouse/Grimmway. The data in the common land areas will be reviewed to confirm if any adjustments are warranted.

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

3. FEEDBACK ON UNDESIRABLE RESULTS AND MINIMUM THRESHOLDS

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

Lowering of Groundwater Levels

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

Reduction in Groundwater Storage

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

Degraded Water Quality

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

Land Subsidence

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

Surface Water Depletions

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

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 8/3/2018

MEETING: Technical Forum Conference Call

ATTENDEES: Matt Young (Santa Barbara County Water Agency)
Matt Scrudato (Santa Barbara County Water Agency)
Matt Klinchuch (Cuyama Basin Water District)
Dennis Gibbs (Santa Barbara Pistachio Company)
Neil Currie (Cleath-Harris Geologists)
John Fio (EKI)
Matt Naftaly (Dudek)
Jeff Shaw (EKI)
John Ayres (Woodard & Curran)
Sercan Ceyhan (Woodard & Curran)
Micah Eggleton (Woodard & Curran)

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1. AGENDA

- Current Basin Water Conditions
- Numerical Model Development Update
- Next steps

2. DISCUSSION ITEMS

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

Item No.	Comment	Commenter	Response/Plan for Resolution
1	The well at the intersection of the Cuyama River and Cottonwood Canyon Creek may be picking up water from the basin finger just North of the well	Neil Currie	This will be kept in mind when evaluating data from this well.
2	Data may be easier to interpret if wells form a common area are clustered and plotted on the same graph	Jeff Shaw	The W&C team will review the presentation of data and improve where appropriate.

3	Were discontinuities due to faults considered when creating groundwater elevation and depth-to-water maps?	Neil Currie	Due to limitations in the amount and spatial distribution of data and to large changes in elevation in many areas, it is difficult to identify and locate discontinuities that can be attributed to faults.
4	There is potentially more groundwater elevation data out in the west by the Spanish Ranch property.	Neil Currie	The W&C team will incorporate any additional data that is provided.
5	Why is the numerical model's agricultural pumping estimate different from its ETAW estimate?	Jeff Shaw	The agricultural pumping estimate reflects ETAW plus related inefficiencies and losses.
6	What is the time schedule for OPTI to be made available for review?	Jeff Shaw	An initial version of OPTI should be available for review prior to the September Workshop.
7	When will model simulation results be available for review?	Jeff Shaw	Preliminary model simulation results will be presented at the September Workshop and Technical Forum call.
8	Is the agricultural efficiency currently shown by the model reasonable?	John Fio	The model is still undergoing calibration and the data shown were preliminary estimates. It may be refined as the calibration is completed.

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 8/31/2018

MEETING: Technical Forum Conference Call

ATTENDEES: Matt Young (Santa Barbara County Water Agency)
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Matt Klinchuch (Cuyama Basin Water District)
Dennis Gibbs (Santa Barbara Pistachio Company)
Neil Currie (Cleath-Harris Geologists)
John Fio (EKI)
Jeff Shaw (EKI)
Anona Dutton (EKI)
Brian Van Lienden (Woodard & Curran)
Sercan Ceyhan (Woodard & Curran)
Ali Taghavi (Woodard & Curran)
Byron Clark (Davids Engineering)

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1. AGENDA

- Approach for Cuyama Basin model development
- Preliminary modeling results for Cuyama Basin groundwater conditions
- Next steps

2. DISCUSSION ITEMS

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

Item No.	Comment	Commenter	Response/Plan for Resolution
1	Will you make the IDC and IWFM model files available for review?	Jeff Shaw	Model files will be made available once the model is fully calibrated. Calibration is still ongoing for both the IDC and IWFM, and will be refined based on stakeholder feedback
2	What is the status of the IDC calibration?	Jeff Shaw	As mentioned above, IDC calibration continues to be refined; however, the model is currently reasonable enough to move forward with groundwater model calibration. Additional back and forth with IDC and IWFM will take place during the full model calibration.
3	What factors/parameters are most sensitive to agricultural efficiency levels in the model?	John Fio	There are many factors that affect agricultural efficiency; the target soil moisture fraction is one of the last factors to be refined as part of the calibration.

4	There are some years (e.g. 2002) where the model currently shows small net loss from the groundwater aquifer to the stream. Is this correct?	John Fio	This is a preliminary result, which is subject to ongoing revisions, refinement, and correction.
5	Some wells are at the edge of the Upper and Lower Morales formations; this could explain why groundwater levels in those wells are dipping recently	Neil Currie	This will be considered as model refinement continues.
6	Are calibration results available for the western portion of the basin?	Neil Currie	Results for this area are not yet complete because model calibration is being done from upstream to downstream.
7	Is the drop in CSD well levels related to subsidence?	Jeff Shaw	There may be a relationship, but subsidence is likely to have a small effect on aquifer storage
8	Reductions in CSD well levels may be related to development of the nearby Duncan Family Farms in the late 1990's	Dennis Gibbs	This will be investigated and considered as part of the model refinement.
9	A deep percolation estimate of 38 taf/year is concerning because tests have shown water in the aquifer to be very old	Dennis Gibbs	The deep percolation value will be refined as the model calibration is completed
10	Does the model have a time lag in deep percolation to the aquifer?	John Fio	Yes, there is a time lag because the model includes an unsaturated zone between the root zone and the groundwater zone.
11	What are the model's initial conditions?	John Fio	Initial conditions are based on observed historical data at the beginning of the calibration period in 1994
12	Does the model represent discontinuities near Santa Barbara Fault as part of the initial conditions? This could improve run-time.	John Fio	The available data does not have the resolution necessary to do so. The model solves for the discontinuities as part of its solution.
13	Is the Santa Barbara Fault keyed into bedrock at its east end?	John Fio	Yes
14	Are you comparing the model to the USGS model?	Anona Dutton	The USGS model is used for reference and for comparison, but their model data is not used directly with the exception of the geologic layering in the center of the basin. There are tables comparing water budgets in last Technical Forum Call.

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 9/21/2018

MEETING: Technical Forum Conference Call

ATTENDEES: Matt Young (Santa Barbara County Water Agency)
Matt Scrudato (Santa Barbara County Water Agency)
Matt Klinchuch (Cuyama Basin Water District)
Dennis Gibbs (Santa Barbara Pistachio Company)
Neil Currie (Cleath-Harris Geologists)
John Fio (EKI)
Jeff Shaw (EKI)
Anona Dutton (EKI)
Brian Van Lienden (Woodard & Curran)
Sercan Ceyhan (Woodard & Curran)
Ali Taghavi (Woodard & Curran)
Micah Eggleton (Woodard & Curran)
John Ayres (Woodard & Curran)
Byron Clark (Davids Engineering)
Bryan Thoreson (Davids Engineering)

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1. AGENDA

- Monitoring Networks
- Update on Numerical Model Development
- Management Areas
- DWR Technical Services Program Update
- Next steps

2. DISCUSSION ITEMS

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

Item No.	Comment	Commenter	Response/Plan for Resolution
1	How does the monitoring well network for groundwater levels prioritize screen interval information vs measurement frequency?	Jeff Shaw	Higher measurement frequency is given higher priority over having screen interval information in monitoring well prioritization

2	How was prioritization performed for water quality monitoring wells?	Jeff Shaw	There's not a lot of water quality data available, so prioritization is focused on the number of water quality measurements at each well
3	Can we apply a tiering scheme to water quality, similar to levels?	Jeff Shaw	That's something that could be considered in the future, but we're finding in general that the quality of water quality data is low, which is why we need a plan to fill that data gap.
4	SBCWA provided us with an email with additional Western basin water quality data	Matt Scrudato	This will be considered as model refinement continues.
5	How are we separating out the effects of water vs oil for subsidence?	Neil Currie	The GSP propose that the GSA explore adding more subsidence data sensors, which will provide additional data to make this assessment.
6	How much of the available water level data was provided by private landowners and what is the quality of that data?	Dennis Gibbs	Data was provided by Grapevine, Bolthouse, and Grimmway. Their data was from pressure transducers or from their monitoring program. This data filled in data gaps for areas where we wouldn't have data otherwise. In the Groundwater Conditions section we compared historical level data between private and DWR/USGS and found that they were consistent with each other.
7	Are there any active monitoring sites in Ventura County?	Dennis Gibbs	There are 2 along the river at the South end of the Basin. The W&C team coordinated directly with Ventura County to obtain the available data.
8	Why does the top tier in the level prioritization require a monthly frequency? Wouldn't quarterly be sufficient?	Dennis Gibbs	DWR guidance materials clearly indicate that the Cuyama Basin needs to do monthly monitoring based on its quantity of groundwater use and recharge. We recommend that the entire monitoring network be monthly for the first few years and then quarterly after that.
9	A significant portion of the wells in the monitoring network are private landowners. Do they have consistent protocols for how they collect data?	Jeff Shaw	They are not consistent in how they do monitoring currently. The GSP will set up consistent protocols for future monitoring.
10	Water is currently moving east and west across the middle of the Basin	Dennis Gibbs	This is being represented in the IWFM model.
11	W&C requested assistance from the CBWD regarding production well locations. What is the status of that effort?	Brian Van Lienden	Matt Klinchuch has reached out to landowners and has acquired some data. Additional data should be provided by the end of next week, although he may not get a response from some landowners.

12	Can you share the IDC and PEST outputs from the model development?	John Fio and Jeff Shaw	While preliminary versions of these modules are complete, they continue to be refined as the IWFM model is calibrated. This data can be provided once the model calibration is complete.
13	How did you determine how much acreage is idle during the period of record?	Jeff Shaw	Idle land uses were included in the land use data provided by Bolthouse and Grimmway, and in the land use estimates developed by LandIQ. These were refined using Landsat satellite imagery to detect the actual presence of green vegetation each year.
14	What does a 2% difference in irrigated area translate to in terms of change in water demand?	Anona Dutton	For the CBWD ag area – 2% of ~57 TAF/year total demand equates to about 1,100-1,200 AF/year.
15	Are fallowed fields included in the remote sensing model?	Jeff Shaw	Yes
16	Would improving efficiency in lower efficiency areas improve the Basin water budget?	Jeff Shaw	Given the very low river flows in this Basin, it is assumed that the water that's not consumed is returned to the groundwater. Therefore, an improvement in efficiency won't have an appreciable effect on the overall water budget.
17	Looking at data density for the proposed southeast management area, there's not a lot of information to help understand conditions in that part of the Basin	Jeff Shaw	This is a critical data gaps area. But in some of these areas, there's not a lot of need for data monitoring.
18	The recommended management areas look really good. In east of Ventucopa area, there's a finger that should be in Southeast Basin Area.	Dennis Gibbs	The delineations of the management areas will be reviewed and refined.
19	Do we need to have a calibrated model before setting management areas?	Jeff Shaw	We need to set the sustainability thresholds very soon. While modeling results are useful, we need to move forward, and we can adjust down the road. Modeling results probably won't change the management area delineations drastically.

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 10/23/2018

MEETING: Technical Forum Conference Call

ATTENDEES: Matt Young (Santa Barbara County Water Agency)
Fray Crease (Santa Barbara County Water Agency)
Matt Klinchuch (Cuyama Basin Water District)
Neil Currie (Cleath-Harris Geologists)
Tim Cleath (Cleath-Harris Geologists)
John Fio (EKI)
Jeff Shaw (EKI)
Anona Dutton (EKI)
Matt Naftaly (Dudek)
Brian Van Lienden (Woodard & Curran)
Sercan Ceyhan (Woodard & Curran)
Ali Taghavi (Woodard & Curran)
Micah Eggleton (Woodard & Curran)

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1. AGENDA

- GSP Development Process and GSP Outline Update
- Update on Management Areas
- Sustainability Thresholds Overview
- Numerical Model Development Update
- Next Steps

2. DISCUSSION ITEMS

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

Item No.	Comment	Commenter	Response/Plan for Resolution
1	Would the rationale used for sustainability indicators be similar with each threshold region?	Jeff Shaw	The intent is to use the threshold regions to help identify rationales used to set the sustainability indicators in each region.
2	Using the term “threshold regions” as opposed to “management areas” may be confusing	Matt Young	Comment noted. The terminology used will need to be clarified going forward.

3	Why a straight line instead of using a hydrogeologic barrier in Northeast boundary?	Neil Currie	The intent of the boundary is just to separate out wells in different regions. The exact boundary line can be adjusted in the future.
4	We should separate out all of the undeveloped area in the eastern basin into a separate region.	Multiple	This proposal has been included in the options to be presented to the SAC and Board.
5	In the central basin, we should consider using the 2015 levels as the measurable objective rather than the minimum threshold.	Anona Dutton	This will be considered as an option as the proposed thresholds are developed.
6	The shallowest well rationale is limited because we don't have good data on which wells are still active.	Anona Dutton	This limitation has been added to the presentation materials for the SAC and Board.
7	Undesirable results for each sustainability indicator need to be clearly defined.	Tim Cleath	Comment noted. These will be described in the relevant GSP section.
8	We should describe the reasoning behind each rationale in the presentations to the SAC and Board	Anona Dutton	Descriptions for each rationale will be added to the SAC and Board presentations.
9	Why were the wells in the presentation selected?	Jeff Shaw	The wells used in the presentation are just example wells selected to demonstrate how each potential rationale would work.
10	Instead of using a different rationale in each region, W&C should use a step function to implement the criteria that can be applied throughout the Basin.	Jeff Shaw and Anona Dutton	It would be very difficult to develop a single function that can be applied basin-wide. Using different rationales in each region provides more flexibility to define thresholds and objectives for each well in a reasonable way. The reasoning for why rationales were selected in each region will be described in the relevant GSP section.

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 11/28/2018

MEETING: Technical Forum Conference Call

ATTENDEES: Matt Young (Santa Barbara County Water Agency)
Matt Klinchuch (Cuyama Basin Water District)
Neil Currie (Cleath-Harris Geologists)
Spencer Harris (Cleath-Harris Geologists)
John Fio (EKI)
Jeff Shaw (EKI)
Dennis Gibbs (Santa Barbara Pistachio Company)
Brian Van Lienden (Woodard & Curran)
Sercan Ceyhan (Woodard & Curran)
Micah Eggleton (Woodard & Curran)
John Ayres (Woodard & Curran)
Mesut Cayar (Woodard & Curran)

1. AGENDA

- Detailed Monitoring Analysis in Schoolhouse Canyon
- Review of Preliminary Thresholds
- Numerical Model Development Update
- Next Steps

2. DISCUSSION ITEMS

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

Item No.	Comment	Commenter	Response/Plan for Resolution
1	Spikes similar to what was seen in Schoolhouse Canyon in 2017 may happen in many in wet years, and in other wells in the Basin as well.	Jeff Shaw	Comment noted. 2017 is the only year where data is currently available to see this pattern in the western basin.
2	Are the representative wells that were selected in the Western Basin typical of stakeholder wells?	Dennis Gibbs	Most of the representative wells that were selected in the western basin are stakeholder wells. These wells reflect the available range of well depths in the region.

3	How do minimum thresholds relate to the undesirable results?	Spencer Harris	Minimum thresholds and undesirable results are directly related as the minimum threshold is the level below which an undesirable result is occurring.
4	Can the model help developing some of these thresholds, including how sustainable they might be?	Spencer Harris	Once the model has been developed it can be used to look at how variable groundwater levels may be when pumping is at long-term sustainable levels.
5	The levels proposed for wells in the western basin may not be representative of how the wells in that part of the basin will be used.	Spencer Harris	Greater buffers for operational flexibility can be considered.
6	Why assume that going below 2015 or 2018 levels would result in unreasonable consequences? What would happen if these thresholds are being crossed?	Spencer Harris	Using 2015 or 2018 levels may be reasonable in some areas but not others. We would need to consider the physical characteristics of each part of the aquifer.
7	In the northwestern region, there has been a change in land use and the representative wells are active pumping wells – when you develop a new area, there's a drawdown that occurs. It is unreasonable to set a threshold based on current levels when you know that the levels will be drawn below that due to the current operation of the wells. We would like a rationale that reflects this while avoiding undesirable results in the region.	Spencer Harris	An additional approach for the Western region will be added for discussion at the SAC meeting.
8	Greater flexibility can be a good thing in establishing the thresholds and objectives, especially in areas where future operations may differ from what we've seen historically. Physically-based criteria in the western basin are worthy of consideration.	Jeff Shaw	Comment noted. Operational flexibility will be taken into consideration when developing the sustainability thresholds.
9	The BMPs say that we should consider GDE. Have we looked at that?	Matt Young	A biologist is currently doing an assessment; when it is complete, the results will be reported to the Tech Forum and SAC
10	How are we verifying the numerical model?	John Fio	Checking water levels and mass balances for a period outside the calibration period (e.g. 2016/2017)

11	Given that you've divided the Basin into regions, it would be useful to lay out the case for why we think each region behaves similarly.	Jeff Shaw	This is something we can address in future presentations.
12	Do we have an estimate of the total groundwater storage? Will we quantify it?	Multiple	The model gives an estimate, but its based on the stratigraphy and storage coefficients. Storage estimates have a lot of uncertainty with respect to the depth of the basin and storage properties.

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 12/14/2018

MEETING: Technical Forum Conference Call

ATTENDEES: Matt Young (Santa Barbara County Water Agency)
Fay Crease (Santa Barbara County Water Agency)
Tim Cleath (Cleath-Harris Geologists)
John Fio (EKI)
Jeff Shaw (EKI)
Dennis Gibbs (Santa Barbara Pistachio Company)
Matt Naftaly (Dudek)
Brian Van Lienden (Woodard & Curran)
Sercan Ceyhan (Woodard & Curran)
Micah Eggleton (Woodard & Curran)
John Ayres (Woodard & Curran)
Ali Taghavi (Woodard & Curran)

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1. AGENDA

- Numerical Model Development Update
- Review of Preliminary Thresholds Presentation

2. DISCUSSION ITEMS

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

Item No.	Comment	Commenter	Response/Plan for Resolution
1	What drives the model boundary flows to be higher in recent years?	Matt Young	The boundary flows are still being reviewed as part of model calibration. The cause of this difference will be investigated.
2	Can you provide the projected land use for review along with more information on the ARMA model for projecting land use?	Jeff Shaw	These will be provided to the Technical Forum members.
3	Can you talk about how and why you make an assumption about improved agricultural efficiency? How much of the decline in agricultural pumping is due to improved efficiency versus change in cropping pattern?	Matt Young	Irrigation efficiencies in the model are based on the rationale that improved irrigation practices have been applied in the field. The actual change in agricultural water use in the model is due to both the change in cropping patterns and the change in irrigation efficiency. W&C will review the data to assess how much change is due to each factor.

4	The shallowest well may not be the most important factor to use to determine thresholds. It would be better to look at the bottom of basin.	Tim Cleath	The shallowest nearby well is not a sole factor that is used, but it is an indicator of aquifer conditions. There is not a lot of good information on the bottom of the aquifer in many parts of the basin
5	You should look at a longer period of record – focusing on just 2010 to present is focusing just on a single drought and could be misleading.	Tim Cleath	For the most part, the data doesn't really go further back on wells that are currently monitored.
6	Isolating the Badlands region on the eastern part of basin is a good improvement	Tim Cleath	Comment noted.
7	Many wells only have monitoring measurements once per year – the frequency of data makes it hard to understand trends	Tim Cleath	A number of the wells in the monitoring network are from private landowners, and they only measured once a year. We have to work with the data we have now, but can change the frequency of monitoring going forward.
8	In wells with no fluctuations, the five years of storage approach doesn't work very well; we should consider a different approach in these regions	Jeff Shaw & Tim Cleath	We may need to consider other ideas; Technical Forum members are welcome to submit ideas for how to develop thresholds in these areas.
9	We should include a buffer in the thresholds so that we don't trigger an "undesirable result" if we go below the minimum threshold.	Jeff Shaw	Going below the minimum threshold initially triggers an investigation by the GSA to determine the cause. The GSA will need to consider the available information and determine how to respond.
10	Using 2015 as an operational level is not a good approach in the western basin. Thresholds should be based on quantitative estimates of undesirable results, similar to what we have provided the Board	Tim Cleath	The proposal from Grapevine provided to the Board will be included for discussion in the slides on the northwestern region at the Dec 18 Board meeting.
11	The Caliente Hills fingers should be treated like the eastern Badlands (i.e. put into their own region) because there is no development in those areas.	Tim Cleath	This is something that could be considered by the Board.
12	The distribution of wells to be used for management should be more restrictive than those to be used for thresholds	Tim Cleath	We are restricted by the available data and available time to develop the GSP. The monitoring network and thresholds will need to be adjusted as more information is available in the future.

13	You should do a statistical analysis of which strategies work in each region.	Jeff Shaw	Comment noted. We will have a table available with summary information at the meeting on December 18.
14	If you're going to propose a saturated-thickness method option for calculating sustainability criteria in one of the Threshold Regions, you should examine that method for all of them. It's a technically defensible method (vs. subtracting some arbitrary value from 2015, for example), and it may help create more MoOF.	Jeff Shaw	This can be considered, however, data may not available to do this type of analysis in all parts of the basin.

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 1/25/2019

MEETING: Technical Forum Conference Call

ATTENDEES: Matt Young (Santa Barbara County Water Agency)
Matt Scrudato (Santa Barbara County Water Agency)
Catherine Martin (San Luis Obispo County)
Neil Currie (Cleath-Harris Geologists)
John Fio (EKI)
Jeff Shaw (EKI)
Dave Leighton (EKI)
Dennis Gibbs (Santa Barbara Pistachio Company)
Brian Van Lienden (Woodard & Curran)
Sercan Ceyhan (Woodard & Curran)
Micah Eggleton (Woodard & Curran)
John Ayres (Woodard & Curran)
Ali Taghavi (Woodard & Curran)
Sebastien Poore (Woodard & Curran)

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1. AGENDA

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

2. DISCUSSION ITEMS

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

Item No.	Comment	Commenter	Response/Plan for Resolution
1	When will you release the model input and output files?	Jeff Shaw	Model files will be released subsequent to the release of the draft Water Budgets GSP section.
2	It may make sense to subdivide the Central Basin into developed and undeveloped areas. I can provide input on where it makes sense to draw a line.	Dennis Gibbs	Dennis can mark up the pdf map provided to the Tech Forum and send it back to us with his ideas.
3	The rationale for separating the two areas in CB for water budget accounting is not clear.	John Fio	Comment noted. This separation has not been included in material to be presented to the SAC and Board

4	There was discussion about potentially drawing a different line between the Northwest and Western boundaries for purposes of water budgets. The new boundary would better reflect geology in that part of the Basin.	Multiple	Technical Forum members responded that these changes could be reasonable, for purposes of discussing water budgets. However, we would need to be careful that we are still adequately reflecting the relationship between the regions and the threshold wells. The original boundary has been retained for the SAC/Board presentations.
5	What was the modeling assumption for pumping going forward?	Jeff Shaw	W&C took the 2017 land use conditions, and assumed a variable pattern going forward that approximated recent agricultural land use.
6	There are localized pumping depressions in the Ventucopa corridor.	Dennis Gibbs	Comment noted. This may need to be considered when looking at model performance in the Ventucopa region.
7	I can give you some ideas for good locations for monitoring wells in the Ventucopa area.	Dennis Gibbs	W&C will contact Dennis and others fior ideas for where new wells can be added in the Category 1 task.
8	What iss the largest avg annual decline in the Basin?	Dennis Gibbs	The largest decline in the Basin is about 10 feet/year.
9	Twitchell Reservoir has a sedimentation problem – the GSA should engage Twitchell operators when considering a potential stormwater capture project.	Dennis Gibbs	Comment noted. This should be considered if the GSA does a more detailed study during the implementation phase.
10	Controlled burning would be a hard sell. If you ran a burn on areas where there is a flat slope it could work, but it often doesn't go according to plan.	Jeff Shaw	Comment noted. The pros and cons of this option will need to be considered by the Board.
11	Through controlled prescription burning, you don't necessarily increase sedimentation. A program that runs appropriately will reduce ET and sediment won't necessarily go down the valley	Dennis Gibbs	Comment noted. The pros and cons of this option will need to be considered by the Board.
12	You should consider cloud seeding as a potential action. A study has been performed for this action in the Cuyama Basin.	Matt Scrudato	Matt will provide W&C with the study report. This action will be added to the SAC/Board presentation for consideration.
13	Materials developed for Paso Robles GSP development may be useful for Cuyama Basin discussions with the SAC/Board.	Cathy Martin	Cathy will provide W&C with the materials and these will be taken into consideration for future SAC/Board presentations.

14	It would be better to use example numbers rather than actual numbers when discussing the potential pumping allocation options.	Multiple	This change has been made to the SAC/Board presentations.

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 2/22/2019

MEETING: Technical Forum Conference Call

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

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1. AGENDA

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

2. DISCUSSION ITEMS

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

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

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

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MEETING MEMORANDUM

PROJECT: Cuyama Basin Groundwater Sustainability Plan Development

MEETING DATE: 3/25/2019

MEETING: Technical Forum Conference Call

ATTENDEES: Matt Young (Santa Barbara County Water Agency)
Cathy Martin (San Luis Obispo County)
Neil Currie (Cleath-Harris Geologists)
John Fio (EKI)
Jeff Shaw (EKI)
Dave Leighton (EKI)
Matt Klinchuch (Provost & Pritchard)
Dennis Gibbs (Santa Barbara Pistachio Company)
Brian Van Lienden (Woodard & Curran)
Sercan Ceyhan (Woodard & Curran)

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1. AGENDA

- Numerical Model and Water Budget Update
- Projects and Management Actions
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2. DISCUSSION ITEMS

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

Item No.	Comment	Commenter	Response/Plan for Resolution
1	There are ancillary issues that could affect the CCSD production area. If groundwater levels adjacent to the CCSD are drawn down, it would affect the CCSD.	Dennis Gibbs	The groundwater levels monitoring network will be used to measure if levels in the vicinity of the CCSD are being drawn down.
2	If the CCSD is not part of a management area, then how can it be limited to historical pumping levels?	Matt Young	This will be clarified during the SAC discussion.
3	The CCSD well is outside the CCSD service area.	Matt Klinchuch	This will need to be accounted for in designating management areas.
4	The pumping allocation approach could be the subject of potential litigation. The GSA should seek legal counsel in developing the approach.	Matt Young	CBGSA and/or CBWD legal counsel will be consulted in development of the policy.

5	What is the methodology for developing the climate change scenarios?	Dennis Gibbs	The climate change scenarios include modified precipitation and crop evapotranspiration (ET) that are adjusted using data and methods provided by the California Department of Water Resources.
6	You should consider presenting the more variability in modeling results, including looking at drier and wetter climate scenarios instead of just the central tendency projection.	Jeff Shaw	This will be considered for future analyses, most likely during the GSP implementation phase.
7	Looking at just the 1967-2016 hydrology does not capture the full climatic cycle.	Dennis Gibbs	A 50-year period was selected to comply with SGMA requirements.
8	Why does climate change result in higher crop ET but lower native vegetation ET?	Matt Klinchuch	Whereas the model will pump water to meet crop ET, the native vegetation ET is limited by the availability of precipitation. Therefore, actual native vegetation ET is less under climate change.
9	Can other pumping reduction schedules be considered outside of the ones shown?	Jeff Shaw	Yes – the Board can select an appropriate glide path for pumping reductions.
10	Will economics be considered prior to pumping reductions are implemented?	Multiple	Economic analysis can be performed in the GSP implementation phase prior to implementation of projects or pumping allocations.
11	Another approach for tracking pumping could be to use crop acreage with a factor for each crop.	Matt Young	Alternate methods can be considered for implementation by the Board.
12	A footnote should be added to note whether pumping fees would be applied to de minimis users	Cathy Martin	The presentation slides will be clarified prior to the GSA Board meeting
12	Another option to consider for GSA financing is to have a fee for each well with an additional charge for each unit of pumping	Matt Young	Alternate methods can be considered for implementation by the Board.
13	Fox Canyon in Ventura County could be reviewed for potential implementation approaches	Jeff Shaw	This can be considered during the GSP implementation phase.