Executive Summary

ES-1 Introduction

The Sustainable Groundwater Management Act (SGMA), effective as of January of 2015, created a new statewide framework for managing California's groundwater at the local level. SGMA empowers local agencies to form groundwater sustainability agencies (GSAs) tasked with developing groundwater sustainability plans (GSPs or Plans), such as this document. A GSP is a detailed road map for maintaining or bringing a designated groundwater basin into a sustainable condition within the next 20 years. When a basin is managed sustainably, groundwater conditions are maintained in a manner that avoids undesirable results caused by groundwater conditions occurring throughout the basin, such as chronic lowering of groundwater levels, or significant and unreasonable depletion of supply, reduction of groundwater storage, degraded water quality, land subsidence, or depletions of interconnected surface waters.

In his signing statement, Governor Brown emphasized that "groundwater management in California is best accomplished locally." The Carpinteria Groundwater Basin (Basin) Plan was developed by one GSA formed by the Carpinteria Valley Water District (CVWD), the City of Carpinteria, the Santa Barbara County Water Agency (Water Agency), and the County of Ventura. On January 31, 2020, the GSA entered into a Joint Exercise of Powers Agreement (JPA) to form the Carpinteria GSA for the purpose of managing groundwater and coordinating preparation of a single GSP for the Basin. The JPA outlines the powers of the GSA and describes the Board of Directors composition, decision making, and other terms. The Carpinteria GSA Board of Directors adopted Resolution 0001 on February 7, 2020, declaring its intent to designate itself to California Department of Water Resources (DWR) as the recognized GSA for the Basin, and the required documentation was submitted to DWR in February 2020.

The Basin was originally designated as a low-priority basin by DWR. In 2019, DWR conducted a basin reprioritization process that reclassified the Basin as a high-priority basin, resulting in the preparation of this Plan pursuant to Section 10720, et. seq., of the State Water Code as required by SGMA.

This executive summary fulfills the Plan requirement for the Carpinteria GSA. It describes the Basin, develops quantifiable management objectives that account for the interests of the Basin's beneficial groundwater uses and users, and identifies a group of projects and management actions that will allow the Basin to achieve sustainability within 20 years of plan adoption.

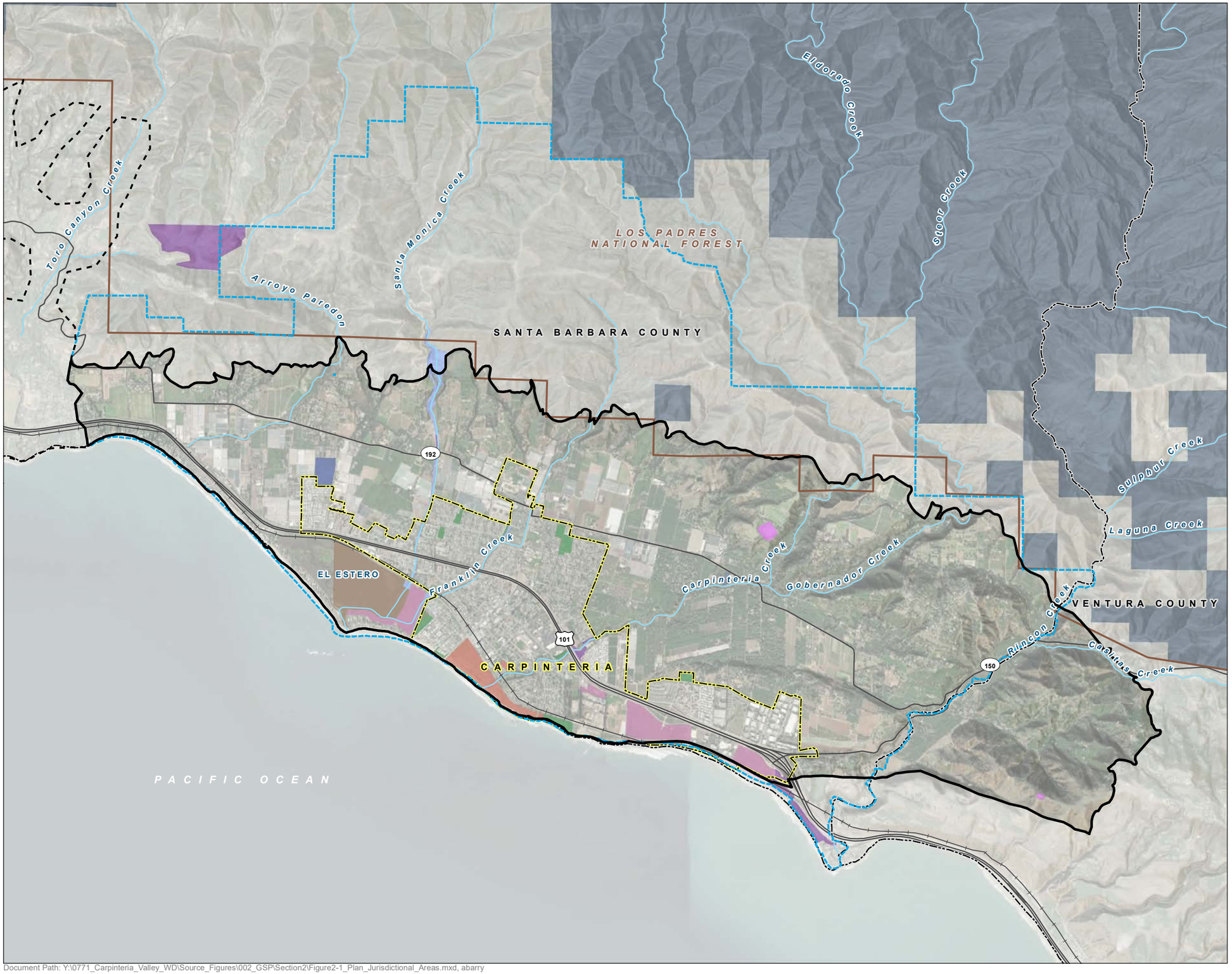
ES-1.1 Plan Area

The jurisdictional boundaries for the Plan cover the entire Carpinteria Groundwater Basin identified by DWR as Basin No. 3-018 (DWR, 2018) as shown in Figure ES-1. This 7,801-acre (12.7 square mile) coastal basin consists of a low-lying alluvial plain that includes portions of Santa Barbara County and Ventura County and the incorporated City of Carpinteria. In unincorporated areas under county jurisdiction, the County of Santa Barbara and the County of Ventura are responsible for comprehensive long-range planning, permitting, and development review. The Santa Barbara Flood Control and Water Conservation District has jurisdiction over certain flood control facilities. The City of Carpinteria has land management authority within its boundaries, and municipal and agricultural water service within the City is provided by CVWD. The U.S. Bureau of Reclamation has jurisdiction over the Carpinteria Regulating Reservoir. Lands under state jurisdiction include Carpinteria State Beach (California Department of Parks and Recreation), the beds of tidal waters (California State Lands Commission), and the Carpinteria Salt Marsh Reserve (University of California Natural Reserve System).

FIGURE ES-1

Carpinteria Groundwater Basin Plan Area and Jurisdictional Areas

Carpinteria Groundwater Basin
Groundwater Sustainability Plan



LEGEND

- Carpinteria Valley Water District Service Area
- Carpinteria Groundwater Basin
- Los Padres National Forest

Land Ownership

- Bureau of Reclamation
- California Department of Parks and Recreation
- California State Lands Commission
- Carpinteria Cemetery District
- Carpinteria, City of
- Land Trust for Santa Barbara County
- Santa Barbara Flood Control and Water Conserv. District
- Santa Barbara, County of
- USDA Forest Service
- University of California

All Other Features

- City Boundary
- County Boundary
- Montecito Groundwater Basin
- Railroad
- Major Road
- Watercourse

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Miles

Date: September 15, 2022
Data Sources: BLM, ESRI, USGS, Maxary Imagery (2020), DWR Bulletin 118

GSI Water Solutions, Inc.

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CVWD's service area covers all of the Basin within Santa Barbara County with the exception of a small area on the northeast edge of the District boundary, and the service area also extends beyond the Basin boundaries to the north and includes a small portion to the southeast of the Basin on the west side of Rincon Point. CVWD has water management and supply authority within its service area. The Ventura County portion of the Basin is located within the service area of Casitas Municipal Water District, which has water management and supply authority within its service area.

The surface water bodies in the plan area include Carpinteria, Franklin, Gobernador, Rincon, Toro Canyon, and Santa Monica Creeks. U.S. Highway 101 forms the major transportation corridor running from northwest to southeast through the Basin. Average annual precipitation within the Basin ranges from 15 to 19 inches.

The Basin's eastern boundary underlies Rincon Creek near Laguna Ridge. The Pacific Ocean forms its southern boundary. An adjustment to the western boundary was approved by DWR in 2018 following an application submitted by the Montecito Water District and supported by CVWD for a jurisdictional basin boundary modification. The originally defined Basin boundary was moved to the west to coincide with the boundary between the two water districts' service areas. The new western boundary of the Basin follows the limits of the CVWD service area along Toro Canyon and separates the Basin from the Montecito Groundwater Basin. The Basin's northern boundary is delineated at the geologic contact with the Coldwater Sandstone and Sespe Formations in the foothills of the Santa Ynez Mountains. DWR approved a second basin boundary modification request in 2018 to refine the delineation of the northern boundary using more recently published geologic maps.

Groundwater rights in the Basin have not been adjudicated. No other GSAs have been formed within the Basin, and no alternative plans have been submitted for any part of the Basin.

ES-1.2 Sustainable Management Criteria

The Carpinteria GSA establishes sustainable management criteria (SMCs) to avoid significant and unreasonable conditions caused by groundwater use that could lead to undesirable results for six sustainability indicators listed in SGMA. The sustainability indicators include (1) chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply, (2) significant and unreasonable reduction of groundwater storage, (3) seawater intrusion, (4) degraded water quality, (5) land subsidence, and (6) depletion of interconnected surface water. Basin stakeholders helped to define the sustainability goal, what constitutes undesirable results, and appropriate SMCs for each sustainability indicator. SGMA also requires that GSAs identify GDEs and assess the effects of changing groundwater levels on GDEs. The Plan includes a robust groundwater monitoring program and defines projects and management actions that have been developed to maintain long-term groundwater sustainability.

As noted in Section 3 of this Plan, several data gaps exist in the hydrogeologic conceptual model (HCM). The uncertainty created by these data gaps was considered when developing the SMCs. The SMCs are considered initial criteria and will be reevaluated and potentially modified in the future as new data become available.

ES-1.3 Outreach Efforts

The Carpinteria GSA has engaged stakeholders in consultation since its formation, starting with public meetings during development of the JPA forming the GSA. A contact list for interested parties was developed throughout this process, and the Carpinteria GSA has continued seeking broad engagement in management of the Basin's groundwater resources during development of this Plan. Beneficial uses and users identified in the Basin and invited to participate in development and implementation of the Plan include:

- Holders of overlying groundwater rights, including:

  - Agricultural users
  - Domestic well owners
- Municipal well operators
- Public water systems
- Local land use planning agencies
- Environmental users of groundwater
- Surface water users
- Federal government, including, but not limited to, the military and managers of federal lands
- California Native American Tribes
- Disadvantaged Communities, including, but not limited to, those served by private domestic wells or small community water systems
- Entities listed in Section 10927 that are monitoring and reporting groundwater elevations in all or a part of the groundwater basin managed by the GSA

The Communication and Engagement Plan developed for the GSP is included as Appendix C. Eight public workshops were held between October 2022 and August 2023. In addition, and Groundwater Sustainability Plan Advisory Committee (GSPAC) was established consisting of Basin stakeholders selected after an interview process, and seven GSPAC meetings, which were open to the general public, were held between February and August 2023.

ES-1.4 Plan Organization

This Plan has been developed collaboratively by the member agencies making up the Carpinteria GSA. The organization of the Plan is as follows:

- **Section 1 – Introduction to Plan Contents:** An introduction to the Plan, including a description of its purpose and a brief description of the Basin.
- **Section 2 – Administrative Information:** Includes the following:
  - Information on the Carpinteria GSA and a brief description of the agencies participating in the GSA, including information on the legal authority of the GSA to plan and coordinate groundwater sustainability for the Basin.
  - An overview of the Basin, including land use and agencies with jurisdiction, a description of the existing groundwater management plans and regulatory programs, any programs for conjunctive use, and urban land use programs that might affect, or be affected by, this Plan.
  - The Carpinteria GSA's communication and engagement planning and implementation, public feedback and stakeholder comments on the plan, how feedback was incorporated into the Plan, and responses to comments received.
- **Section 3 – Basin Setting:** Includes the following:
  - An explanation of the HCM developed for the Basin that includes descriptions of the regional hydrology and geology, principal aquifers and aquitards, and a description of the data gaps in the current model.
  - A detailed description of the groundwater conditions, including groundwater elevations and changes in storage, seawater intrusion, groundwater quality for drinking water and agricultural irrigation and trends over time, an evaluation of land subsidence, locations where surface water and groundwater are interconnected, and the identification and distribution of groundwater-dependent ecosystems.

  - A presentation of the historical, current, and projected future water budgets for the Basin; how the water budgets were developed; an estimate of sustainable yield for the Basin; and the effects of climate change using DWR climate change assumptions.
- **Section 4 – Monitoring Networks:** A detailed description of the monitoring objectives and monitoring in the Basin for groundwater levels, storage, seawater intrusion, water quality, land subsidence, interconnected surface water, representative monitoring sites, and a description of the data management and reporting system.
- **Section 5 – Sustainable Management Criteria (SMCs):** Defines the sustainability goal for the Basin; describes the process through which the SMCs were established; describes significant and unreasonable effects that could lead to undesirable results as a result of groundwater conditions occurring throughout the Basin; describes and defines SMCs regarding chronic lowering of groundwater levels, significant and unreasonable reduction in groundwater storage, seawater intrusion, degraded groundwater quality, land subsidence, and depletion of interconnected surface water (including quantity and timing of surface water depletion); and describes the minimum thresholds, measurable objectives, and interim milestones to avoid undesirable results.
- **Section 6 – Projects and Management Actions:** Provides a description of each project and management action that may be developed and implemented by the Carpinteria GSA to avoid undesirable results and ensure sustainability within 20 years of Plan adoption.
- **Section 7 –Plan Implementation:** Describes the implementation sequence for projects and management actions, overall schedule, estimated implementation costs, and sources of funding.
- **Section 8 – References and Technical Studies:** Lists the references and technical studies used to develop the Plan.

Summaries of the key technical sections of this Plan are presented below.

ES-2 Basin Setting (Plan Section 3)

Section 3 of the Plan describes the physical setting and characteristics of the Basin, including the basin boundaries, geologic formations and structures, and principal aquifer units. The HCM describes how the groundwater system works and is based on the available body of data and prior studies of the Basin's geology, hydrology, and water quality. In this Plan, the HCM provides a framework for subsequent sections of the basin setting, including groundwater conditions and water budgets. Together these sections provide the basis for understanding the groundwater resources in the Basin and support the GSA's efforts to achieve groundwater sustainability in the Basin by 2043. This Plan will be updated as required to maintain this goal.

ES-2.1 Hydrogeologic Conceptual Model and Principal Aquifers

The HCM of the Basin was initially developed by Geotechnical Consultants, Inc. (GTC) and is documented in their 1976 report. The 1976 GTC report is the most comprehensive report on the Basin, and it is built upon the previous work regarding the basin structure and hydraulic parameters to include a detailed analysis of the water budget for the Basin. An HCM generally describes a groundwater basin as a hydrogeologic system, including topography, setting, the underlying geologic system, principal aquifers, generalized recharge and discharge areas for the aquifers, and water inflows and outflows.

The Basin is located on the south flank of the Santa Ynez Mountains, one of the east-west trending ridges of the Transverse Range Geomorphic Province. The Basin represents the north limb of a synclinal geologic structure, the deepest parts of which terminate against the traces of the Rincon Creek Fault. This structural depression has subsequently been filled with younger water-bearing deposits. Water-bearing deposits in the

Basin include all unconsolidated and semi-consolidated sediments of the Quaternary age, with older consolidated and generally non-water bearing rocks forming the definable boundaries of the Basin.

One principal aquifer has been identified in the Basin occurring primarily of unconsolidated and semi-consolidated sediments of the Pleistocene and upper Pliocene-aged Carpinteria and Casitas Formations. In some local alluvial valleys of Basin Creeks, wells penetrate and may possibly screen the sediments of the younger alluvium, but available data indicate that these wells usually are also screened in the Casitas Formation, which provides most of the productive yield. There is no consistent low permeability strata separating the alluvium from Casitas sediments; these sediments function as a single hydrogeologic unit. Such deposits are readily capable of absorbing, storing, transmitting and yielding water to wells. Holocene-aged alluvial deposits are present as a thin veneer along the coastal plain and along all creek channels and comprise the sediment of alluvial fan deposits at canyon mouths along the northern basin boundary. Older Tertiary sedimentary bedrock units are considered to be generally non-water-bearing and constitute the boundaries of the groundwater basin.

The principal aquifer system in the basin largely occurs in the Casitas Formation, which is contained in the entire basin area north of the Rincon Creek Fault and is exposed in outcrops along the northern and eastern boundaries. The Casitas Formation is an assemblage of poorly to moderately consolidated clayey to gravelly sand with variable amounts of silt and cobbles reaching substantial thicknesses of 2,300 to 2,500 feet in SU-1. Sandy clay is abundant and sandy units are typically thin and lenticular and cannot be correlated over long distances. Notable exceptions to this are the major water producing zones delineated at the A, B, C and D Zones in the Confined Area of the Basin.

Underlying the Casitas Formation is the marine Santa Barbara Formation, which unconformably overlies all older consolidated rocks in the Basin. The formation is only exposed south of the Rincon Creek Fault in SU-2 where it unconformably overlies Miocene shales. The Santa Barbara formation consists of poorly to moderately consolidated, soft and massive, sandstone and siltstone with abundant clay shale. Available data indicate the formation is 750 to as much as 1,250 feet thick in SU-1 and at least 1,500 feet thick in SU-2. Although the formation represents a potential water-bearing deposit in the Basin, no water wells are known to penetrate it and no major aquifers have been discerned within it (note: the wells shown on the cross-sections that do penetrate the Santa Barbara Formation are exploratory borings or wildcat oil wells).

ES-2.2 Recharge and Discharge in the Carpinteria Basin

Outside of the Confined Area of the Basin and extending to the bedrock boundaries, the Carpinteria and Casitas Formations contain laterally discontinuous layers of both permeable and impermeable materials, and water held in these areas is generally unconfined. The primary sources of recharge to the Basin are percolation of precipitation, subsurface inflow, and percolation of irrigation water. This area is delineated as the Recharge Area.

The primary method of discharge from the aquifer is groundwater pumping. Groundwater within the principal aquifer of SU-1 does not discharge directly to the ocean in the southeastern portion of the basin due to the presence of overlying confining layers and the barrier created by the Rincon Creek Thrust Fault. Subsurface outflow from SU-1 is believed to occur in the general area from Serena Park to Sand Point (a distance of approximately 9,000 feet) where there is no fault barrier between basin sediments and the Pacific Ocean. In SU-2, significant subsurface outflow is not believed to occur due to the onshore contact of unconsolidated water-bearing materials with consolidated bedrock, which effectively isolates SU-2 from the ocean.

ES-2.3 Groundwater Conditions

Analysis of water-level hydrographs presented in this section led to the identification of the historical basin high and the basin low periods within the WY 1985 to WY 2020 historical water budget base period. Five groundwater elevation hydrographs typical of basin conditions are presented in Figure ES-2.

Water-level contours are presented for the basin high and low periods within the base period, as well as for January CVWD and current conditions. The specific periods for which water-level contours were prepared include:

- Fall 1991 –base period historical low
- Spring 1998 – base period historical high
- January 2015 - SGMA effective date
- Spring 2020 – current seasonal high
- Fall 2020 – current seasonal and historic low

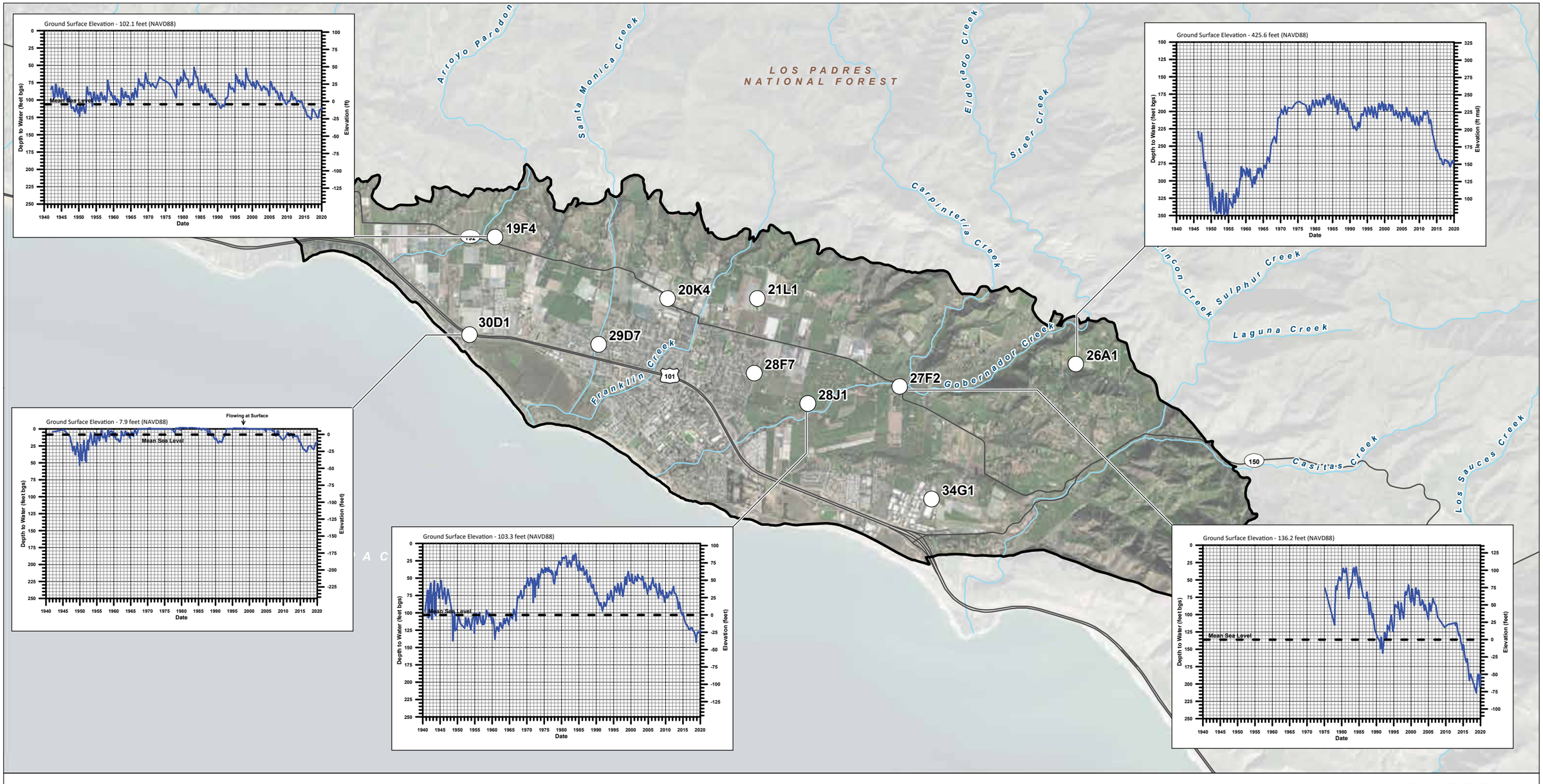
Figure ES-3 presents groundwater elevation contours for Fall 2020.

The primary purpose of the water-level contours is to help to identify general patterns in the flow regime within the basin, including those attributable to recharge sources and associated with discharge areas. Water-level contours show that in SU-1, groundwater generally flows in a northeast to southwesterly direction in the eastern half of the Basin, and north to south in the western half of the basin. The directions of groundwater flow generally reflect the movement of groundwater from the primary sources of recharge in the Recharge Area to the primary sources of extraction (groundwater pumping) in the Confined Area in the central portion of the Basin. It is noted that available data for SU-2 are limited, and water-level contours are not depicted for unit this reason.

Water levels for January 2020 (Figure ES-4) show the development of a water-level depression centered in the central portion of the basin, with water levels as much as 50 to 60 feet below msl. It is noted that this time period coincides with the most recent drought period experienced in the Basin.

These water-level conditions result in a reversal of the natural pre-development seaward groundwater gradient, creating the potential for seawater intrusion in the western portion of the basin where basin deposits are exposed to the Pacific Ocean. It is noted that prior to 2019 seawater intrusion had not historically been detected in existing wells in the basin; however, before 2019 there were no monitoring wells along the coast that that were designed detected seawater intrusion.

The CVWD and GSA have recognized this deficiency in the historical monitoring well network in the basin and recently drilled seawater intrusion “sentinel” wells near the coastline just west of El Estero.



LEGEND

- Proposed Water Level RMS Well
- Carpinteria Groundwater Basin
- Major Road
- Watercourse

FIGURE ES-2

Historical Basin Hydrographs

Carpinteria Basin Groundwater Sustainability Plan

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feet

CARPINTERIA GSA

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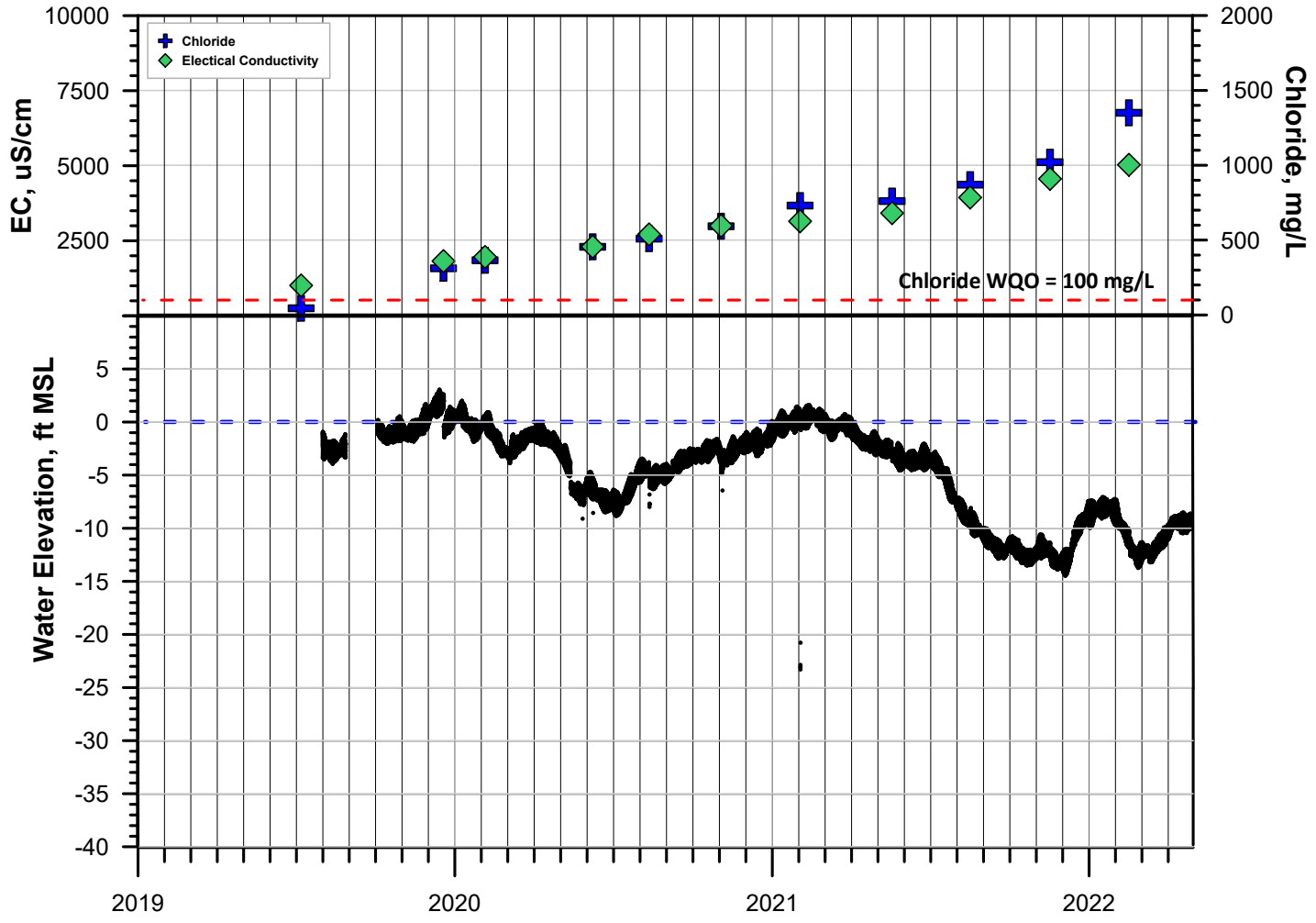

FIGURE ES-3

Sentinel Well Data – MW-1 (C Zone)

Carpinteria Basin Groundwater Sustainability Plan

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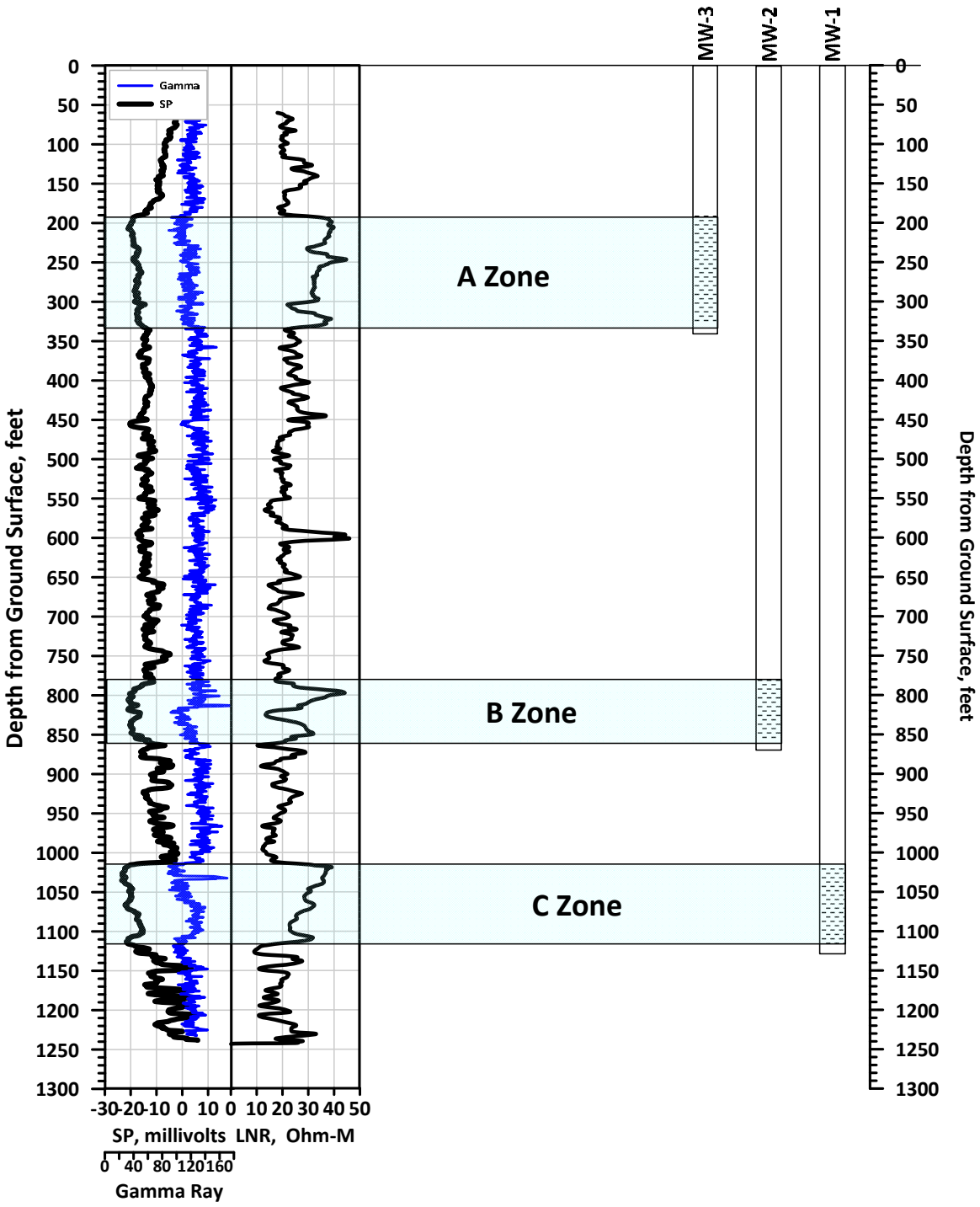

FIGURE ES-4

Sentinel Well Completions Schematic

Carpinteria Basin Groundwater Sustainability Plan

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ES-2.4 Interconnected Groundwater and Surface Water

It is concluded that there are no interconnected surface water systems in the Basin (see Section 3.2.7).

ES-2.5 Groundwater Dependent Ecosystems (GDEs)

GDEs are defined under SGMA as "ecological communities of species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface." GDE types include terrestrial vegetation that is supported by groundwater that discharges to seeps, springs, wetlands, streams, and estuaries.

The Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) GIS shapefiles were downloaded from DWR and mapped in the Basin to identify potential GDEs. The NC Dataset covering the Basin consists of both vegetation and wetlands areas. The potential GDEs are largely concentrated along the primary creeks in the Basin. Historical analysis of groundwater elevations beneath the NC datasets were performed.

Each potential GDE polygon was inspected with respect to whether the depth-to-water was less than 30 feet under wet, normal, and dry water year types. Potential GDEs that had depth-to-water greater than 30 feet during two or more of the above water year types were deemed to not be dependent on groundwater from the principal aquifer and is, therefore, not considered a GDE. This analysis led to screening out all but four of the potential GDE polygons in the NC dataset.

The remaining four potential GDE polygon areas located along Arroyo Paredon and Rincon Creeks continue to be considered potential GDEs, and will be further evaluated during the initial 5-year SGMA implementation period.

ES-2.6 Water Budget Development

According to SGMA regulations (§ 354.18), the Plan must include a water budget for the basin that provides an accounting and assessment of the total annual volume of surface water and groundwater entering and leaving the basin, including historical, current, and projected water budget conditions. A water budget accounts for the change in the total volume of water stored in a basin under these different conditions. The regulations require that the water budget be reported in graphical and tabular formats.

This water budget analysis is inextricably tied to the SGMA requirement to ensure the Basin is operated within its sustainable yield. Sustainable yield is defined in SGMA as "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus that can be withdrawn annually from a groundwater supply without causing an undesirable result."

In this Plan, the discussion of the water budget periods refers to water years, which run between October 1 and September 30 of the following year. The three water budget periods are as follows:

- The historical water budget period is WY 1985 through 2020.
- The current water budget period is WY 2012 through 2020.
- The projected water budget period is the 52-year period of WY 2021 through 2072 and extends 50 years past the submittal of this Plan as required by SGMA regulations.

The 36-year period selected for the historical water budget includes the most recently available information, two wet and two dry hydrologic cycles, recent changes in imported water supply availability, changes to water demand associated with cropping patterns, and associated land use. The historical water budget period was chosen to define a specific period when all of the elements of recharge and discharge to the Basin may be compared to other periods (e.g., future projected). This historical period allows for the identification of long-

term trends in basin supply and demand, water level trends, changes of groundwater in storage, and estimates of the annual components of inflow and outflow to the zone of saturation.

Some water budget data are available via direct measurement (e.g., CVWD metered pumping), whereas others require estimation based on commonly used techniques. In general, the techniques used for this Plan are based on methods used by GTC in their 1976 and 1986 water budget inventories, but as modified by Pueblo Water Resources in 2012 given the availability of new data and/or analytical tools. The groundwater budget for the Carpinteria Groundwater Basin is expressed by the following equation:

Inflow = Outflow (+/-) Change in Storage

The historical water budget summary from WY 1985 through WY 2020 is presented graphically in Figure ES-5. A projected water budget is presented in Section 3.3 as part of this Plan.

ES-3 Monitoring Networks (Plan Section 4)

Section 4 describes the existing monitoring networks within the Basin and includes an explanation of the implementation of the monitoring networks for the GSA's Plan and recommended improvements to the monitoring networks. Representative Monitoring Site (RMS) wells are selected from the existing District monitoring network for each applicable sustainability indicator. Together, these monitoring networks will be able to track the GSA's progress toward achieving sustainability by documenting short-term, seasonal, and long-term trends in groundwater conditions. This section includes monitoring objectives, monitoring protocols, assessment and improvement of monitoring networks, representative monitoring sites, and data reporting requirements for each of the monitoring networks.

The monitoring networks presented in Section 4 were developed based on existing sites monitored for decades by the CVWD (formerly the Carpinteria County Water District) prior to the passage of SGMA. During the 20-year Plan implementation period, it may be necessary to expand the existing monitoring networks to fully demonstrate sustainability and improve the Plan. Monitoring networks and data gaps are described for each of the six sustainability indicators. The data gaps will be addressed during Plan implementation to improve the Carpinteria GSA's ability to track progress and demonstrate sustainability.

The selection of wells used in the monitoring networks presented in this section draws on historical groundwater data compiled by the U.S. Geological Survey (USGS), CVWD, the California Statewide Groundwater Elevation Monitoring (CASGEM), and DWR. The criteria used to determine which wells to use in the monitoring networks are as follows:

- Period of record of historical measurements
- Available well construction information
- Spatial distribution relative to applicable sustainability indicators
- Groundwater use in proximity of wells
- Impacts on beneficial uses of groundwater in the Basin

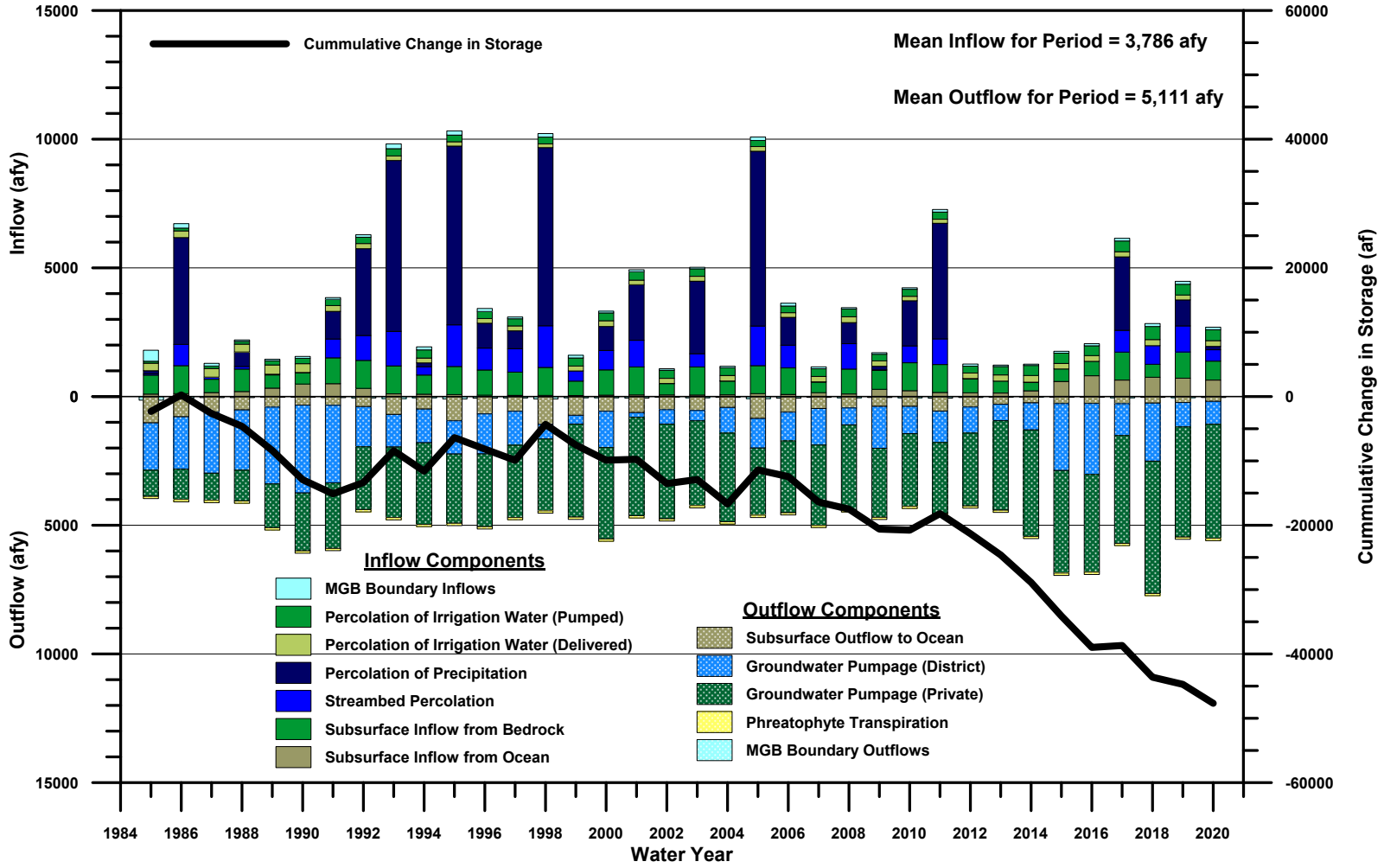

FIGURE ES-5

Historical Water Budget Summary (WY 1985 – 2020)

Carpinteria Basin Groundwater Sustainability Plan

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The objectives of the monitoring networks are to identify and select representative monitoring site (RMS) wells to collect data to support monitoring of groundwater conditions and detection of potential undesirable results, and to achieve the sustainability goal. As stated in the SGMA regulations, the monitoring networks will accomplish the following:

- "Demonstrate progress toward achieving measurable objectives described in this Plan.
- Monitor impacts to the beneficial uses or users of groundwater.
- Monitor changes in groundwater conditions relative to measurable objectives and minimum thresholds.
- Quantify annual changes in water budget components."

The recommended monitoring networks for the Basin that are presented in this section are intended to monitor for the sustainability indicators and their associated undesirable results, which are listed below:

1. Chronic lowering of groundwater levels
2. Reduction of groundwater storage
3. Seawater intrusion
4. Degraded water quality
5. Land subsidence
6. Depletion of interconnected surface water

The approach for establishing the monitoring networks is to leverage historical or existing monitoring programs and incorporate, as needed, additional monitoring locations that have been made available by cooperating entities. The monitoring networks are limited to locations with data that are publicly available. The sections below include discussions of data gaps in each monitoring network and proposed locations and methods for filling those data gaps.

The SGMA regulations allow the Plan to use existing monitoring sites for the monitoring network. Monitoring of groundwater elevations in the Carpinteria Valley and within the Basin date back to the 1940s. Historical water level data were collected by the USGS and CVWD. In 1994, CVWD established a Groundwater Monitoring Program (GMP) pursuant to Assembly Bill (AB) 3030, which included collection of groundwater levels, groundwater and surface water quality data, precipitation data, and groundwater production data. The Basin GMP also established annual review of and reporting on the data collected. The well network first established through the GMP now includes all of the well types within the Basin, including municipal, private agricultural, and dedicated monitoring wells. A total of 69 wells are included in the existing monitoring networks for the Basin. Of these, 35 wells are monitored for water levels, 46 wells are monitored for basic water quality parameters, and 12 wells are monitored for both. Several of these wells were selected as RMS wells for the sustainability indicators.

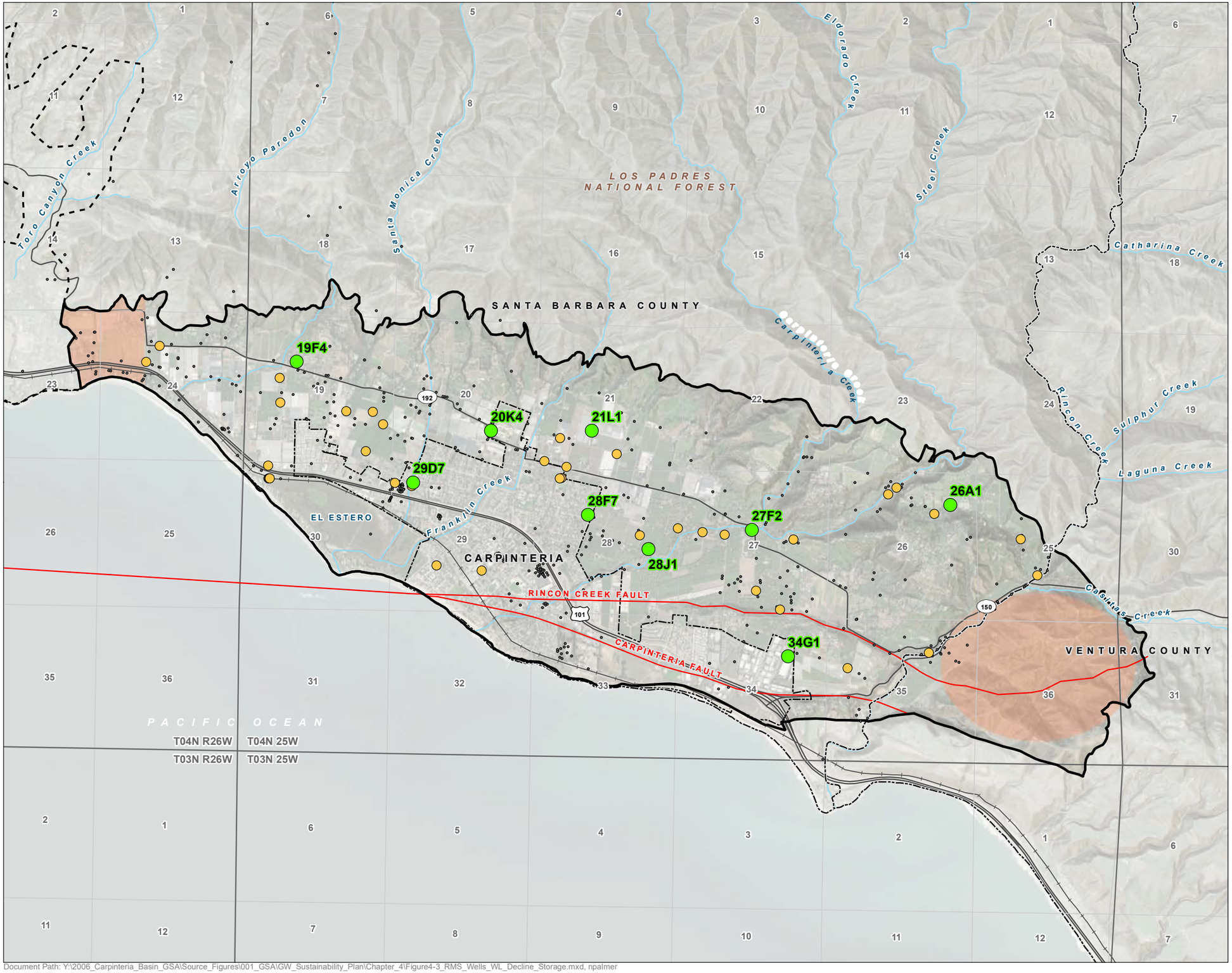
The proposed RMS well network to monitor conditions associated with the chronic water level decline and reduction of groundwater in storage indicators are presented in Figure ES-6. The proposed RMS well network to monitor conditions associated with the seawater intrusion sustainability indicator are presented in Figure ES-7. The proposed RMS well network to monitor conditions associated with the degradation of water Quality sustainability indicator is presented in Figure ES-8.

The proposed monitoring wells include active and inactive CVWD production wells, active and inactive private agricultural wells, and dedicated monitoring wells. The wells are spatially distributed throughout the confined and recharge areas of the Basin. Most of these wells have been monitored by CVWD prior to and during the AB 3030 GMP. CVWD continues to monitor water levels in these wells in the interim period between the termination of the AB 3030 program and implementation of the Plan and will continue to do so on behalf of the Carpinteria GSA.

FIGURE ES-6

RMS Wells for Water Level Decline and Reduction of Storage

Carpinteria Basin
Groundwater Sustainability Plan



LEGEND

- Water Level RMS Well
- GSA Monitoring Well
- GSA Database Well
- Data Gap Area
- Carpinteria Groundwater Basin

All Other Features

- City Boundary
- County Boundary
- Montecito Groundwater Basin
- Fault
- Railroad
- Major Road
- Watercourse

NOTES

GSA: Groundwater Sustainability Agency
RMS: representative monitoring well

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Date: September 22, 2023
Data Sources: BLM, ESRI, USGS, Maxary Imagery (2020), DWR Bulletin 118

CARPINTERIA GSA
GROUNDWATER SUSTAINABILITY AGENCY

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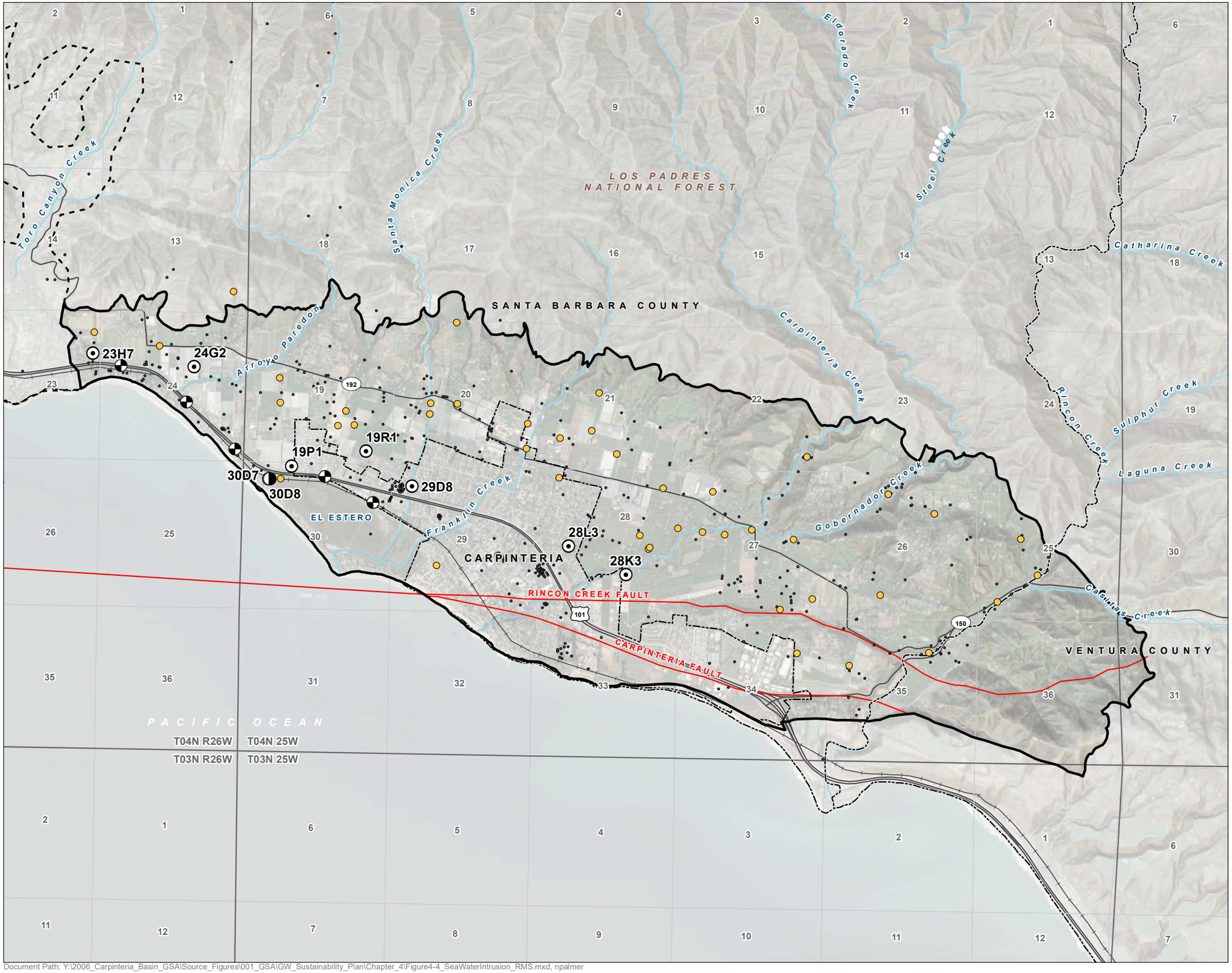
FIGURE ES-7

RMS Wells for Seawater Intrusion Monitoring

Carpinteria Basin
Groundwater Sustainability Plan



LEGEND

- Seawater Intrusion RMS Well
- Existing Monitoring Well
- Proposed Seawater Intrusion Monitor Well
- Water Quality Monitoring Well
- GSA Database Well

All Other Features

- City Boundary
- County Boundary
- Carpinteria Groundwater Basin
- Montecito Groundwater Basin
- Fault
- Railroad
- Major Road
- Watercourse

NOTES

GSA: Groundwater Sustainability Agency
RMS: representative monitoring well

N

0 ½ 1
Miles

Date: September 22, 2023
Data Sources: BLM, ESRI, USGS, Maxary Imagery (2020), DWR Bulletin 118

CARPINTERIA GSA
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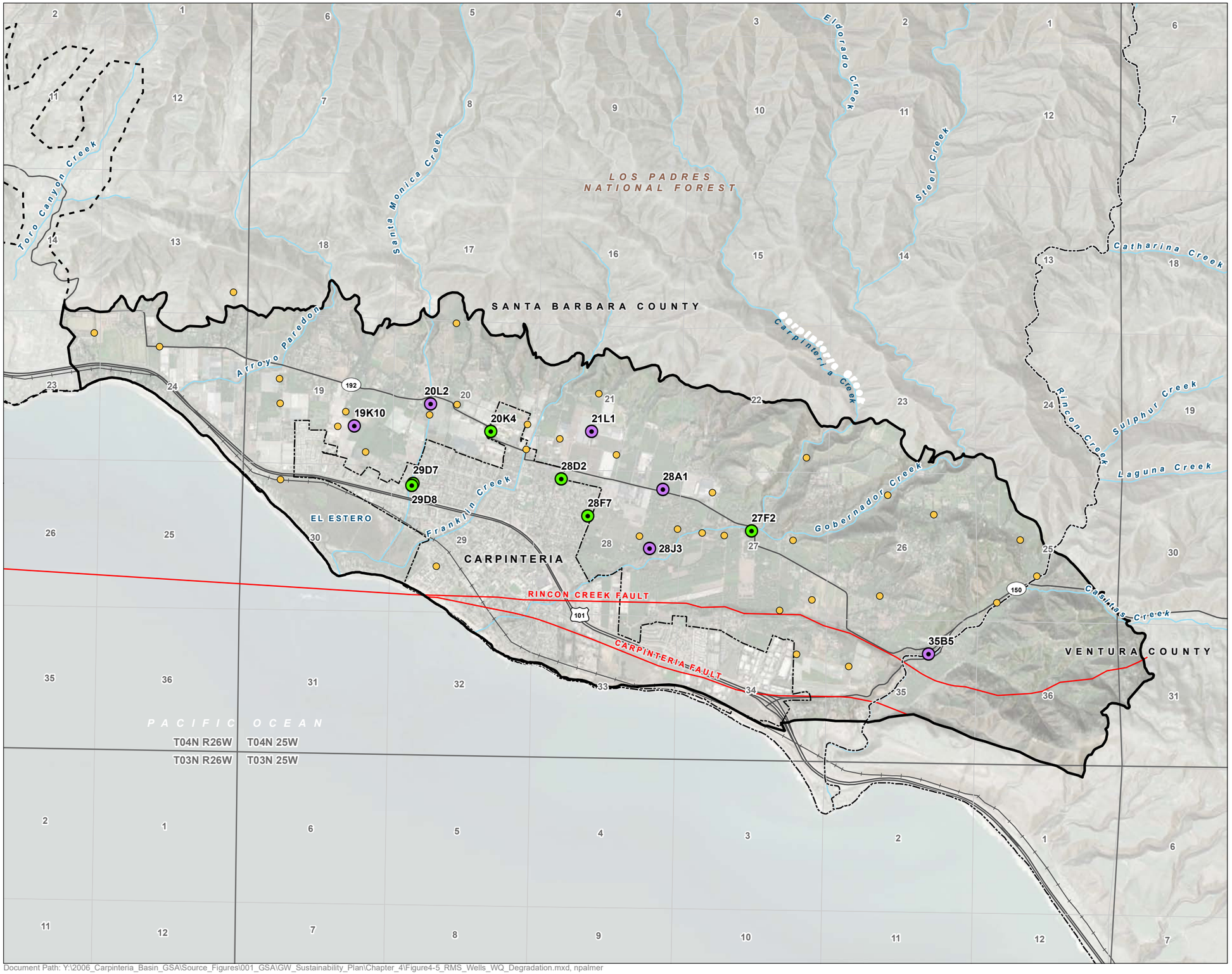
FIGURE ES-8

RMS Wells for Water Quality Degradation

Carpinteria Basin
Groundwater Sustainability Plan



LEGEND

- Chloride, Boron, and TDS RMS Well
- Arsenic and Nitrate RMS Well
- Water Quality Monitoring Well
- Carpinteria Groundwater Basin

All Other Features

- City Boundary
- County Boundary
- Montecito Groundwater Basin
- Fault
- Railroad
- Major Road
- Watercourse

NOTES

GSA: Groundwater Sustainability Agency
RMS: representative monitoring well

N

0 ½ 1
Miles

Date: September 22, 2023
Data Sources: BLM, ESRI, USGS, Maxary Imagery (2020), DWR Bulletin 118

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ES-4 Sustainable Management Criteria (SMCs) (Plan Section 5)

This section defines the conditions that constitute sustainable groundwater management and discusses the process by which the Carpinteria GSA will characterize undesirable results and establish minimum thresholds and measurable objectives for the six sustainability indicators in the Basin in accordance with SGMA.

The methods and data used to develop the SMCs and how these criteria take into consideration current and future beneficial uses and groundwater users are described below. Defining the SMCs required technical analysis of historical data and input from the affected stakeholders in the Basin. The SMCs presented in this section are based on currently available data and the application of the best available science. As noted in Section 3 of this Plan, several data gaps exist in the HCM. The uncertainty created by these data gaps was considered when developing the SMCs. The SMCs are considered initial criteria and will be reevaluated and potentially modified in the future as new data become available.

The SMCs are grouped by sustainability indicator. The following six sustainability indicators are applicable in the Basin and could lead to significant and unreasonable effects caused by groundwater conditions occurring throughout the Basin:

- Chronic lowering of groundwater levels (Section 5.5)
- Reduction of groundwater storage (Section 5.6)
- Seawater intrusion (Section 5.7)
- Water quality degradation (Section 5.8)
- Land subsidence (Section 5.9)
- Interconnected surface water depletions (Section 5.10)

According to SGMA regulations (§354.26(a)), “Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.”

Minimum thresholds for the first two sustainability indicators, chronic lowering of groundwater levels and reduction of groundwater in storage, are defined as minimum groundwater elevations measured in the established RMS well network in the Basin. Measurable objectives are defined as goals considered to be achievable within the 20-year SGMA implementation period after evaluation of historical data. Interim Milestones are interim goals to be assessed every 5 years when GSPs are re-evaluated. Sustainable management criteria for these sustainability indicators are presented in Table ES-1.

Table ES-1. Summary of Minimum Thresholds, Measurable Objectives, and Interim Milestones for Carpinteria Groundwater Basin Chronic Lowering of Groundwater Levels Sustainability Indicator

RMS Well	MT (ft NAVD 88)	2029 IM (ft NAVD 88)	2034 IM (ft NAVD 88)	2039 IM (ft NAVD 88)	MO (ft NAVD 88)	Land Surface Elevation (ft NAVD 88)
19F4	−30	−18	−5	7	20	102
20K4	−77	−58	−39	−20	0	47
21L1	−85	−61	−37	−13	10	69
27F2	−92	−62	−32	−3	25	136
26A1	140	160	180	200	220	425
28J1	−40	−23	−5	13	30	103
28F7	−90	−64	−38	−12	15	65
29D7	−45	−34	−23	−12	0	28
35E1	12	21	30	41	50	243

Notes

ft = foot or feet

IM = interim milestone (see Section 5.5.4)

MO = measurable objective goal for 2044

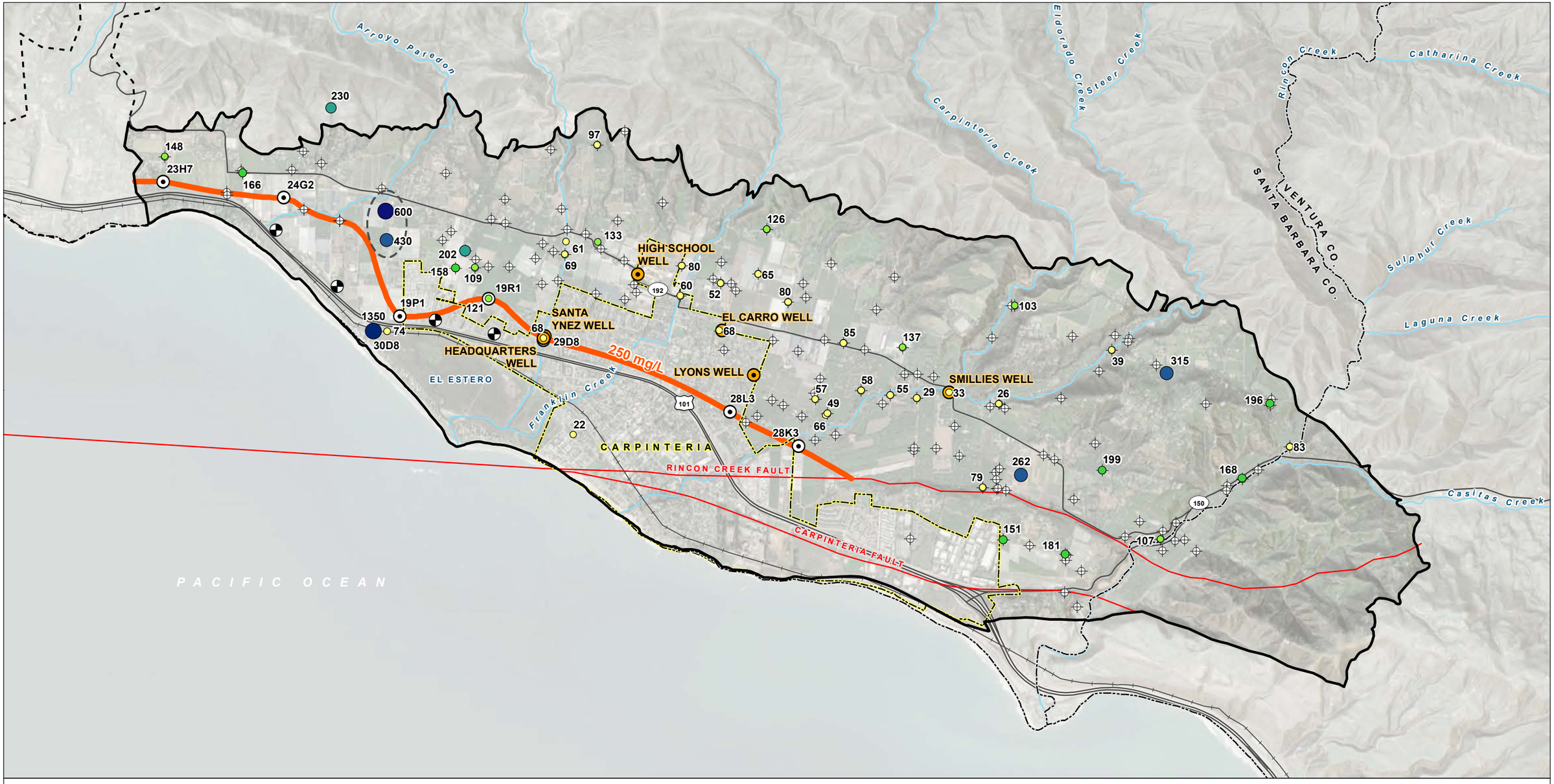
MT = minimum threshold

NAVD 88 = North American Vertical Datum of 1988

RMS = representative monitoring site

Minimum thresholds for the third sustainability indicator, seawater intrusion, are defined as a chloride isocontour of 250 milligrams per liter, with the location of the isocontour line defined by drawing a line through all active wells in the western portion of the basin (Figure ES-9). The southeastern portion of the Basin is not considered to be at risk from seawater intrusion to the barrier created by the presence of the Rincon Creek and Carpinteria faults.

Minimum thresholds for the degradation of water quality sustainability indicator are based on existing state and federal water quality regulatory criteria, and on basin measurable objectives for this and other coastal basins promulgated by the Regional Water Quality Control Board. The proposed sustainable management criteria for this sustainability indicators are presented in Table ES-2.



LEGEND

Maximum Chloride Concentration in mg/L (2015 - 2021)

- < 100
- 101 - 150
- 151 - 200
- 201 - 250
- 251 - 500
- > 500

- MT Isocontour at 250 mg/L
- CVWD District Well
- Proposed RMS Well (Active)
- Proposed Monitoring Well
- Existing Monitoring Well
- Active Well
- CVWD Database Well

All Other Features

- Carpinteria Groundwater Basin
- Montecito Groundwater Basin
- County Boundary
- City Boundary
- Fault
- Railroad
- Major Road
- Watercourse

FIGURE ES-9

Seawater Intrusion Isocontour SMC

Carpinteria Basin Groundwater Sustainability Plan

N

0 1,500 3,000 4,500 feet

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Table ES-2. Minimum Thresholds for the Water Quality Degradation Sustainability Indicator

Constituent	MT	RMS Locations	Rationale
Arsenic	10 µg/L	5 CVWD supply wells	MCL is the federal regulation for drinking water CVWD is the only potable water supplier in Basin
Nitrate (as N)	10 mg/L	5 CVWD supply wells	MCL is the federal regulation for drinking water CVWD is the only potable water supplier in Basin
TDS	1,000 mg/L	5 CVWD supply wells and 6 monitoring wells	MT set at SMCL
Chloride	142 mg/L	5 CVWD supply wells and 6 monitoring wells	MT set at the Basin Plan's "no problem" agricultural threshold
Boron	0.75 mg/L	5 CVWD supply wells and 6 monitoring wells	MT set at Basin Plan agricultural threshold for other coastal basins

Notes

µg/L = micrograms per liter

CVWD = Carpinteria Valley Water District

MCL = maximum contaminant level

mg/L = milligrams per liter

MT = minimum threshold

N = nitrogen

RMS = representative monitoring site

SMCL = secondary maximum contaminant level

TDS = total dissolved solids

Land subsidence may occur as the result of over pumping of groundwater in areas where shallow clays may be compacted. There is no historical occurrence of land subsidence in the Carpinteria Basin. The minimum thresholds for land subsidence are based on data collected under the California Department of Water Resources InSAR data program, which measures subsidence from space using satellite technology. The minimum threshold for land subsidence is defined as no more than 0.1 feet of subsidence due to groundwater extraction in any given year, and cumulative measured subsidence of 0.5 feet in any 5-year period.

Because available data indicate that there are no interconnected surface water systems in the Basin, no SMCs are established for the depletion of interconnected surface water depletions sustainability indicator.

ES-5 Projects and Management Actions (Plan Section 6)

SGMA regulations require each GSP to include a description of projects and management actions necessary to achieve the basin sustainability goals and to respond to changing conditions in the Basin. This section describes the projects and management actions that the Carpinteria GSA believes will, when implemented, help the Basin attain sustainability in accordance with § 354.42 and § 354.44 of SGMA regulations. The concepts for the proposed projects and management actions were developed during working sessions with GSA staff, meetings with the Carpinteria GSA Technical Coordination Committee, meetings with the GSA GSPAC, and in public workshops between April and August 2023. In the context of this Plan, projects are defined as activities supporting groundwater sustainability that require significant funding, infrastructure, and engineering support. Groundwater management actions generally refer to activities that support

groundwater sustainability through policy and regulations without significant infrastructure requirements or capital investments. The effectiveness of the projects and management actions will be assessed based on the ability to avoid undesirable results as discussed in Section 5 of this Plan.

The Carpinteria GSA has developed a portfolio of potential projects and management actions that can be implemented in a phased manner as the conditions in the Basin dictate. Based on the results of the analysis that was performed in conjunction with the development of this Plan, the Carpinteria GSA concludes that the sustainability goals described in this Plan and required under the provisions of SGMA can be achieved through the implementation, as needed, of the projects and management actions described in Sections 6.3 through 6.14 of the Plan. This Plan categorizes listed projects as either Tier 1 projects or Tier 2 projects. Tier 1 projects are priority projects expected to be implemented within the first 5-year SGMA implementation period; two projects are identified as Tier 1 projects. Tier 2 projects are non-priority projects also identified for possible future consideration. It is expected that all management actions discussed in this section will be evaluated and implemented as appropriate in the first 5-year SGMA implementation period.

The Carpinteria GSA plans to continually monitor and assess its progress toward meeting the sustainable management criteria described in Section 5 of this Plan. Under conditions where minimum thresholds are projected to be achieved, the Carpinteria GSA will perform assessments to determine whether the trends are related to groundwater pumping, drought conditions, or other factors. If groundwater level data are trending toward reaching minimum thresholds as a direct consequence of groundwater pumping in the Basin, then the Carpinteria GSA will determine which additional project(s) and/or management action(s) to implement to address these conditions.

A summary of the projects and management actions identified by the Carpinteria GSA are listed below. Tier 1 projects are expected to be implemented within the first 5-year SGMA implementation period. Tier 2 projects will be evaluated and ranked during the first 5-year period for potential future implementation. Some projects or management actions may occur if drivers other than sustainability, such as water supply management flexibility, necessitate the implementation. These projects and management actions are discussed in detail in Section 6.

Tier 1 Projects

- Carpinteria Advanced Purification Project (CAPP)
- Carpinteria Sentinel Monitoring Well Network Expansion
- Local infrastructure tie-in with Santa Barbara County

Tier 2 Projects

- Carpinteria Seawater Intrusion Barrier Project
- Aquifer Storage and Recovery (ASR) Projects
- Recharge Enhancement (Recharge Basins and Creek De-lining)
- Regional Infrastructure Tie-Ins and Agreements with Neighboring Basins

Potential Management Actions

- Municipal Pumping Re-Distribution
- Annual Reports
- Address Data Gaps

- Perform Video Surveys in Representative Wells that Currently Do Not Have Adequate Construction Records to Confirm Well Construction
- Identify wells in the Ventura County portion of the Basin that can be monitored for water levels or water quality
- Survey and Investigate Potential Groundwater Dependent Ecosystems (GDEs) in the Basin
- Geophysical monitoring along the coast every 5 years to evaluate seawater intrusion.
- Groundwater Pumping Fee Program
- Well Registration and Well Meter Installation Programs
- Water Use Efficiency Programs
- Groundwater Model Revisions and Updates

As work on supplemental water supply and resource management efforts is ongoing, additional projects and/or management actions may be identified and added to the list in future Plan updates.

ES-6 Plan Implementation (Plan Section 7)

This section provides a conceptual roadmap for the Carpinteria GSA's efforts to implement this Plan after adoption and discusses implementation efforts in accordance with SGMA regulations § 354.44(b)(6). This implementation plan is based on the Carpinteria GSA's current understanding of the Basin's conditions and anticipated administrative considerations that affect the management actions described in Section 6. Understanding of basin conditions and administrative considerations will evolve over time, based on future refinement of the hydrogeologic setting, groundwater flow conditions, and input from basin stakeholders.

Implementation of this Plan requires robust administrative and financing structures, with adequate staff and funding to support compliance with SGMA. The Plan calls for the Carpinteria GSA to routinely provide information to the public about Plan implementation, progress towards sustainability, and the need to use groundwater efficiently. The Plan calls for a website to be maintained as a communication tool for posting data, reports, and meeting information.

Section 6 of the Plan identifies the following three tiers of projects and management actions that may be considered for implementation by the Carpinteria GSA:

- Tier 1 projects are expected to be implemented within the first 5-year SGMA implementation period.
- Tier 2 projects will be considered after the first 5-year period and prior to the 20-year implementation deadline.
- Tier 3 management actions will be evaluated individually after Plan adoption, and implemented as appropriate under the direction of the GSA.

These projects and management actions can be implemented as the conditions in the Basin dictate. It is important to note that the Tier 2 projects and some of the management actions described in Section 6 may not be necessary if the implementation of Tier 1 projects and management actions result in conditions within the Basin that are trending toward meeting the Carpinteria GSA sustainability goals and measurable objectives. However, the Carpinteria GSA may determine that the implementation of Tier 2 projects is desirable for reasons other than reaching sustainability within the Basin and may elect to implement selected initiatives at any time.

Based on the results of the analysis performed in conjunction with the development of this Plan, the Carpinteria GSA concludes that the sustainability goals described in this Plan, and required under the provisions of SGMA, can be achieved through the implementation, as needed, of the Tier 1 projects (see

Sections 6.3 through 6.5), and some combination of and management actions (see Sections 6.9 through 6.14). Therefore, the Carpinteria GSA does not plan at this time to implement any of the Tier 2 projects and/or to initiate the construction of any project infrastructure for the specific goal of achieving sustainability until such time as evidence indicates that the Tier 2 projects will be necessary for sustainable groundwater management. Planning level budget estimates are provided for Tier 1 and Tier 2 projects, management actions, and GSA administrative costs.