CHAPTER 2
Plan Area

2.1 SUMMARY OF JURISDICTIONAL AREAS AND OTHER FEATURES (23 CCR §354.8)

2.1.1 Groundwater Basin Boundaries

The Plan Area is defined as the Colusa Subbasin (5-021.52), part of the Sacramento Valley Groundwater Basin, as described in DWR Bulletin 118 (DWR, 2006) with boundary updates approved in February 2019. The Subbasin covers approximately 1,131 square miles (723,823 acres).

The lateral extent of the subbasin is defined by the subbasin boundaries provided in Bulletin 118 (DWR, 2006). The subbasin is generally bounded by Stony Creek to the north, the Coast Ranges to the west, the Sacramento River to the east, and the Colusa-Yolo County boundary and the Colusa County Water District are located along the southern boundary.

The vertical boundaries of the subbasin are the land surface (upper boundary) and the definable bottom of the basin (lower boundary). The definable bottom was established as part of development of the preliminary hydrogeologic conceptual model (HCM) during previous data collection and analysis efforts conducted by the consulting team. The vertical extent of the subbasin is subdivided into a surface water system (SWS) and groundwater system (GWS). The SWS represents the land surface down to the bottom of plant root zone, within the lateral boundaries of the subbasin. The GWS extends from the bottom of the root zone to the definable bottom of the subbasin, within the lateral boundaries of the subbasin.

The Colusa Subbasin is hydraulically connected with surrounding subbasins along shared river boundaries and the Glenn and Yolo County boundary. The Subbasin adjoins the following subbasins (Figure 2-1).

- Corning Subbasin (5-021.51) to the north
- Butte Subbasin (5-021.70) to the east
- Sutter Subbasin (5-021.62) to the southeast
- Yolo Subbasin (5-021.67) to the south

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Table 2-1. Adjacent Subbasins and Associated GSAs

Subbasin	SGMA Basin Priority	GSA(s)
Corning Groundwater Subbasin 5-021.51	High	• Tehama County Flood Control & Water Conservation District GSA • Corning Subbasin GSA
Butte Groundwater Subbasin 5-021.70	Medium	• Biggs-West Gridley Water District • Butte County • Butte Water District • City of Biggs • City of Gridley • Colusa Groundwater Authority • Glenn County • Reclamation District 1004 • Reclamation District 2106 • Richvale Irrigation District • Western Canal Water District
Sutter Groundwater Subbasin 5-021.62	Medium	• Butte Water District • City of Live Oak • City of Yuba City • Reclamation District No. 70 • Reclamation District No. 1500 • Reclamation District No. 1660 • Sutter County • Sutter Extension Water District • Sutter Community Service District
Yolo Groundwater Subbasin 5-021.67	High	• Yolo Subbasin GSA

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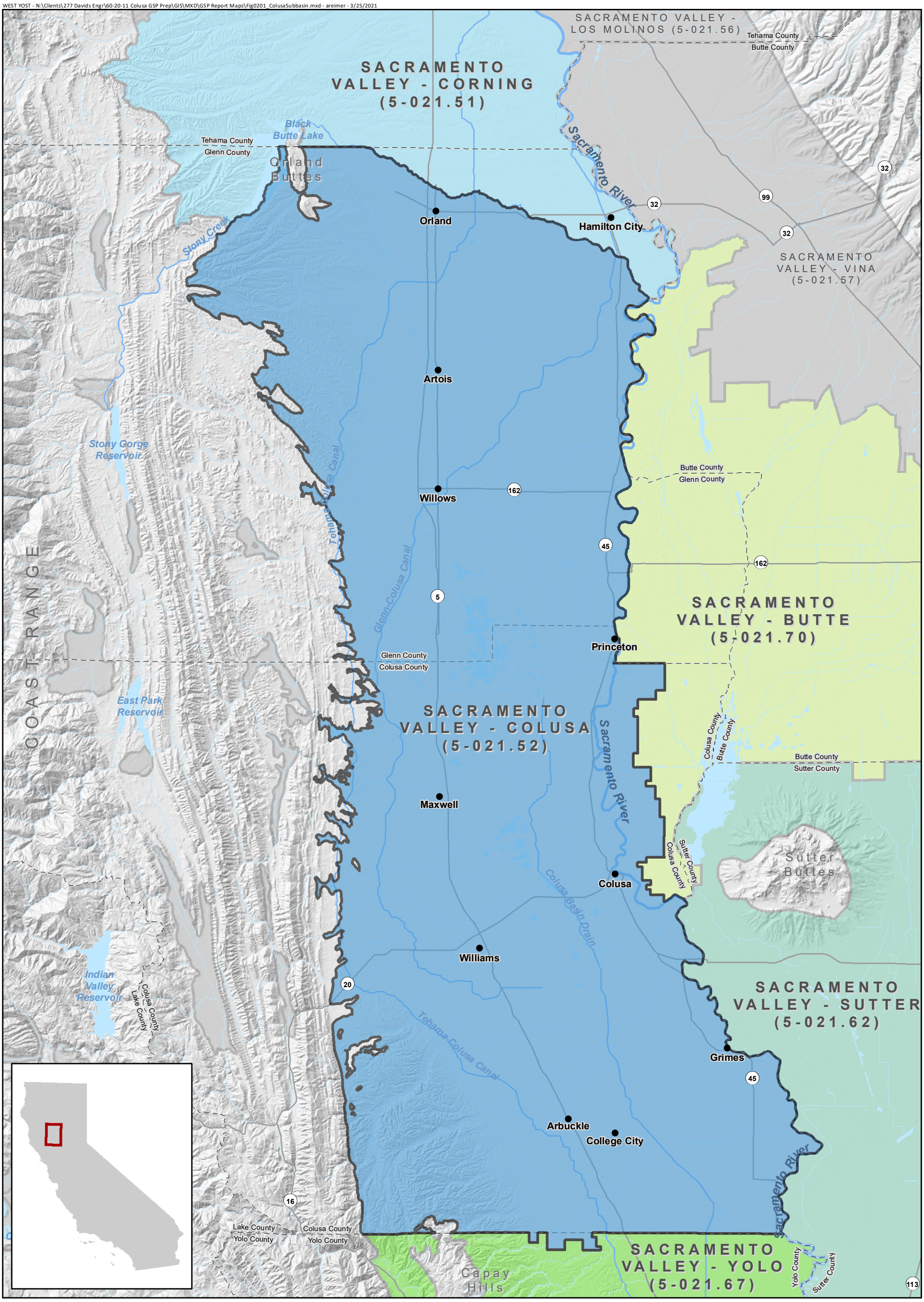

Source: California DWR Bulletin 118 Groundwater Basins v.6.1, revised in 2019.

Datums: North American Datum of 1983 (NAD 83), California State Plane Zone II, feet.

- Colusa Subbasin (5-021.52)
- Non-Adjacent Groundwater Basins

Adjacent Groundwater Basins

- Corning Subbasin (5-021.51)
- Butte Subbasin (5-021.71)
- Sutter Subbasin (5-021.62)
- Yolo Subbasin (5-021.67)

N

0 2.5 5

Scale in Miles

Figure 2-1

Area Covered by this GSP: Colusa Subbasin

Colusa GSA and Glenn GSA
Colusa Subbasin
Groundwater Sustainability Plan

2.1.2 Groundwater Sustainability Plan Area

The Colusa Subbasin is divided among two GSAs for GSP development (Figure 2-2). The CGA for the Colusa County portion of the Subbasin, is a Joint Powers Authority (JPA) with 12 member agency representatives/Director seats. The CGA is comprised of the County, two cities, six water districts, two reclamation districts, a water company, and two appointed private water pumper representatives. The GGA for the Glenn County portion of the Subbasin is comprised of 10 member agency representatives including the County, two cities, and seven water districts, refer to Figure 2-3.

Primary urban areas within the study area include the incorporated cities of Orland and Willows in Colusa County and the cities of Colusa and Williams in Glenn County as well as the unincorporated communities of Hamilton City, Artois, Butte City, Princeton, Maxwell, Arbuckle, Grimes and College City. Interstate 5 and State Route 45 traverse the study area north to south while State Routes 20, 32, and 162 are the primary west to east thoroughfares.

There are no adjudicated areas or areas addressed in an alternative to a GSP within the Colusa Subbasin.

2.1.2.1 Water Purveyors

The Colusa Subbasin is served by several water purveyors, providing water for urban, agricultural, and environmental resources uses (Figure 2-4). These purveyors include cities, special districts, mutual water companies, reclamation districts, investor-owned water utilities, and national wildlife refuges. Thus, potable water uses in the Colusa Subbasin depends on groundwater.

Municipal Water Purveyors

Municipal purveyors rely on groundwater to meet their potable water needs. In addition to the municipal water purveyors, rural domestic water needs are typically met with groundwater from individual wells. Refer to Table 2-2, Municipal Water Purveyors, for the municipal water purveyors in the Colusa Subbasin. A description of each of the incorporated cities' water services facilities is provided further below.

Table 2-2. Municipal Water Purveyors within the Colusa Subbasin GSA

County	Colusa Subbasin Water Purveyor	GSA Member Agency		Service Area Population	Connections	No. Wells	Annual Volume of Water Served
		CGA	GGA				
Colusa	City of Colusa	X		5,698	2,126	5	1675 AF
Colusa	City of Williams	X		5,287	2,100	3	1039 AF
Colusa	Arbuckle Public Utility District			2300	794	4	
Colusa	Del Oro Water Company Arbuckle District			188	55		
Colusa	College City Community Services District						
Colusa	Grimes Water District			381	123	2	3.5 AF[1]
Colusa	Maxwell Public Utility District			1,294	392		242 AF
Glenn	City of Orland		X	7,501	2,315	6	2504 AF
Glenn	City of Willows/Cal Water Willows District		X	7,118	2,371	7	1044 AF
Glenn	Artois Community Services District			198	53		75 AF[(a)]

(a) Public Water System Annually Reported Water Production and Deliver Information - 2016 average annual

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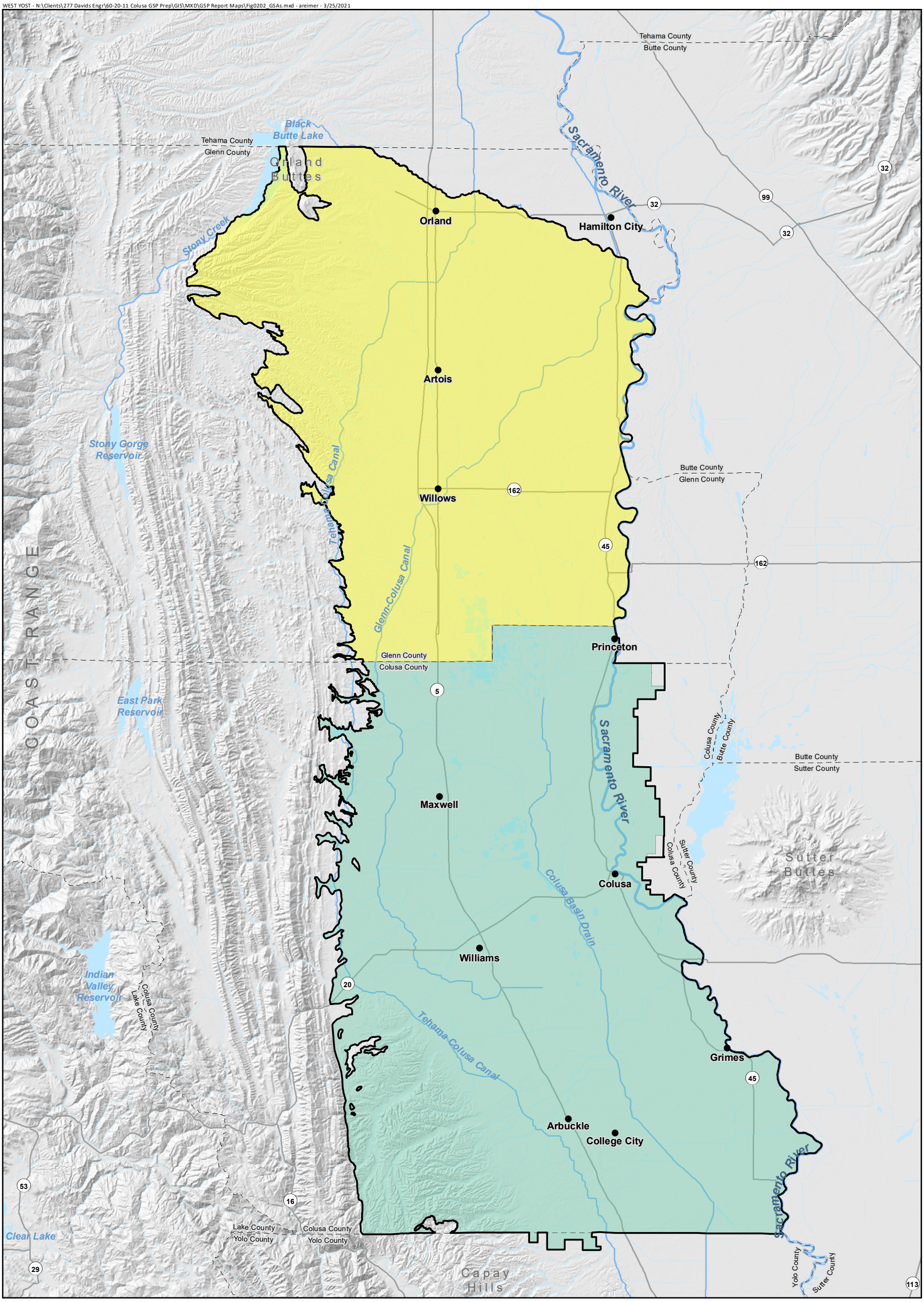

Source: Exclusive Groundwater Sustainability Agency (GSA) boundaries were obtained from the DWR GSA Map Viewer Application, 2021.

Datums: North American Datum of 1983 (NAD 83), California State Plane Zone II, feet.

- Colusa Subbasin
- Colusa Groundwater Authority GSA - Colusa Subbasin
- Glenn Groundwater Authority GSA

N

0 2.5 5

Scale in Miles

Figure 2-2

Colusa Subbasin GSAs

Colusa GSA and Glenn GSA
Colusa Subbasin
Groundwater Sustainability Plan

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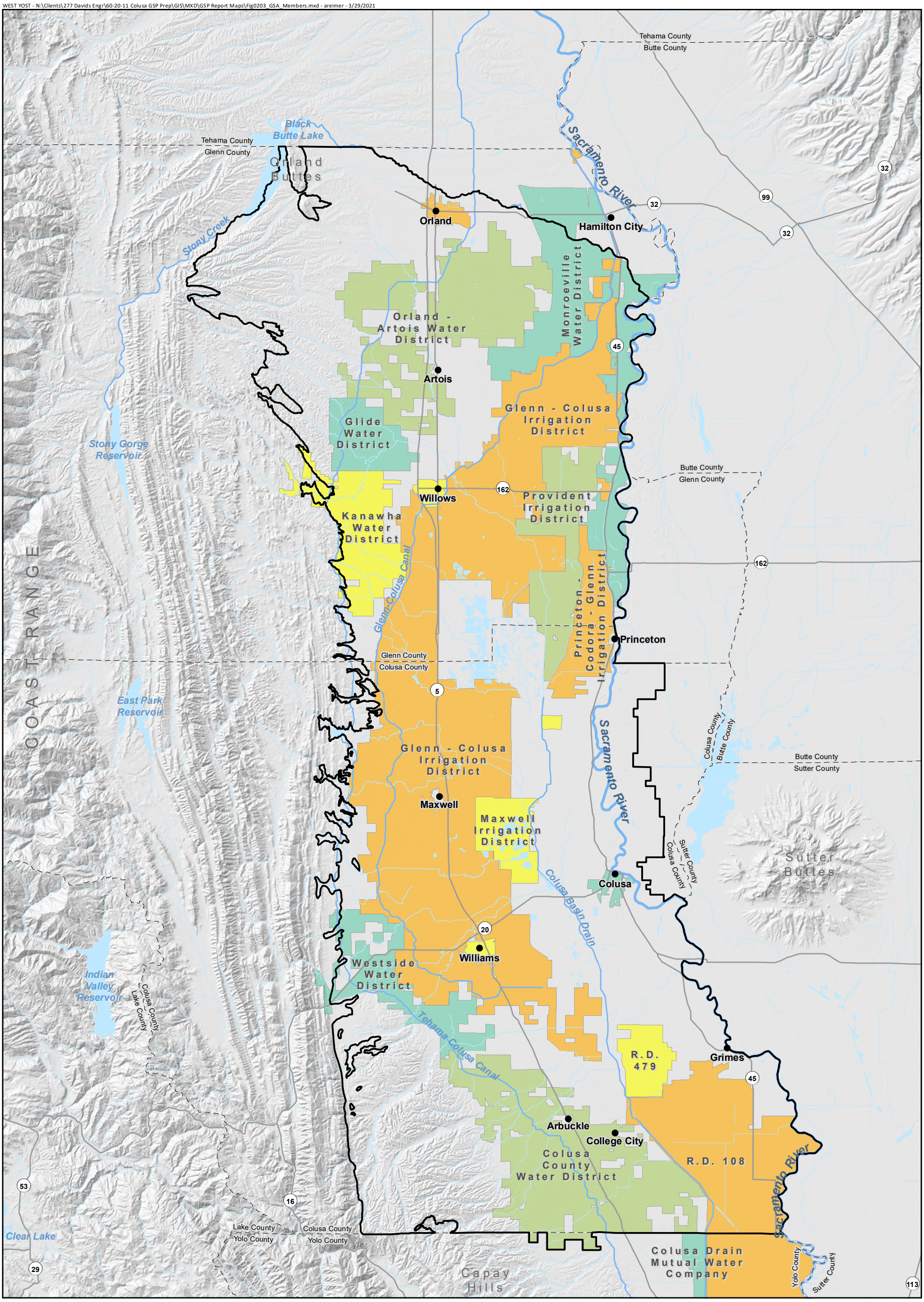

Source: Member agency boundaries were obtained from the California Natural Resources Agency website (2020). Agency boundaries not included in that dataset were obtained from other sources.

Datums: North American Datum of 1983 (NAD 83), California State Plane Zone II, feet.

Note:
1. Colusa County, a private pumper representative from Colusa County Groundwater Commission, and Glenn County are also members of the Colusa Groundwater Authority and Glenn Groundwater Authority, respectively.

- City of Williams; City of Willows; Kanawha Water District; Maxwell Irrigation District; Reclamation District No. 479
- City of Orland; Glenn - Colusa Irrigation District; Princeton - Codora - Glenn Irrigation District; Reclamation District No. 108
- Colusa County Water District; Orland - Artois Water District; Provident Irrigation District
- City of Colusa; Colusa Drain Mutual Water Company; Glide Water District; Monroeville Water District; Westside Water District
- Colusa Subbasin

N

0 2.5 5

Scale in Miles

Figure 2-3

Colusa Subbasin GSA Member Agencies

Colusa GSA and Glenn GSA
Colusa Subbasin
Groundwater Sustainability Plan

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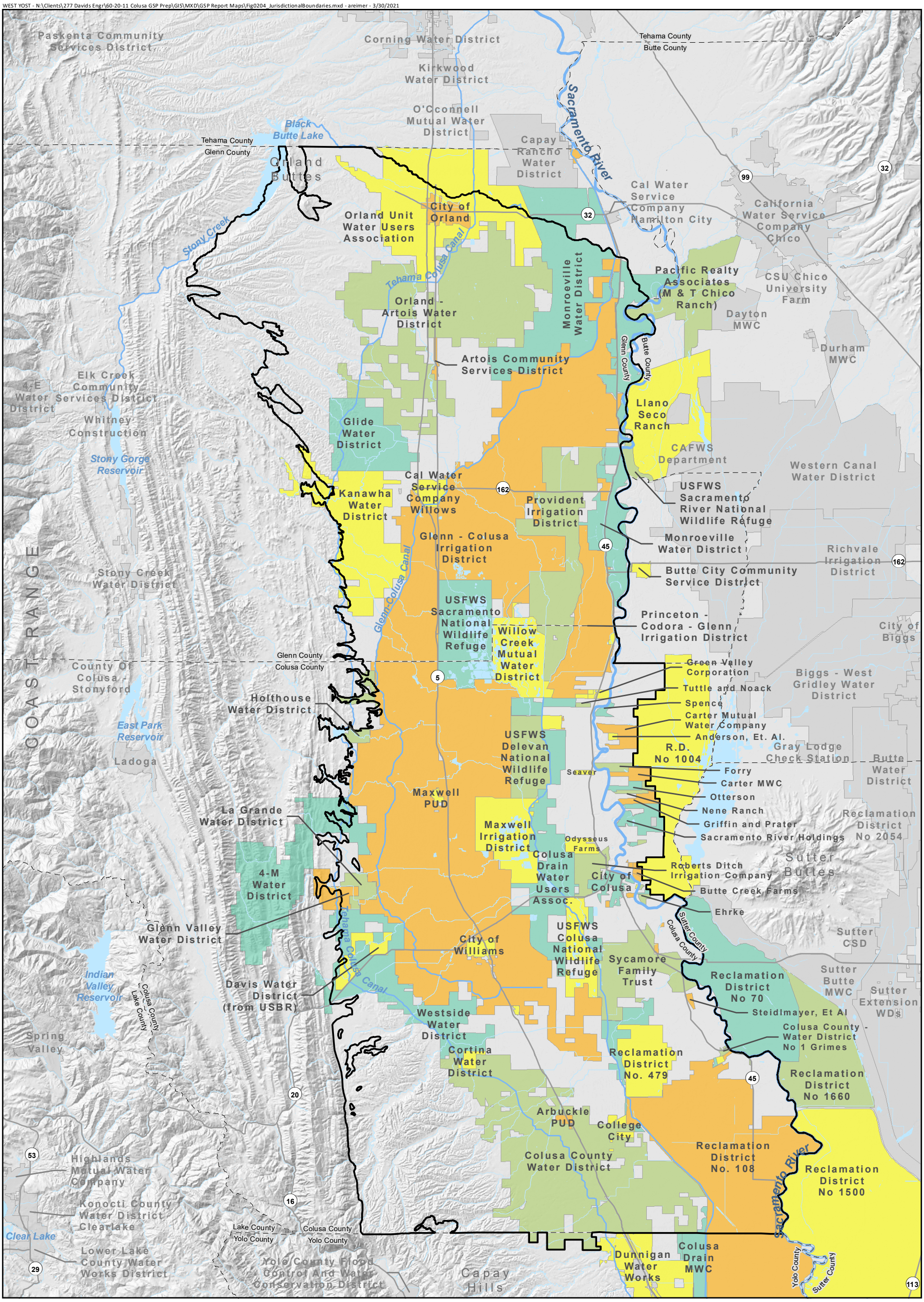

Source: Member agency boundaries were obtained from the California Natural Resources Agency website (2020). Agency boundaries not included in that dataset were obtained from other sources.

Datums: North American Datum of 1983 (NAD 83), California State Plane Zone II, feet.

Note:
1. Where service areas overlap, only one agency is shown.
2. Butte County is listed as water district in the CNRA file. Butte County, like Colusa or Glenn County, is not shown as a distinct water district on this map.
3. Small water services agencies are not labeled on this map.

Colusa Subbasin

Water Agencies not Within or Adjacent to the Colusa Subbasin

Water Agencies Within or Adjacent to the Colusa Subbasin and Displayed in the Colors Shown Below and Labelled in the Map

N

0 2.5 5

Scale in Miles

Figure 2-4

Water Districts and Jurisdictionl Boundaries

Colusa GSA and Glenn GSA
Colusa Subbasin
Groundwater Sustainability Plan

City of Colusa

The City of Colusa provides potable water for residential, commercial, and industrial uses within the City limits. The City obtains water from five groundwater wells that extend 200 feet or more. Based on the 2007 General Plan Update Master Environmental Impact Report, there were 2,126 service connections and a population of approximately 5,698. Of the service connections, 1,914 are residential land uses, 195 commercial uses, and the remainder are industrial and other users. In 2006, the annual production for all five wells was approximately 545.8 million gallons or 1,675 acre-feet (AF), pumping 1,000 and 1,330 gallons per minute.

City of Williams

The City provides potable water to residences and businesses. According to the 2012 General Plan, there are approximately 2,100 service connections serving an estimated population of 5,287. Water is supplied by three active and two standby groundwater wells, pumping approximately 2,800 gallons per minute. The wells are approximately 120 to 500 feet deep. The average annual water flow is about 400,000 gallons per day up to 1.2 to 1.5 mg on a peak day; the month of July is the peak month with approximately 36.5 million gallons pumped or 1,039 AF in 2016.

City of Orland Water System

The City of Orland's primary water system, consists of six wells distributed throughout the City. The wells have an average depth of approximately 200 feet, and the average depth of groundwater is generally between 20 - 50 feet. The wells produce between approximately 500 and 1,200 gallons per minute each; and are automatically regulated by the water level in the system's storage tank. The water transmission and distribution systems consist of approximately 30 miles of pipeline for a population of 7,501 residents and 2,315 service connections.

City of Willows/Cal Water Willows District

Water service in the City of Willows, and adjacent unincorporated area, is provided by the California Water Service Company (Cal Water), Willows District. The District operates seven groundwater wells, two storage tanks, and 36 miles of pipeline. From 2010 to 2015, the District delivered an average of 1.6 million gallons of water per day to more than 2,300 customer connections. The 2015 Urban Water Management Plan prepared by Cal Water, contain many of the elements required by SGMA and thus already serve as a road map toward the implementation of SGMA and the basin GSP. Some of these components include actions to develop additional water supplies to maintain supply reliability, water quality, and recycled water.

The City of Willows Water Department owns and operates a small water system just south of Willows District boundaries, south of Road 53.

Agriculture Water Purveyors

Table 2-3 summarizes the main agricultural water purveyors in the Colusa Subbasin, excluding smaller Central Valley Project (CVP) contractors and diverters with service areas less than 1,000 acres.

National Wildlife Refuges

There are three National Wildlife Refuges within the Colusa Subbasin, the Sacramento National Wildlife Refuge, Delevan National Wildlife Refuge, and Colusa National Wildlife Refuge, refer to Figure 2-4. These Refuges along with the Sutter Refuge and Sacramento River Refuge and three wildlife management areas comprise the Sacramento National Wildlife Refuge Complex.

Table 2-3. Agricultural and Other Water Purveyors within the Colusa Subbasin

County	Water Purveyor	GSA Member Agency		Service Area Size, acres[a]	Primary Water Source	Annual Surface Water Supply Volume, af[b]	Supply Volume Description
		CGA	GGA				
Agricultural Water Purveyor3							
Colusa/Glenn	Glenn-Colusa Irrigation District	X	X	160,000	SW	704,100	Average annual supplies under all rights and contracts, 2003 to 2012 (2012 WMP)
Colusa	Reclamation District No. 108	X		59,000	SW	155,000	Average annual supplies under all rights and contracts, 2003 to 2012 (2012 WMP)
Colusa	Colusa County Water District	X		46,000	SW	51,000	Average annual USBR CVP deliveries from Tehama-Colusa Canal, 1990 to 2015
Colusa	Colusa Drain Mutual Water Company	X		37,000	SW	--	
Colusa	4-M Water District			18,000	SW	1,900	Average annual USBR CVP deliveries from Tehama-Colusa Canal, 1990 to 2015
Colusa/Glenn	Provident Irrigation District	X	X	17,000	SW	67,800	Average annual supplies under all rights and contracts, 2003 to2012 (2012 WMP)
Colusa/Glenn	Princeton-Codora-Glenn Irrigation District	X	X	11,000	SW	68,200	Average annual supplies under all rights and contracts, 2003 to 2012 (2012 WMP)
Colusa	Westside Water District	X		15,000	SW	29,000	Average annual supplies under all rights and contracts, 2001 to 2010 (2010 WMP)
Colusa	Maxwell Irrigation District	X		9,000	SW	7,800	Average annual USBR CVP supplies, 1990 to 2015
Colusa	Sycamore Family Trust			8,000	SW	31,800	Max. CVP Contract Amount (Contract 14-06-200-2146A-R-1)
Colusa	Reclamation District No. 479	X		6,000	SW	--	
Colusa	Carter MWC			2,000	SW	7,100	Max. CVP Contract Amount (Contract 14-06-200-2401A-R-1)
Colusa	Davis Water District			2,000	SW	2,300	Average Annual USBR CVP deliveries from Tehama-Colusa Canal, 1990 to 2015
Colusa	Glenn Valley Water District			2,000	SW	900	Average annual USBR CVP deliveries from Tehama-Colusa Canal, 1990 to 2015
Colusa	Holthouse Water District			2,000	SW	1,100	Average annual USBR CVP deliveries from Tehama-Colusa Canal, 1990 to 2015
Colusa	Roberts Ditch Irrigation Company			2,000	SW	4,400	Max. CVP Contract Amount (Contract 14-06-200-935A-R-1)
Colusa	La Grande Water District			1,000	SW	4,300	Average annual USBR CVP deliveries from Tehama-Colusa Canal, 1990 to 2015
Colusa	Cortina Water District			< 1,000	SW	800	Average annual USBR CVP deliveries from Tehama-Colusa Canal, 1990 to 2015
Colusa/Glenn	Willow Creek Mutual Water Company			8,000	SW	2,500	Typical average diversions in years when water is available, 2010-2020 (eWRIMS A028238)
Glenn	Monroeville Water District		X	37,000	GW	N/A	Formed and approved in 2016 as a water district representing groundwater users
Glenn	Orland-Artois Water District		X	37,000	SW	53,000	Max. CVP Contract Amount (Contract 14-06-200-8382A)
Glenn	Orland Unit Water Users Association			27,000	SW	88,000	Average annual diversions, 2002-2016 (2017 AWMP)
Glenn	Kanawha Water District		X	17,000	SW	26,000	Average annual USBR CVP deliveries from Tehama-Colusa Canal, 1990 to 2015
Glenn	Glide Water District		X	10,000	SW	11,400	Average annual USBR CVP deliveries from Tehama-Colusa Canal, 1990 to 2015
National Wildlife Refuges							
Colusa/Glenn	USFWS Sacramento National Wildlife Refuge			11,000	SW	33,000	Average annual supplies under all rights and contracts, 1995 to 2004 (2006 WMP)
Colusa	USFWS Delevan National Wildlife Refuge			6,000	SW	21,000	Average annual supplies under all rights and contracts, 1995 to 2004 (2006 WMP)
Colusa	USFWS Colusa National Wildlife Refuge			4,000	SW	19,000	Average annual supplies under all rights and contracts, 1995 to 2004 (2006 WMP)

(a) Area from water district shapefiles, rounded to 1,000 acres.
(b) Volume rounded to 100 acre-feet (af). Average annual, typical annual, or maximum contract annual volume (see description).
(c) Main agricultural water purveyors in the Colusa Subbasin, excluding most smaller purveyors and diverters with service areas of less than 1,000 acres and smaller purveyors and diverters without publicly available information.
GW = Groundwater
SW = Surface water

The Sacramento National Wildlife Refuge is 10,819 acres and is comprised of 7,086 acres of managed wetlands and 3,360 acres of unmanaged wetlands, grasslands, alkali meadow, vernal pools and riparian habitats.

The Delevan Refuge consists of 5,877 acres and is comprised of approximately 4,600 acres of managed wetlands and approximately 984 acres of unmanaged wetlands, grasslands, alkali meadow, vernal pools and riparian habitats.

The Colusa Refuge consists of over 4,686 acres. It is comprised of approximately 3,347 acres of managed wetlands and 1,191 acres of unmanaged wetlands, grasslands, alkali meadow, vernal pools and riparian habitats. The Refuge is within the Colusa Basin and is bisected by the Colusa Basin Drain, which drains the Basin southeast to the Sacramento River.

A Comprehensive Conservation Plan (CCP) guides the management of the Refuges and includes a variety management tools, including Water Management Plans. The five-year Water Management Plans document water use, identify water supply system needs, and outline steps required to improve both efficiency and quantity of water used. The preparation of these plans is a requirement of the Central Valley Project Improvement Act, which requires the Bureau of Reclamation to purchase and deliver water to these Refuges.

2.1.2.2 Jurisdictional Boundaries of Other Agencies

There are federal, tribal, and state public lands within the Colusa Subbasin, Figure 2-5.

Federal lands located within the Plan Area include portions of land managed by the Bureau of Land Management and Bureau of Reclamation. There are three Wildlife Refuges within the Subbasin managed by the United States Fish and Wildlife Service including the Sacramento National Wildlife Refuge, Delevan National Wildlife Refuge, and Colusa National Wildlife Refuge.

Tribal lands within the Subbasin are owned by the Cachil Dehe Band of Wintun Indians/Colusa Rancheria and the Cortina Indian Rancheria of Wintun Indians, Figure 2-5, Public and Tribal Lands.

State lands managed by the California Department of Fish and Wildlife are primarily located along the Sacramento River.

2.1.2.3 Well Density per Square Mile

The densities of public water supply, domestic, and agricultural wells per public land survey section within the Colusa Subbasin are shown in panels from left to right on Figure 2-6. Each section is approximately one square mile. The number of wells reported by section were determined using data from the California DWR Online System of Well Completion Reports (OSWCR) well completion report (WCR) database provided via the California Open Data Portal (DWR, 2021). The downloaded dataset only includes wells with WCRs that have been submitted to DWR and is as accurate as the information provided on the WCRs. Well locations are based on either information provided in the WCRs or are located at the center of their designated public land survey township, range, and section. As such, the well densities shown on Figure 2-6 and reported here are representative of well distribution but may not reflect the actual number of existing or active wells per well use type within the subbasin (i.e. public water supply, domestic, or agricultural well).

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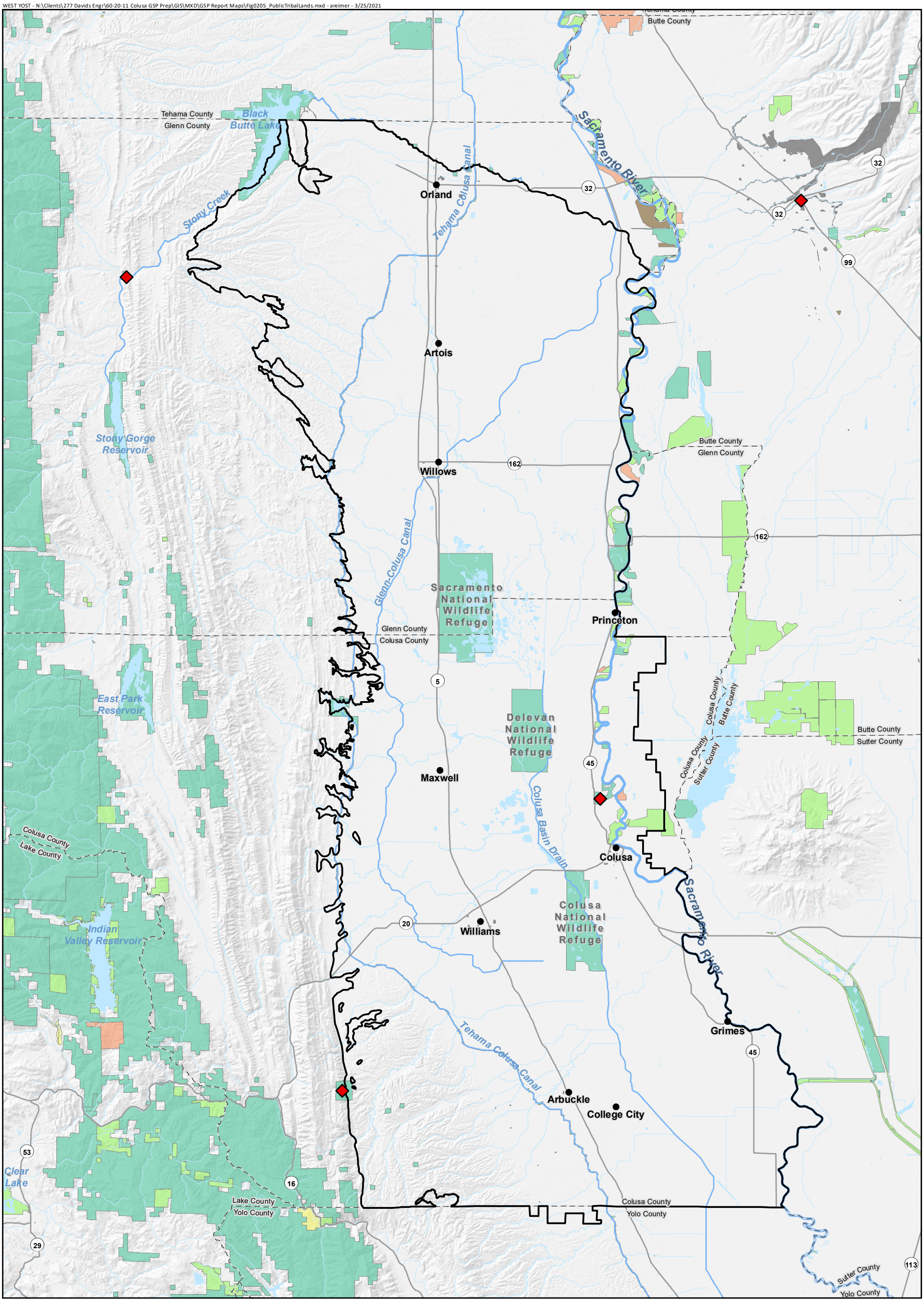

Source: Public and tribal lands were obtained from the State of California Governor's Office of Emergency Services (CalOES) GIS Data Hub, 2020.

Horizontal Datum: North American Datum of 1983, California State Plane Zone II, feet.

Colusa Subbasin

Public Lands

- Federal Land
- State Land
- County Land
- City Land
- Special District
- Non Profit Area
- Tribal Land

N

0 2.5 5

Scale in Miles

Figure 2-5

Public and Tribal Lands

Colusa GSA and Glenn GSA
Colusa Subbasin
Groundwater Sustainability Plan

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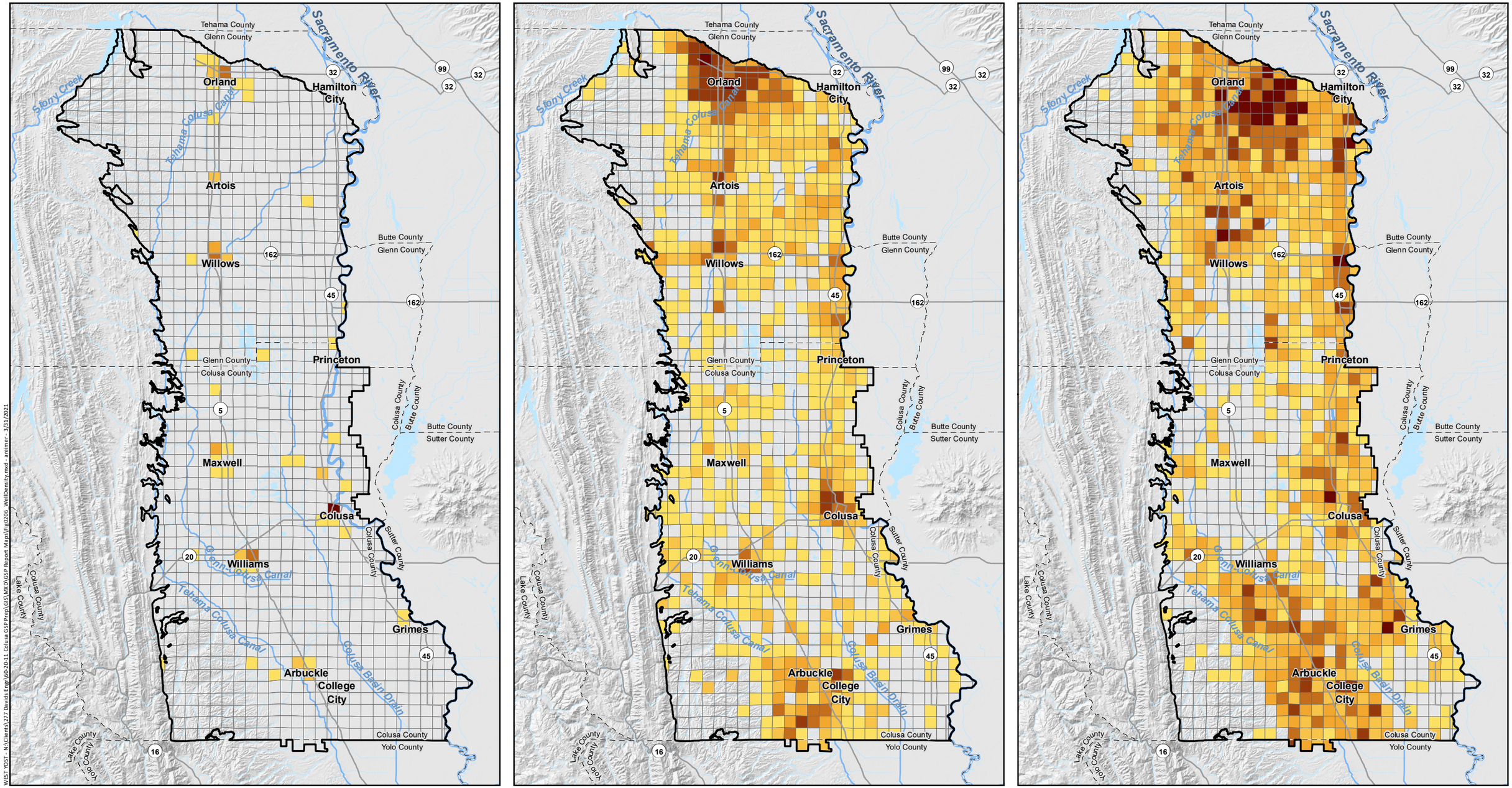
Public Water Supply Well Density

Domestic Water Supply Well Density

Agricultural Water Supply Well Density



Source: Well locations are those included in the Online System for Well Completion Reports (OSWCR) and were obtained from the California Open Data Portal.

Horizontal Datum: North American Datum of 1983 (NAD 83), California State Plane Zone II, feet.

Note:
1. The well database was filtered based on the planned use for each well. The planned use designated in the database may not match what the well is/was actually used for.
2. Wells with unknown use or uses other than water supply were not included in this analysis.

Colusa Subbasin

Public Water Supply Wells per Square Mile

0	4
1	5
2	> 5
3	

Domestic Water Supply Wells per Square Mile

0	11 - 25
1 - 2	26 - 100
3 - 5	> 100
6 - 10	

Agricultural Water Supply Wells per Square Mile

0	6 - 7
1	8 - 10
2 - 3	> 10
4 - 5	

N

0 4 8

Scale in Miles

Figure 2-6

Density of Wells within the Colusa Subbasin

Colusa GSA and Glenn GSA
Colusa Subbasin
Groundwater Sustainability Plan

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Public water supply wells are mostly concentrated in urban areas near cities and towns. Domestic water supply wells are more spread out throughout the Subbasin but occur in higher numbers surrounding urban areas and along the Sacramento River. The densest square mile concentration of domestic wells exceeds 100 wells and occurs near Orland. Agricultural wells are also more widespread than public wells but tend to be concentrated between the urban areas. The densest square mile concentration of agricultural wells exceeds 10 wells, an order of magnitude less than that of domestic wells.

According to the WCR database, there are approximately 73 public supply wells, 3,500 domestic wells, and 2,600 agricultural wells within the Colusa Subbasin. Averaged over the entire Colusa Subbasin, this is equivalent to approximately 0.06 public supply wells, 3.1 domestic wells, and 2.3 agricultural wells per square mile. Wells not planned for groundwater extraction or with an unknown or unspecified use designation were not included in this analysis.

2.1.3 Existing Land Use Designations

Land use areas in the Colusa Subbasin are broadly classified across three sectors: agricultural, urban, and native vegetation (Figure 2-7). Agricultural land use (and water use) encompasses all agricultural crops reported in the Colusa Subbasin. Urban land use includes urban, industrial, and semi-agricultural land.

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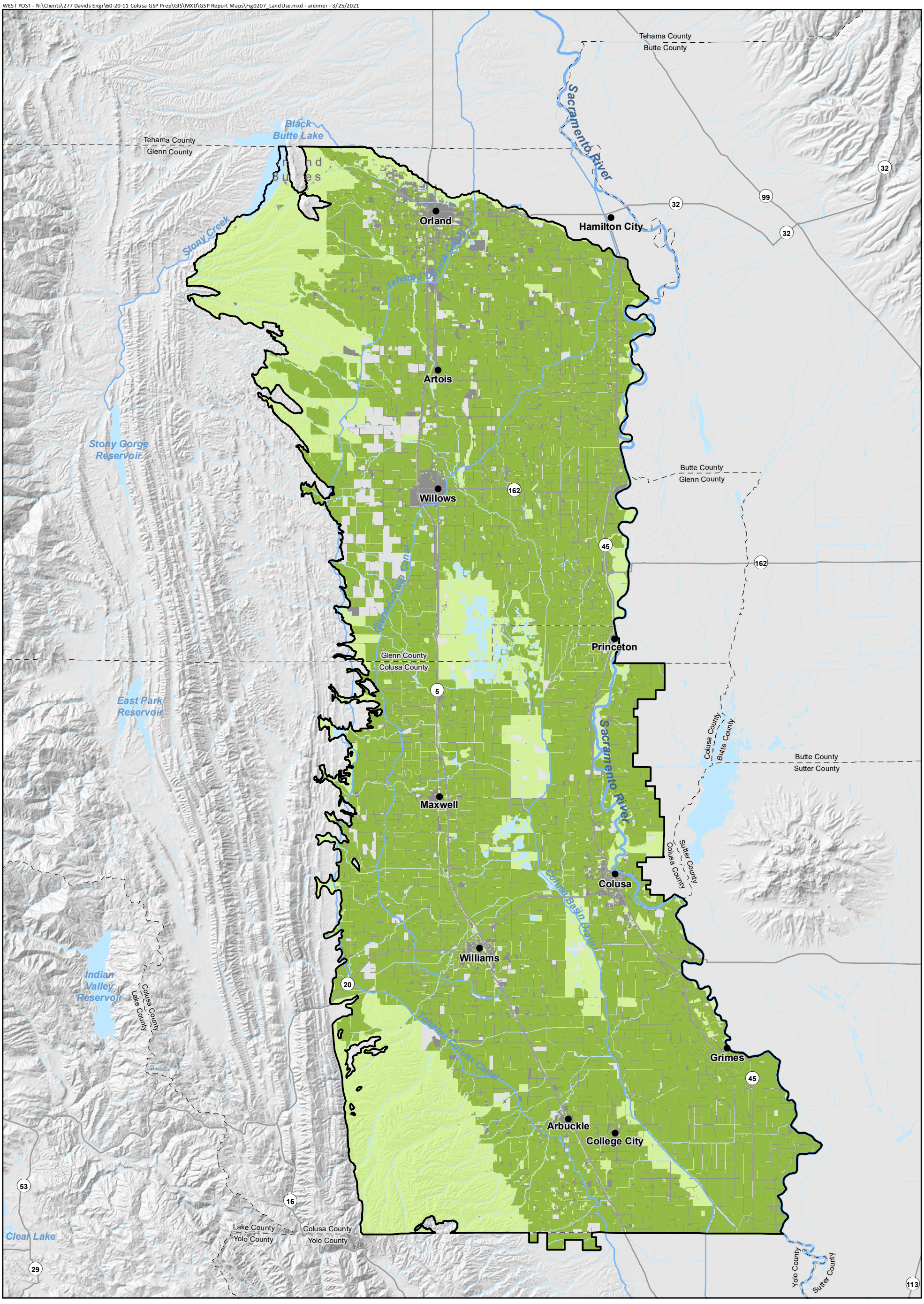

Source: Source: Land uses depicted in this map were surveyed in 2014 for Colusa, Glenn, and Yolo Counties via the Department of Water Resources Land Use Survey.

Datum: North American Datum of 1983 (NAD 83), California State Plane Zone II, feet.

Note:
1. Land use outside of the Colusa Subbasin is not shown on this map.

Colusa Subbasin

Land Use (2014)

- Agriculture
- Native
- Urban
- Idle

N

0 2.5 5

Scale in Miles

Figure 2-7

Land Use

Colusa GSA and Glenn GSA
Colusa Subbasin
Groundwater Sustainability Plan

2.2 WATER RESOURCES MONITORING AND MANAGEMENT PROGRAMS

2.2.1 Monitoring and Management Programs

Existing surface water and groundwater monitoring and management programs within the Colusa Subbasin are identified below with a summary of water planning documents applicable to the subbasin GSAs.

Continued monitoring is required to track the progress of the GSP implementation plan by providing data on groundwater and surface water availability in the Subbasin. See Chapter 6 for more details of applicable projects that require additional monitoring to fill data gaps.

2.2.1.1 Water Planning Documents

The local agencies that have formed the Colusa Subbasin's GSAs have prepared and adopted various water planning documents that discuss surface and groundwater supplies, distribution infrastructure, and implementation and monitoring programs

Development and implementation of this GSP has and will continue to consider the interests of all beneficial uses and users of groundwater, including agricultural water users, municipal water users, disadvantaged communities (DACs), groundwater dependent ecosystems (GDEs), and other stakeholders. Implementation of this GSP will support all goals for the protection of natural resources, GDEs, and DACs, including those established in the plans listed below, consistent with SGMA and GSP regulations.

The following plans have contributed to the development of the GSP:

- Regional Water Plans
  - Northern Sacramento Valley Integrated Regional Water Management Plan (NSV IRWMP) (approved 2014, updated adopted 2021)
    - The six counties of Butte, Colusa, Glenn, Shasta, Sutter and Tehama have been working together to take an integrated approach to water-related issues such as economic health and vitality; water supply reliability; flood, stormwater and flood management; water quality improvements; and ecosystem protection and enhancement. The IRWM is a collaborative effort to enhance coordination of the water resources in a region. The IRWM involves multiple agencies, stakeholders, tribes, individuals and groups to address water-related issues and offer solutions which can provide multiple benefits to the region. The Northern Sacramento Valley IRMWP was adopted by the NSV Board on April 14, 2014 and received final approval from the California Department of Water Resources (DWR) on July 24, 2014. The Plan was updated in 2019/2020 to comply with new DWR requirements. In March, the NSV Board adopted the Revised Draft IRWMP.
  - Sacramento Valley Regional Water Management Plan (RWMP) (2012, 2018)
    - Focuses on four subbasins, including the Colusa Subbasin, and addresses water supply and water use of participating water districts. The Plan discusses regional water measurement programs; provides analysis of water management quantifiable objectives; and actions to implement and achieve quantifiable objectives. The geographic boundary of the area covered by the Sacramento Valley Regional Water

Management Plan (Regional Plan) and served by the participating Sacramento River Settlement Contractors (SRSC) is the portion of the Sacramento River Basin from Shasta Dam to the Sacramento metropolitan area.

- Agricultural Water Management Plan (2012) – Participating Sacramento River Settlement Contractors
  - The 2012 Sacramento Valley Regional Water Management Plan Annual Update (2012 RWMP Annual Update) was prepared by the Sacramento River Settlement Contractors (SRSC) in cooperation with the U.S. Bureau of Reclamation, in accordance with the Regional Criteria for Evaluating Water Management Plans for the Sacramento River Contractors (Regional Criteria). The Regional Criteria specifies that the participating SRSCs will jointly file an annual update every subsequent year to report on implementation actions taken, along with any additions and revisions to the RWMP.
- Colusa Basin Watershed Management Plan (2012)
  - This Plan focuses on the following eight goals as identified by stakeholders and the TAC:
    1. Protect, maintain, and improve water quality
    2. Promote activities to ensure a dependable water supply for current and future needs
    3. Preserve agricultural land and open space
    4. Manage and reduce invasive plant populations
    5. Reduce destructive flooding
    6. Enhance soil quality and reduce erosion
    7. Preserve and enhance native habitat
    8. Address unknown future effects of climate change

- Water Management Plans
  - USFWS Comprehensive Conservation Plan for the Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges – Water Management Plans
  - Colusa County Water District Water Management Plan (2015)
  - Orland Artois Water District Water Management Plan (2014)
- Urban Water Management Plans
  - Willows District Urban Water Management Plan (2015)
- Groundwater Management Plans
  - Colusa County Groundwater Management Plan
    - The Colusa County Groundwater Management Plan was adopted in 2008. In preparing the Groundwater Management Plan, it was the intent of Colusa County that it be applicable countywide and serve the following purposes:
      1. To be responsible stewards of the water resources in Colusa County.
      2. To be eligible for grant funding to increase the understanding of the groundwater basins underlying Colusa County.
      3. To retain local control of water management decisions.

- Colusa County's goals for groundwater management (as developed with input from the public through meetings, workshops, and surveys) are to:
  1. Ensure a Reliable Water Supply
  2. Ensure Long-Term Groundwater Sustainability
  3. Optimize Conjunctive Use of Surface Water and Groundwater
  4. Protect Water Rights
  5. Maintain Local Control
  6. Prevent Unnecessary Restrictions on Groundwater Use

— Glenn County Groundwater Management Plan (adopted 2000)

- Glenn County Ordinance No. 1115, Groundwater Management aims to protect the County's groundwater resource. The Glenn County Groundwater Management Plan uses the Basin Management Objective (BMO) of Groundwater Basin Management, which encompasses six key elements:
  1. Management Areas and Sub-Areas, which groups groundwater users together who have the same vested interest in maintaining the groundwater resource at mutually agreeable levels.
  2. BMO Parameters requires management objectives for minimum groundwater levels.
  3. Public input is provided through the Glenn County Water Advisory Committee.
  4. Establishing a groundwater quality monitoring network.
  5. Adaptive management to resolve non-compliance with management objectives.
  6. Enforcement and conflict resolution when a BMO threshold is exceeded.

- Drought Management Plans

— Sacramento River Settlement Contractors Drought Management Plan (2016)

- Water contracts with various entities specify contractual water deliveries be made except during dry periods. During periods of reduced water supplies, deliveries are decreased in accordance with the curtailment terms in the contracts. Central Valley Project contractors along the Sacramento River can generally be grouped into two major categories: Sacramento River Settlement Contractors (SRSCs) and CVP Water Service Contractors. SRSCs within the Colusa Subbasin include: Glenn-Colusa Irrigation District, Provident Irrigation District, Princeton-Codora-Glenn Irrigation District, and Reclamation District 108.

- Other Plans

— General Plans (refer to Section 2.3.1)

- Colusa County General Plan
- Glenn County General Plan
- City of Colusa General Plan
- City of Williams General Plan
- City of Orland General Plan
- City of Willows General Plan

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- Municipal Service Reviews
  - A county's Local Agency Formation Commission (LAFCO) conducts a review of municipal services provided in a county by region, sub-region or other designated geographic area, as appropriate, for the service or services provided by a governing entity. Municipal Service Reviews (MSR) provide written summaries of the six topics pertaining to service infrastructure:
    1. Growth and population projections for the affected area
    2. The location and characteristics of any disadvantaged unincorporated communities (DUC) within or contiguous to the sphere of influence
    3. Present and planned capacity of public facilities and adequacy of public services, including infrastructure needs or deficiencies
    4. Financial ability of agencies to provide services
    5. Status of, and opportunities for shared facilities
    6. Accountability for community service needs, including governmental structure and operational efficiencies
  - The following GSAs have readily available MSRs:
    1. City of Colusa MSR (Draft 2021)
    2. City of Orland MSR (2014)
    3. City of Willows MSR (2014)
    4. Kanawha / Glide Water District MSR (2020)
    5. Orland-Artois water District MSR (2019)

2.2.1.2 Surface Water Monitoring and Management Programs

Surface water flows into and within the Colusa Subbasin are extensively monitored through existing federal, state, regional, and local programs. Data and spatial information from these monitoring programs have been incorporated directly into this GSP to support water budget development, per 23 CCR Section 354.18.

Federal, State, and Regional Programs

Table 2-4 lists the existing surface water monitoring networks with publicly available data and their respective websites.

Table 2-4. Existing Surface Water Monitoring Programs

Surface Water Monitoring Network	Responsible Agency	Surface Water Monitoring Type	Website
National Water Information System (NWIS)	U.S. Geological Survey (USGS)	Discharge	https://waterdata.usgs.gov/nwis
Water Data Library (WDL)	California Department of Water Resources (DWR)	Discharge	http://wdl.water.ca.gov/waterdatalibrary/
California Data Exchange Center (CDEC)	California DWR & U.S. Bureau of Reclamation (USBR)	Discharge; Reservoir Conditions	http://cdec.water.ca.gov/cdecstation2/ https://www.usbr.gov/

Local Programs

Local monitoring programs in the Colusa Subbasin include:

- Colusa County WD's SCADA system used to automate and measure incoming flows to the distribution system from canal side pumping facilities (2010 WMP)
- Colusa County WD's use of SonTek, McCrometer, and venturi flow meter devices to measure and record inflows
- GCID's diversion metering and publicly-available online reporting system, in compliance with SB 88
- GCID's main canal SCADA and automation project
- GCID's drain outflow monitoring project, with water measurement and telemetry equipment at key outflow sites
- Orland-Artois Water District's (OAWD) distribution system metering and SCADA system (2020 WMP)
- Metered inflows using venturi meters and doppler meters across five locations
- SCADA system used for monitoring and operating pumps
- Orland Unit Water Users Association's (OUWUA) SCADA system, which has been expanded and enhanced in recent years to include more than 10 additional sites and additional outflow monitoring capabilities (2017 AWMP)
- OUWUA's use of Rubicon FlumeGates, SonTek acoustic doppler meters, propeller meters, and McCrometer magnetic flow meters (among other) to measure and record deliveries (2017 WMP)
- OUWUA's records of grower deliveries in its water orders database (2017 WMP)
- Westside WD's Tehama-Colusa Canal delivery monitoring system, including McCrometer propellers and SonTek meters installed at canal mileposts 71.46 through 90.00 (2010 WMP).
- RD108's SCADA system used to measure incoming flows.
- RD108's delivery measurement system and water accounting database.

Efficient Water Management Practices

Water conservation and water use efficiency are important considerations in achieving groundwater sustainability. Efficient water management practices (EWMPs), as defined in CWC §10902, include all reasonable and economically justifiable programs to improve the delivery and use of water used for agricultural purposes. Broad efforts to improve water use efficiency in areas across the Subbasin are identified in the General Plans of counties and cities that overlie the Colusa Subbasin.

For agricultural water suppliers that must develop, adopt, and implement Agricultural Water Management Plans (AWMPs), CWC §10608.48 identifies key EWMPs that suppliers must implement, some without exception and some if locally cost-effective and technically feasible. Non-exempted agricultural water suppliers throughout the Colusa Subbasin have adopted and are currently implementing AWMPs. Information on specific activities, programs, and efforts to implement key EWMPs can be found in those AWMPs.

For CVP contractors that must develop, adopt, and implement Water Management Plans (WMPs), implementation of key Best Management Practices (BMPs) is also described throughout their WMPs. These BMPs generally align with EWMPs described in the AWMPs, and are aimed at improving water use efficiency. CVP contractors throughout the Colusa Subbasin are actively implementing WMPs. Information on specific activities, programs, and efforts to implement key BMPs can be found in those WMPs.

Irrigated Lands Regulatory Program

The Central Valley Regional Water Quality Control Board (CVRWQB) has adopted waste discharge requirements (WDRs) for discharges from irrigated commercial croplands to protect both surface water and groundwater supplies. When land is in agricultural production it is irrigated and fertilized. It is assumed that portions of the soil amendments, particularly fertilizer, is converted to nitrate which percolates into the groundwater. The ILRP regulates such discharges by evaluating and managing the loading of nitrate to groundwater. Commercial irrigated lands, including managed wetlands are required to obtain regulatory coverage.

2.2.1.3 Groundwater Monitoring and Management Programs

Both Counties currently have wells included in the state-wide California's Statewide Groundwater Elevation Monitoring Program (CASGEM) program. Glenn County also has a Basin Management Objective (BMO) groundwater level monitoring well network. Colusa County's current groundwater monitoring network consists of wells originally identified in its Groundwater Management Plan (GMP), but has since been revised. These and other existing groundwater monitoring programs are described in more detail in the following sections. Proposed new groundwater monitoring sites were evaluated based on existing sites from DWR and USGS groundwater monitoring networks, and recommendations from County staff.

Groundwater Level Monitoring

Table 2-5 lists existing groundwater level monitoring programs with publicly available data and their respective websites.

Table 2-5. Existing Groundwater Monitoring Programs

Groundwater Monitoring Network	Responsible Agency	Website
National Water Information System (NWIS)	U.S. Geological Survey (USGS)	https://waterdata.usgs.gov/nwis
Water Data Library (WDL)	California Department of Water Resources (DWR)	http://wdl.water.ca.gov/waterdatalibrary/
California's Statewide Groundwater Elevation Monitoring Program (CASGEM)	California DWR	https://www.casgem.water.ca.gov/ Note: site requires a user name and password
County-Specific Groundwater Level Monitoring Programs	County of Colusa & County of Glenn	Colusa County: http://countyofcolusa.org/index.aspx?NID=660 Glenn County: http://www.countyofglenn.net/committee/water-advisory-committee/management-plan

Groundwater Extraction Monitoring

The replenishment of groundwater extractions occurs through various forms of recharge. The types and amounts of historical and current recharge are described in detail in Section 3.3 (Water Budget Information), and future estimates of recharge are detailed in Appendix 3-D (Groundwater Model Documentation). Future replenishment for groundwater extractions that will occur with implementation of projects and management actions for this GSP are described in detail in Chapter 4.

Groundwater Quality Monitoring

Table 2-6 lists the groundwater quality monitoring networks with publicly available data and their respective websites.

Table 2-6. Existing Groundwater Quality Monitoring Programs

Groundwater Monitoring Network	Responsible Agency	Website
National Water Information System (NWIS)	U.S. Geological Survey (USGS)	https://waterdata.usgs.gov/nwis
Water Data Library (WDL)	California Department of Water Resources (DWR)	http://wdl.water.ca.gov/waterdatalibrary/
Public Water Agencies and Municipalities	State Water Resources Control Board (SWRCB) Division of Drinking Water (DDW)	https://sdwis.waterboards.ca.gov/PDWW/
GeoTracker and GeoTracker Groundwater Ambient Monitoring and Assessment (GAMA) Programs	SWRCB	http://geotracker.waterboards.ca.gov/ http://geotracker.waterboards.ca.gov/gama/
Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS)	Central Valley Salinity Coalition	Not Available[(a)]
Irrigated Lands Regulatory Program (ILRP)	Central Valley Regional Water Quality Control Board	http://ceden.waterboards.ca.gov/AdvancedQueryTool
Glenn County Annual Water Quality Sampling Program	County of Glenn	http://www.countyofglenn.net/committee/water-advisory-committee/water-quality[(a)]

(a) Groundwater quality data are not available online.

Land Subsidence Monitoring

Table 2-7 lists the existing land subsidence monitoring networks and data sets with publicly available data, and their respective websites.

Table 2-7. Existing Land Subsidence Monitoring Programs

Subsidence Monitoring Network	Responsible Agency	Website
Interferometric Synthetic Aperture Radar (InSAR) Surveys[a]	European Space Agency Japanese Space Exploration Agency Italian Space Agency Canadian Space Agency German Aerospace Center National Aeronautics and Space Administration (NASA) Jet Propulsion Laboratory (JPL)	http://www.esa.int/ESA http://global.jaxa.jp/ http://www.asi.it/en http://www.asc-csa.gc.ca/eng/ http://www.dlr.de/dlr/en/desktopdefault.aspx/tabid-10002/ https://data.cnra.ca.gov/dataset/nasa-jpl-insar-subsidence
Continuous Global Positioning System (GPS) Benchmarks	National Geodetic Survey; UNAVCO; Berkeley Seismological Laboratory	https://www.ngs.noaa.gov/NGSDataExplorer/# http://www.unavco.org/data/data.html http://seismo.berkeley.edu/networks/index.html
Extensometers	California Department of Water Resources (DWR)	http://wdl.water.ca.gov/groundwater/landsubsidence/LSmonitoring.cfm
Sacramento Valley Height-Modernization Project	California DWR Northern District & U.S. Bureau of Reclamation	Not Available[b]

(a) The InSAR sources currently house unprocessed raw survey data but not interpretative reports for specific regions. Some of the reports using InSAR to study subsidence specific to California can be found on DWR's website

(b) Sacramento Valley Height-Modernization project data are not available online.

2.2.2 Impacts to Operational Flexibility

There are existing groundwater management and/or monitoring programs that may limit the operational flexibility of the basin, including design criteria, flood control programs, measures that limit pumping, or limitations on surface water deliveries by reducing surface water supplies available for conjunctive use programs. However, continued operation of these surface water and groundwater monitoring programs will support tracking the progress of the GSP implementation by providing data on water availability as well as inflows and outflows from the subbasin.

2.2.3 Groundwater Ordinances

Colusa County Code, Chapter 43, Groundwater Management, provides guidance for groundwater transfers and groundwater substitution practices to assure the overall economy and environment of the County is protected by fostering prudent water management practices.

Glenn County Code Section 20.030, Groundwater Coordinated Resource Management Plan, provides guidance for the continued availability of groundwater by limiting the extraction of groundwater through groundwater monitoring, protecting groundwater quality, and minimizing land subsidence. In addition, Section 20.080 provides well drilling requirements prior to the drilling or abandonment of a well.

2.2.4 Conjunctive Use Programs

Surface water and groundwater are used conjunctively throughout the Colusa Subbasin to meet water management objectives. Generally, within each agricultural water purveyor's service area, available surface water is used on a preferential basis, with groundwater pumped by private landowners as need to satisfy crop water requirements. The amount of groundwater pumped in any given year depends primarily on the crop water requirements (which vary by the crop types planted each year, and weather conditions), and on the quantity of surface water available during that year.

For the purveyors with highly reliable and adequate surface water supplies, including the Sacramento River Settlement Contractors, private pumping is generally small compared to surface water use, except in years when their supplies are reduced according to settlement contract terms, and in years when surface water is transferred (both within and outside the subbasin), and groundwater is pumped to substitute for transferred surface water.

The water purveyors along the Tehama Colusa Canal have federal contracts that provide less reliable surface water supplies, which can vary from zero to 100% of their maximum contract quantities. Consequently, groundwater pumping is highly variable depending on each year's water allocation, and to a lesser extent depending on variability is crop water demands.

Conjunctive use also occurs across purveyor boundaries involving transfers of temporarily surplus water from some purveyors to others who desire to use more surface water to conserve groundwater supplies. In some years, water transfers occur from entities outside the subbasin to Colusa Subbasin purveyors, also reducing the amount of groundwater pumping.

Colusa County Code, Chapter 43, Groundwater Management encourages the conjunctive use of surface water and ground water supplies during dry periods.

2.3 LAND USE ELEMENTS OR TOPIC CATEGORIES OF APPLICABLE GENERAL PLANS

2.3.1 Summary of General Plans/Other Land Use Plans

California Government Code (§65350-65362) requires that each county and city in the state develop and adopt a General Plan. The General Plan is a comprehensive long-term plan for the physical development of the county or city and must contain eight state-mandated elements including: land use, housing, circulation, conservation, noise, safety, open space, and environmental justice. The General Plan may also contain other voluntary elements.

General Plans and information from other land use planning activities were compiled for review and consideration during GSP preparation and for coordination during GSP implementation. This section includes a summary of those plans being implemented in the Colusa Subbasin.

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Two Counties and four cities share land use planning responsibilities and authorities for the Colusa Subbasin. These include:

- Colusa County
  - City of Colusa
  - City of Williams
- Glenn County
  - City of Orland
  - City of Willows

Most of the General Plans prepared by these entities contain goals, objectives, and policies relating to water supplies, water use, water quality, and water resources. Land use designations, assumptions on growth, preservation of agricultural lands, or protection of environmental resources are examples of land use planning that could result in changes in water use over the planning horizon.

As part of the GSP preparation, General Plans for Colusa and Glenn Counties and the cities of Colusa, Williams, Orland, and Willows were reviewed. City and County boundaries are shown in Figure 2-1.

There are no other land use plans applicable within the Colusa Subbasin.

2.3.1.1 Colusa County General Plan

In July 2012, Colusa County adopted its 2012 Comprehensive General Plan Update (Colusa County, 2012). The General Plan area covers the entire County, which overlies the Colusa County portion of the Colusa Subbasin, as shown in Figure 2-1. Although the protection of natural resources in the County is addressed throughout the General Plan, key goals with respect to water resources are contained in the Agriculture Element and Conservation Element. Table 1 of Appendix 2A identifies the selected Colusa County General Plan Goals and Policies applicable to water resources management.

2.3.1.2 Glenn County General Plan

Glenn County's current General Plan was last updated in 1993, and thus is undergoing a comprehensive update. It is anticipated that the General Plan Update will take place from 2019 through the fall of 2021. The General Plan goals, policies, and implementation presented in Table 2 of Appendix 2A are from the 1993 General Plan and are divided into three subject areas: Natural Resources, Public Safety, and Community Development. Table 2 of Appendix 2A identifies the selected Glenn County General Plan Goals, Policies, and Implementation measures applicable to water resources management.

2.3.1.3 City of Colusa General Plan

In October 2007, the City of Colusa adopted its 2005-2025 General Plan Update (City of Colusa, 2007). The General Plan area covers the City of Colusa, which is located adjacent to the Sacramento River in the eastern portion of Colusa County within the Colusa Subbasin, as shown in Figure 2-1. Although the protection of natural resources in the City is addressed throughout the General Plan, key goals with respect to water resources are contained in Land Use Element, Community Character and Design, Safety Element, the Parks, Recreation and Resource Conservation Element, and Municipal Facilities Element. Table 3 of Appendix 2A identifies the selected City of Colusa General Plan Goals, Policies, and Implementation Actions applicable to water resources management.

2.3.1.4 City of Williams General Plan

In May 2012, the City of Williams adopted its 2010 General Plan Update (City of Williams, 2010). The General Plan area covers the City of Williams, which is located in the central portion of Colusa County within the Colusa Subbasin, as shown in Figure 2-1. Key goals with respect to water resources are contained throughout the General Plan Elements. Table 4 of Appendix 2A identifies the selected City of Williams General Plan Goals and Policies applicable to water resources management.

2.3.1.5 City of Orland General Plan

The City of Orland is located in the northeast portion of Glenn County within the Colusa Subbasin, as shown in Figure 2-1. In 2003, the City of Orland updated its General Plan through a comprehensive review of all elements. Previous to that, minor revisions to the General Plan had been made in 2000, with the original adoption of the Plan in 1974. The 2008-2028 General Plan Update revises the 2003 General Plan, in order to reflect upon changing conditions and issues, and to provide a direction for the future growth of the City. The Orland General Plan is a comprehensive document that provides policies and guidelines for the future expansion and development of the community. The City addresses key goals and policies with respect to water resources within in Safety Element and Open Space, Conservation and Public Facilities Element. Table 5 of Appendix 2A identifies the selected City of Orland General Plan Goals, Policies, and Programs applicable to water resources management.

2.3.1.6 City of Willows

The City of Willows is located in the southern portion of Glenn County within the Colusa Subbasin, as shown in Figure 2-1. The City of Willows General Plan was adopted in 1999, with land use amendments made in 2000 and 2010. The Willows General Plan provides policies and guidelines for the future expansion and development of the community. The City addresses key goals and policies with respect to water resources. Table 6 of Appendix 2A identifies the selected City of Willows General Plan Goals, Policies, and Programs applicable to water resources management.

2.3.2 Impact of General Plans on Water Demands

All six of the county and city General Plans in the Plan Area were adopted prior to the development of the GSAs and this GSP. Consequently, these General Plans have not directly considered the potential implications or impacts of this GSP's implementation on urban water demands or supplies within these jurisdictions. It should be noted that Glenn County is currently preparing a comprehensive General Plan Update and may take into consideration sustainable water actions identified in this GSP.

Each of the General Plan's land use elements and land use plans forecast future land development and make assumptions for future urban and agricultural water demands. This GSP uses the same land uses assumptions identified in the general plans for forecasting the anticipated water budget, described in this GSP (refer to Section 3.3).

To achieve sustainability within the Colusa Subbasin GSA, water demands of agricultural and developed land uses will need to come into an equitable balance.

Typically, unincorporated communities rely on a community water system that may rely on either surface or groundwater or both. Rural residential land uses not part of a community system typically rely on individual groundwater wells. Developed urban land uses, such as that within cities, typically rely on groundwater supplies accessed by municipal wells. Therefore, when cities grow or rural densities increase, generally surface water use decreases and groundwater demand increases. The GSP incorporates actions

that encourage land use agencies to participate in efforts to increase groundwater recharge to off-set increased water demands.

2.3.2.1 Impact of the Colusa County General Plan on Water Demands

Several goals and policies of the Colusa County General Plan work to balance agricultural land uses with preserving and protection water, soil, and natural resources necessary to ensure agricultural operations. Policies support water development projects that provide additional sources of water for agricultural use, yet also encourage the preservation of water resources. In addition, the General Plan requires that new residential development connect to municipal water systems and requires development to demonstrate sufficient water supplies are available. The General Plan encourages conservation of water resources including the conservation of biological communities that protect wetlands, riparian habitat, and aquatic resources and thus contribute to the protection of groundwater resources and water quality. The General Plan includes goals and policies that work to ensure a sustainable and long-term supply of reliable water to meet the needs of the county residents, businesses, and agricultural land uses. Land use policies provide for the harmonious use of land and the preservation of the County's resources, including water. Lastly, the General Plan encourages local, regional, and state multi-agency planning efforts as well as coordination with water providers to manage water supplies and avoids groundwater overdraft, water quality degradation and other adverse environmental impacts. Refer to Appendix 2A for selected Colusa County General Plan Goals and Policies.

2.3.2.2 Impact of the Glenn County General Plan on Water Demands

The Glenn County General Plan is undergoing a comprehensive update. However, the existing General Plan does address the protection of water resources in connection with the preservation of agricultural lands and the recognition of the value of agricultural land uses, particularly ricelands for habitat, watershed management, and groundwater recharge. General Plan policies oppose the exportation of groundwater, protect groundwater recharge areas and groundwater quality, encourages water conservation and education, promotes interagency coordination. The General Plan also addresses riparian, wetland, and aquatic resources habitat protection in conjunction with supporting efforts to improve water availability for agricultural users. Water quality policies include the protection of groundwater to ensure that the holding capacity of the area is not exceeded. The General Plan address coordination between the County and water purveyors including creating uniform policies and standards for providing cost-effective water services, particularly in unincorporated areas located within city urban limits.

Refer to Appendix 2A for selected Glenn County General Plan Goals and Policies applicable to water demand.

2.3.2.3 Impact of the City of Colusa General Plan on Water Demands

The City of Colusa's General Plan Goals and Policies provide for a logical land use planning process that includes adequate management of public services, including water supply. As part of the implementation of the General Plan the City has prepared water and storm drainage master plans to address water quality, supply, recycling, distribution, and water conservation. The General Plan also works to ensure that new development respects the natural environment, protects the City's water resources, and minimizes the development of new water sources and facilities while providing water services. Refer to Appendix 2A for selected City of Colusa General Plan Goals and Policies applicable to water demand and management.

2.3.2.4 Impact of the City of Williams General Plan on Water Demands

The City of Williams General Plan identifies policies that pertain to water supply and associated demand in the land use and character, public safety and facilities as well as open space and conservation elements.

New development in the City requires that adequate public services, including water supply, is available. In addition, although not specifically related to water demand, the preservation of water related resources, including wetlands, riparian areas, and other aquatic habitats provides for improved water quality of water supply sources, including groundwater. Implementing actions identify the need for groundwater protection measures in subdivisions as well as developing water efficient landscaping standards for new development. Refer to Appendix 2A for selected City of Williams General Plan Goals, Policies, and Implementing Actions that address water demand and management.

2.3.2.5 Impact of the City of Orland General Plan on Water Demands

The City of Orland General Plan Safety Element policies address the potential for subsidence associated with groundwater extraction. Goals include the conservation, enhancement, and management of water resources to protect water quality and ensure adequate long-term supply for domestic, agricultural, and industrial land uses. Policies support maintaining groundwater infiltration, improving groundwater quality, and encourages water conservation. Refer to Appendix 2A for selected City of Orland General Plan Goals and Policies applicable to water demand and supply.

2.3.2.6 Impact of the City of Willows General Plan on Water Demands

The City of Willows General Plan Land Use Element addresses new growth and the desire to maintain flexibility to changing conditions. Goals include the provision of adequate services, including water. Refer to Appendix 2A for selected City of Willows General Plan goals, objectives, and policies.

2.4 ADDITIONAL GSP ELEMENTS

SGMA requires that the following topics are addressed in the GSP. See below for references to where each topic is addressed.

- Control of seawater water intrusion: See Section 3.2.4 for an explanation of why the seawater intrusion sustainability indicator does not apply to the Colusa Subbasin.
- Wellhead protection areas and recharge areas: Wellhead protection is discussed in Section 2.2.3 and on recharge in Section 2.3.1.
- Migration of contaminated groundwater:
  - Migration of contaminated groundwater is discussed in Section 3.2.5.
- A well abandonment and well destruction program:
  - Well abandonment and well destruction are discussed in Section 2.2.3.
- Replenishment of groundwater extractions:
  - Recharge projects are discussed in Chapter 6.
- Activities implementing, opportunities for, and removing impediments to, conjunctive use or underground storage:
  - Projects and management actions are discussed in Chapter 6.
- Well construction policies:
  - Well construction policies are contained in Section 2.2.3.

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- Measures addressing groundwater contamination cleanup, groundwater recharge, in-lieu use, diversions to storage, conservation, water recycling, conveyance, and extraction projects:
  - Projects and management actions are discussed in Chapter 6.
- Efficient water management practices, as defined in CWC §10902, for the delivery of water and water conservation methods to improve the efficiency of water use:
  - Details on efficient water management practices are discussed in Section 2.2.1.2.
- Efforts to develop relationships with state and federal regulatory agencies:
  - Details on this topic can be found in Section 2.5.
- 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:
  - Details on this topic can be found in Section 2.3.
- Impacts on GDEs:
  - GDEs are discussed in Section 3.2.8.

2.5 NOTICE AND COMMUNICATION

2.5.1 Overview

SGMA requires broad and diverse stakeholder involvement in GSA activities and the development and implementation of the Colusa Subbasin GSP. The intent of SGMA is to ensure successful, sustainable management of groundwater resources at the local level. Success requires cooperation by all beneficial users (defined below), and cooperation is far more likely when beneficial users receive consistent messaging of information and are provided opportunities to shape the SGMA path forward.

To facilitate stakeholder involvement in the GSA process, a Communication and Engagement Plan (Appendix 2A) was created by the GSAs in the Colusa Subbasin to:

- Provide the GSAs and beneficial users guidance to ensure consistent messaging of SGMA requirements and related Colusa Subbasin data and information,
- Provide a roadmap to the GSAs and beneficial users to ensure everyone has an opportunity for meaningful input into GSA decision-making, including GSP development,
- Describe processes that are experienced by beneficial users as fair and respectful to the diverse range of interests in the Colusa Subbasin,
- Make transparent to beneficial users, their opportunities to contribute to the development of a GSP, and
- Ensure that information reaches all beneficial users who have an interest in the Subbasin.

2.5.1.1 COVID-19 Global Pandemic

In March 2020, the COVID-19 global pandemic necessitated unprecedented changes in all aspects of California society including public gatherings and the rules defining how public agencies conduct events. Several Executive Orders were issued by Governor Newsom to address necessary changes in the Ralph M. Brown Act (Government Code § 54950-54963) (Brown Act) which dictates the rules and manner in which local public agencies notice and conduct their sponsored meetings and ensures public transparency of

and accessibility to almost all aspects of said gatherings. Under statewide "shelter-in-place" (SIP) mandates, all public gatherings were prohibited by the State government and as subsequently adopted by the Counties of Colusa and Glenn. These changes thus required that after March 13, 2020 and continuing to present, all meetings individually and jointly convened by the GSAs were conducted through web-based, virtual meeting and telephone-based methods, consistent with protocols allowable through the COVID –related Executive Orders. The following sections describe various actions and events employed to ensure that GSA meetings and GSP development were conducted with the required level of transparency and accessibility. Activities and events that took place prior to March 2020 SIP mandates were conducted in person and virtually thereafter. The following sections also note additional steps taken by the GSAs during the COVID-19 pandemic to modify public engagement and information and ensure that beneficial users remained fully informed of GSA efforts and GSP content.

2.5.1.2 Description of Beneficial Uses and Users in the Basin

Under the requirements of SGMA, all beneficial uses and users of groundwater must be considered in the development of GSPs, and GSAs must encourage the active involvement of diverse social, cultural, and economic elements of the population. Beneficial users, therefore, are any stakeholders who have an interest in groundwater use and management in the Chowchilla Subbasin community. Their interest may be related to GSA activities, GSP development and implementation, and/or water access and management in general. To assist in identifying categories of beneficial uses and users in the Colusa Subbasin, the Communications and Engagement Plan included a Stakeholder Engagement Chart for GSP Development (Table 2-8).

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Table 2-8. Stakeholder Engagement Chart for GSP Development

Category of Interest	Examples of Stakeholder Groups	Engagement Purpose
General Public	• Citizens groups • Community leaders • Interested individuals • Universities/Academia	Inform to improve public awareness of sustainable groundwater management
Land Use	• Municipalities • Local land use agencies • Regional land use agencies • Community Service Districts	Consult and involve to ensure land use policies are supporting GSPs and there are no conflicting policies between the GSAs / GSP and said local government agencies
Private Users	• Private pumpers (domestic and agricultural) • Schools and colleges • Hospitals	Inform and involve in assessing impacts to groundwater users
Urban/ Agricultural Users	• Water agencies • Irrigation districts • Municipal water companies • Mutual water companies • Resource conservation districts • Farmers/Farm Bureaus • Water Districts • Water users associations • Irrigated Lands Regulatory Program Coalition	Collaborate to ensure sustainable management of groundwater
Industrial Users	• Commercial and industrial self-suppliers • Local trade associations or groups	Inform and involve in assessing impacts to users
Environmental and Ecosystem Uses	• Federal and State agencies • Wetland managers • Environmental groups	Inform and involve to consider/incorporate potential ecosystem impacts to GSP process
Surface Water Users	• Irrigation Districts • Water Districts • Water users associations • Agricultural users	Inform and involve to collaborate to ensure sustainable water supplies
Economic Development	• Chambers of commerce • Business groups/associations • Elected officials • State Assembly members • State Senators • Economic Development Team	Inform and involve to support a stable economy
Human Right to Water	• Disadvantaged communities • Small water systems • Environmental justice groups/community-based organizations • De minimis well owners	Inform and involve to provide safe and secure groundwater supplies to all communities reliant on groundwater
Tribes	• Federally Recognized Tribes • Non-Federally Recognized Tribes	Inform, involve and consult with tribal government
Federal Lands	• U.S. Fish and Wildlife Service • U.S. Bureau of Reclamation • U.S. Army Corps of Engineers	Inform, involve and collaborate to ensure basin sustainability
Integrated Water Management	• Regional water management groups (IRWM regions) • Flood agencies	Inform, involve and collaborate to improve regional sustainability

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2.5.1.3 Communications

Decision-Making Processes including Beneficial User Input

As noted above, the Colusa Subbasin is divided between two GSAs for GSP development. The two GSAs have jointly developed this coordinated GSP.

The GSA Boards are the final decision-makers for the Colusa Subbasin. To assist in GSP development, the GSAs convened respective technical advisory committees (TAC) which have principally met in monthly joint sessions to have focused, publicly noticed and accessible discussions about GSP technical issues. The TACs include members of each GSA Board and other advisory representatives who deliberate on technical topics and then provide recommendations to the respective GSA Boards for subsequent decisions. TAC meetings started in May 2020 and as such have all been conducted using web-based and telephone based meeting methods.

To ensure compliance with GSP regulations regarding "*…opportunities for public engagement and…how public input and response will be used*" (and additive to Brown Act requirements) the GSAs have adopted a comprehensive table-based comment tracking system as part of the GSP Administrative Record to continually record beneficial user input and to regularly update the respective Boards on said input. Appendix 2B presents an example of the comment tracking system. The comment tracking system is updated weekly by GSA staff and is then included in the agenda packet for each GSP Board meeting. The agenda for each Board meeting includes a specific item calling attention to the updated comment tables and allowing time for each Board to make inquiry about and discuss any comments received. Prior to key GSP decision milestones, each Board agenda defines said decision as a formal action and further includes an agendized item for discussion by each Board about associated public input recorded in the comments tables that might inform their decision-making. Further, consistent with and expanding on Brown Act requirements, each Board and TAC meeting includes the following periods of public comment on their respective agendas:

- Introductory public comment period at the beginning of the meeting for topics not included in the current agenda
- Public comment periods for each agenda item
- Public comment periods to be held prior to any formal action taken by the Board and/or TAC
- Final public comment period prior to adjournment of each meeting.

Public Engagement Opportunities

There were a number of different meetings at which the public had the opportunity to engage during the GSP development process. For all meetings requiring compliance with the Brown Act, agendas and associated background information are posted no less than 72 hours before a meeting and all materials presented in said meetings are made accessible for the general public to access either through the GSA's respective websites (described below) or through hard copies available at the respective GSA's administrative offices. For meetings not required to be compliant with the Brown Act, presentation materials and event agendas were posted on the respective GSA websites either before or at the latest, immediately after each event.

- **Individual GSA meetings**: Each GSA in the Colusa Subbasin held regular, publicly-noticed, publicly accessible meetings, generally on a monthly schedule.

- **Joint GSA meetings:** The GSAs convened several times for publicly-noticed, publicly accessible joint meetings. The intent of the joint GSA meetings was to provide a forum for representatives from each GSA to share perspectives and information about GSP development and SGMA implementation, and near the end of the GSP development process, to ensure shared expectations and approvals of the GSP.
- **Interbasin SGMA Coordination Meetings:** On a regular and publicly noticed basis, interbasin meetings of representatives from the Colusa Subbasin met with representatives from the adjacent Corning, Butte, Sutter and Yolo Subbasins to discuss interconnected groundwater conditions, potential impacts and other factors related to groundwater management across the larger Sacramento Valley Basin.
- **GSA-specific and Joint Technical Advisory Committee Meetings:** As previously described, GSA-specific TACs were formed to review technical content, work with the technical consultant team and advise their respective GSA Boards on GSP development. The TACs generally met on a monthly basis and always in publicly-noticed, publicly accessible meetings.
- **GSA Formation Working Group Meetings:** In the initial stages of GSA formation, close to 40 separate, eligible GSA organizations noticed the DWR of their intent to form separate GSAs. Using funding provided through DWR's Facilitation Support Services program, all said parties convened into a Subbasin Working Group which convened every 4 to 8 weeks for close to 2 years to negotiate mutual governance agreements that became the basis for the two joint powers authorities to be formed as the respective CGA and GGA. The meetings took place in person; always as publicly-noticed and publicly accessible events held in Colusa and Willows, California.
- **Public Meetings and Workshops**: Beginning in January 2016, the subbasin representatives started focused public events to inform beneficial users about SGMA.
  - **General Education / Information: January and March 2016** - A series of kickoff public meetings were held at the Colusa County Fairgrounds and Orland Memorial Hall to describe SGMA requirements and background, early governance and implementation steps, anticipated methods for public engagement and to provide an opportunity for public question and answer sessions with a panel of eligible GSA leaders actively involved in the governance development process.
  - **GSA Financing – Proposition 218 Public Information Meetings: January and April 2019 -** In support of the respective GSA's efforts to establish long range funding, public information meetings were held respectively at the Colusa Indian Community Events, the Glenn Success Square Conference Center and the Ord Bend Community Hall. The meetings included background about SGMA implementation and compliance, presentations about Proposition 218, discussion of associated financing options and requirements, and opportunities for questions and answers.
  - **GSA Financing – Proposition 218 Public Ballot Hearings: June and July 2019** - In support of the respective GSA's efforts to establish long range funding, final Proposition 218 ballot hearings were held respectively at the Colusa Industrial Properties and the City of Willows Council Chambers. Meetings were held as formal GSA Board meetings with an allowance for public feedback on the ballot process, followed by a formal counting of submitted ballots and a final determination of election outcomes.

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- **SGMA Basin Setting and Sustainable Management Criteria Workshops: September 2019** - The GSAs sponsored a series of public workshops held at the Colusa VFW Hall and the Glenn Success Square Conference Center. The purpose of the workshop was to provide an update on Basin Setting conditions, Subbasin Water Budget, modelling efforts, conduct small group exercises about potential significant and unreasonable conditions associated with sustainability indicators, and to conduct question and answer sessions. Individual and small group worksheets were prepared by workshop participants providing collective beneficial user input to the GSAs about potential groundwater sustainability problem areas in the Subbasin.
- **SGMA Series** – Beginning in December 2020 and extending in virtual format through spring and summer 2021, the GSAs sponsored a series of paired public meetings (one in daytime / one in evening). These meetings focused on the following:
  - **December 2020** – Status of Basin Setting conditions, education on Sustainable management Criteria terms, requirements and processes; Projects and Management Actions terms and next steps, the Colusa Subbasin Well Monitoring Pilot Program
  - **June 2021 -** Current and Historical Groundwater Conditions, Historical, Current, and Projected Water Budgets, Draft Sustainability Goal, Draft Significant and Unreasonable Conditions.
  - **August 2021 –** Public Draft Review meetings for the public release of the GSP

- **Coffee / Neighborhood Meetings 2017 - 2020**: The Program Managers for the CGA and GGA held periodic, locally focused "coffee" meetings and neighborhood meetings with locally interested beneficial users to informally update them on GSA and GSP status and how they could participate.

Soliciting Written Comments

In addition to soliciting feedback at all meetings described above, an opportunity was provided to offer written comments on the GSP via an online comment form or letter. An informal comment period began when initial chapters of the GSP were made available in April 2021 and again during an official 90-day comment period that began on the date the full draft of the GSP was released, on August __ 2021, and continued through __ 2021. All comments received via during these periods were admitted into the Administrative Record and the associated comment tracking system for subsequent review by the GSA Boards and all beneficial users.

The written comments and responses can be found in Appendix 2B.

2.5.1.4 Informing the Public about GSP Development Progress

Interested Parties List

Email distribution lists of GSA-specific beneficial users were developed for outreach throughout the GSP planning process. The lists are maintained and updated by CGA and GGA Program Managers respectively and are included in Appendix 2C (with some information redacted for confidentiality purposes and GSA commitments). Any interested member of the public could be added to the lists by signing up via respective online entry options located on the respective GSA's websites.

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Distribution of Meeting Information

Before each public meeting and workshop, agenda-based flyers were created with key information provided. The flyers was emailed out to the Interested Party list as well as to key outreach leads with various organizations and the member agencies of each GSA to ensure maximum distribution to the widest range of beneficial users feasible. Example meeting and workshop flyers are presented in Appendix 2D.

Outreach and Branding

To provide Subbasin outreach materials with a consistent look and feel that ensure user awareness of messaging and a sense of organizational cohesion, the respective GSA Boards jointly recommended the development and ultimate approval of a Colusa Subbasin Logo and associated graphics standards to be used consistent on all outreach collateral and online materials. Figure X presents the color and black and white versions of the logo used.

Traditional Media Outreach

In advance of each public meeting and workshop, press releases were issued to a local media contact list (Appendix 2D). Local media proved to be highly responsive and the Subbasin efforts collectively received extensive media coverage for most public events described above.

Social Media Outreach

Based on a comprehensive outreach proposal submitted to and approved by the respective GSA Boards in October 2020, GSA staff launched social media sites on Facebook and Twitter:

- Facebook Page
- Twitter

Through these sites, regular content updates were then conducted on average of a weekly basis to ensure user interest and readability and to avoid information on said sites getting "stale". In addition to photographic images and SGMA / GSA / GSP content being regularly updated, the GSAs used Facebook Live to simulcast all events in the SGMA Series to ensure maximum availability for members of the public to view all outreach events from late 2020 through and including public review and subsequent GSA approval of the GSP.

GSA Websites

Throughout the planning process (and beyond) the GSAs have maintained respective websites:

- Colusa Groundwater Authority (CGA) Home Page
- County of Glenn, Glenn Groundwater Authority

These websites are populated with information about Colusa Subbasin-wide SGMA planning efforts. While the layout of these websites vary, in general, each includes the following

- Calendar of public meetings and other events
- Meeting agendas and materials
- Information about past public meetings, including relevant meeting materials

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- Links to external sites (e.g., Department of Water Resources SGMA portal) and other resources such as white papers
- A link to the website of the respective other GSA
- Information about other interbasin efforts
- GSP background documents
- Fact sheets and Subbasin maps

Engagement Matrix

The Engagement Matrix, in Appendix 2E, provides details about the implementation of each of the communication methods outlined above. *NOTE – this matrix is under revision as part of a scheduled update of the Colusa Subbasin Communications and Engagement Plan*.

Beneficial User Input and Responses

As referred to above, the engagement opportunities described above provided various avenues for beneficial users to provide input on GSP development for the GSAs to be informed thereof. The tables in Appendix 2F present the input received and outlines how this input influenced decision-making in GSP development.

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2.6 REFERENCES

California Department of Water Resources. 2021. *Online System for Well Completion Reports (OSWCR) Map Application.* California Department of Water Resources and California Open Data Portal. Accessed at https://dwr.maps.arcgis.com/apps/webappviewer and https://data.ca.gov/dataset/well-completion-reports

CA Drinking Water Watch. Accessed at Water System Details (ca.gov)

California Open Data Portal. Drinking Water – Public Water System. Accessed at Drinking Water - Public Water System Information - Datasets - California Open Data

Colusa, City of. 2007. *Colusa General Plan Draft Master Environmental Impact Report.* Prepared by Pacific Municipal Consultants. July 2007. Accessed at Planning – City of Colusa

Williams, City of. 2012. *City of Williams General Plan Update Background Analysis.* May 2012.

Orland Municipal Services. 2014. *Orland Municipal Services Review.* Adopted April 14, 2014, Glenn LAFCO Resolution 2014-03.

Orland, City of. 2014. *Water System Capacity Study.* Prepared by Rolls Anderson & Rolls. July 1, 2014.

California Water Service. 2016. *2015 Urban Water Management Plan, Willows District.* June 2016.

USFWS, Sacramento, Delevan, Colusa, and Sutter National Wildlife Refuges. 2009. *Final Comprehensive Conservation Plan, and Environmental Assessment, Volume 1*. March 2009.

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