Santa Cruz County
Water Resources Management
Status Report for 2022

Green Valley Creek with no water, 2021. Credit: Kristen Kittleson

Prepared by County of Santa Cruz
Environmental Health

Executive Summary

Santa Cruz County's water resources serve a critical role in protecting public health, preserving fragile watersheds, providing resilient habitats, and supporting recreational and commercial activities. County staff, local agencies, organizations, and the community continue to work together toward long term adaptive solutions to sustain environmental quality and provision safe and reliable water resources to meet current and future water resource needs. This year's status report reflects an emphasis on planning for an altered hydrologic cycle due to a changing climate. Projects and planning efforts undertaken this year are preparing for a future with a greater variability in precipitation and temperature than Santa Cruz experienced when our existing infrastructure was built. The report encompasses activities that took place during calendar year 2022, and reflects water use and rainfall from the 2022 water year which began October 1, 2021 and ended September 30, 2022.

Water Resource Management activities during 2022 were influenced by:

- Drought conditions: despite large storm events in October and December 2021, water year 2022 ended up being the third consecutive dry year[1] after precipitation all but ceased in January and February. Rainfall totals ended the year at 70% of normal.
- The budget surplus at the State led to greater opportunities for grant funding which many local agencies have applied for.
- A push towards resiliency as a priority for both funding, planning, and implementation activities as the impacts of climate change begin to be felt directly.

Key accomplishment include:

- Laying the foundation for development of comprehensive drought response actions and implementing emergency preparedness as an integral part of water resources management with the completion of the Drought Response and Outreach Plan.
- Grant funds have been awarded for numerous projects and programs including:
    - Nearly $150 million to the Pajaro Levee Project
    - $7.6 million to the Mid-County Groundwater Agency for groundwater sustainability efforts
    - $7.6 million to Pajaro Valley Water Management Agency for groundwater sustainability efforts
    - Nearly $10 million for a pipeline between Scotts Valley Water District and the City of Santa Cruz Water Department
    - Nearly $5 million to the City of Watsonville for water storage augmentation
    - Over $650,000 to the County Water Resources Program for drought response
- Building county-wide water supply resilience through project advancement including implementing the first phase of Soquel Creek Water District's Pure Water Soquel project and successful pilot testing of the City of Santa Cruz Aquifer Storage and Recovery project, and progress on the College Lake and Watsonville Sloughs projects.

This report was written by staff in the Santa Cruz County Water Resources Program in Environmental Health. Updates were provided by five County departments and by partners throughout the county including the San Lorenzo Valley Water District, Scotts Valley Water District, City of Santa Cruz Water Department, Soquel Creek Water District, City of Watsonville, Pajaro Valley Water Management Agency, and the Resource Conservation District of Santa Cruz County.

[1] Data from CIMIS (California Irrigation Management Information System): https://cimis.water.ca.gov/

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Introduction

Santa Cruz County's water resources serve a critical role in protecting public health, preserving fragile watersheds, providing resilient habitats, and supporting recreational and commercial activities. Responding to drought, wildfires, a changing climate, and other uncertainties requires integrated and holistic approaches to building resilience and fostering sustainability. The majority of Santa Cruz's water supply is locally derived – a unique situation in a state supported by large federal and state water projects. Domestic supply within the region is provided by five large public agencies, four medium water systems, 109 small water systems (see Figure 1), and some 8,000 individual wells. Wastewater treatment includes centralized water reclamation facilities that collect and process water from sewered areas within the County along with decentralized on-site systems that serve more rural areas.

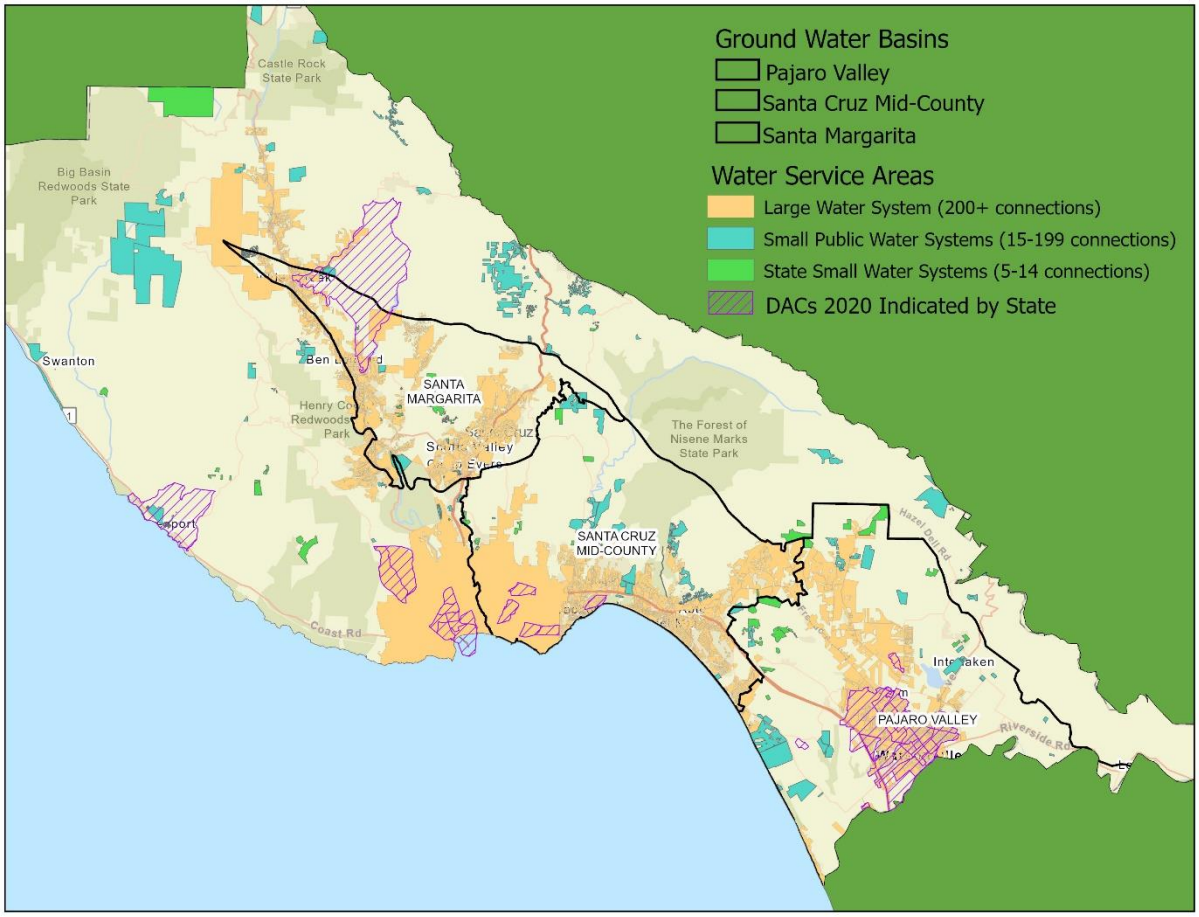


Figure 1: Overview map of Santa Cruz County groundwater resources, water systems, and disadvantaged communities.

Some of the challenges confronting our vulnerable water resources include inadequate water supply particularly during droughts, impaired water quality, overdrafted groundwater basins, depleted streams, and degraded riparian habitat. County staff, local agencies, organizations, and the community continue to work together toward long term adaptive solutions to sustain environmental quality and provision safe and reliable water resources to meet current and future water resource needs. Some water resource programs are mandated under state or federal regulatory requirements, while other programs are supported by grants or local initiatives. This status report is focused on the 2022 water year which began October 1, 2021 and ended September 30, 2022.

Rainfall is critical to sustaining the County's surface and groundwater resources. Water year 2022 was the third consecutive dry year (see Figure 2).[2] Though rainfall patterns vary significantly across the County, the story of the rain year is the same: The water year started strong with a large rain event in October. November was hot and dry but then a series of significant storm events came in December. Unfortunately, and as the La Niña conditions predicted, the rain all but stopped and January and February were extraordinarily dry. Late season rains in March, April, and one unusual event in September were not enough to make up the deficit, and the rain year finished at just over 70% of normal. The US Drought Monitor[3] identified the entire county as experiencing Severe Drought.

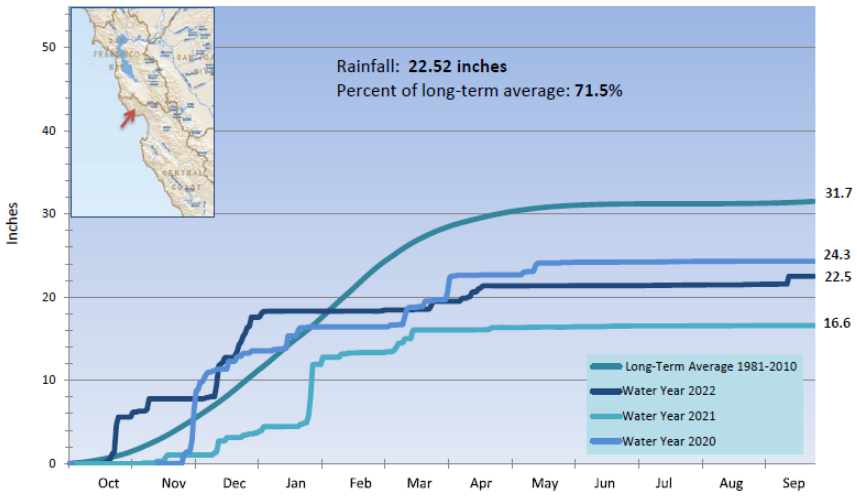


Figure 2. Rainfall in water years 2020-2022 compared to the long-term average, data from cimis, credit City of Santa Cruz Water Department Water Conservation Program..

The drought continued to result in low steamflows with dry stream reaches, extremely dry vegetation, and increased fire risk. Water year 2022 San Lorenzo River flows are shown in Figure 3, well below the median flow from 1937-2022. Despite the ongoing drought, Santa Cruz County ended the year relatively well from a water storage perspective. Loch Lomond, the only surface water reservoir in the County ended the water year around 70% full[4], and groundwater elevations have not shown significant decline[5].

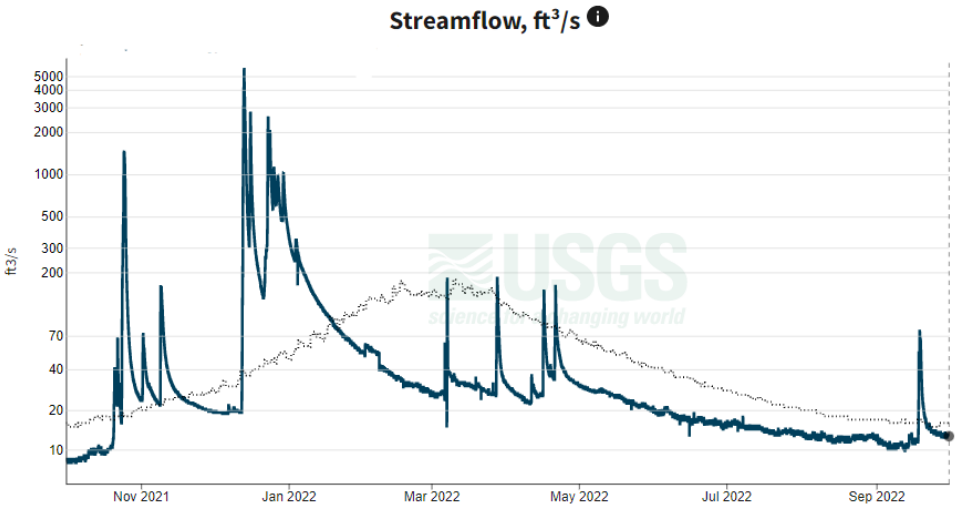


Figure 3. Water year 2022 Streamflow for the San Lorenzo River at the Big Trees gaging station [6]in comparison to median values (1937-2022).

[2] Data from CIMIS (California Irrigation Management Information System): https://cimis.water.ca.gov/
[3] https://droughtmonitor.unl.edu/
[4] https://www.cityofsantacruz.com/government/city-departments/water/weekly-water-conditions
[5]https://sccwaterdata.us/#/overview/GroundwaterLevel
[6] https://waterdata.usgs.gov/monitoring-location/11160500/#parameterCode=00065&period=P7D

Water Resource Management in Santa Cruz County is changing at a pace and scale not seen in 60 years. The driver for this is climate change. While climate models vary, all of the models used locally indicate a future with more frequent droughts, higher temperatures, and increasing variability of rain patterns – for example, intense atmospheric rivers followed by long dry spells. Overall precipitation totals may stay the same or begin to decline, however the increased variability limits the ability to capture and infiltrate the water when it is available[7]. The systems that we rely on for water supply, and that support the environment that we cherish, rely on a climate that does not exist anymore. Loch Lomond was designed to fill every year, our groundwater basins were expected to recharge at certain rates, and our streamflows were sufficient to support important species. The last decade has shown us that those expectations no longer reconcile with reality.

In response to the new paradigm where historically normal is no longer the norm, every water agency in the County is working at an unprecedented scale to plan, develop, design, and implement projects and management actions to bolster water supply reliability. This is happening not only at the individual water agency level, but more often, regionally through partnerships. Some of these partnerships, for example the Santa Margarita and Santa Cruz Mid-County Groundwater Agencies, require regional cooperation to meet quantified metrics for sustainability.

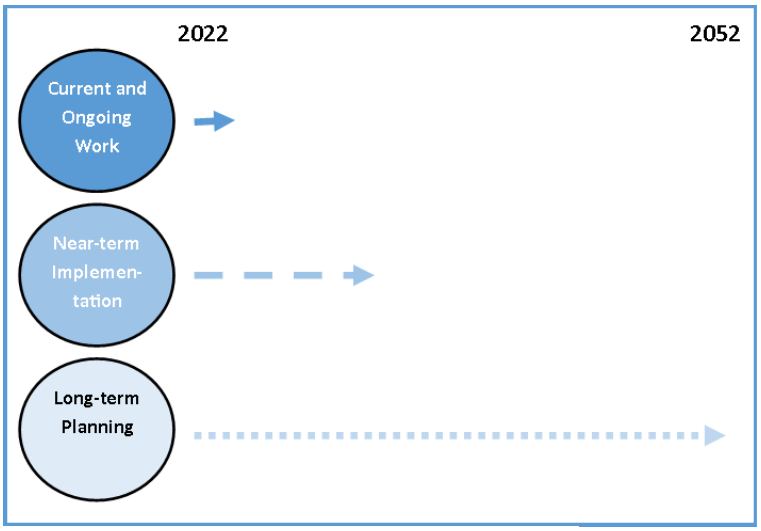


Figure 4: Current, near-term, and long-term planning.

To capture the efforts of the County and partners to continue to meet ongoing responsibilities while increasingly planning for a different future, this year's Water Status Report is broken down into three sections: current and ongoing work that reflects routine responsibilities and accomplishments met over the past twelve months; projects and management actions being prepared for near-term implementation; and planning efforts for projects and management actions that will take place of the next several decades (see Figure 4). This is meant to reflect to the readers the parallel efforts being taken by groups throughout the County to ensure that the future will bring with it a secure source of water supply for residents and protections for the environment.

Current and Ongoing Water Resources Management Efforts

Water resources management efforts are led by various agencies and organizations, each with their own piece of the water management puzzle. In August 2022, the Local Agency Formation Commission (LAFCO) completed their *Countywide Water Service and Sphere Review* which defines the geographic locations of each of the nine major public service providers in the County. For the first time, small water systems were included as part of the review. The document provides a comprehensive overview of

[7] https://www.smgwa.org/media/GroundwaterSustainabilityPlan/GSP_Sect2_PublicReviewDraft_Appendix2D-ModelReport.pdf

service areas, finances, and transparency of these water suppliers. The report is available on the LAFCO website.

On May 22, 2022 the Grand Jury released a report entitled *Our Water Account Is Overdrawn Beyond Conservation: Achieving Drought Resilience.* The focus of the report is on North-County water management. Key themes include the need to look beyond water conservation for water supply resiliency, and the critical role of inter-agency collaboration in achieving drought security. The Santa Cruz Mid-County Groundwater Agency as well as the Santa Margarita Groundwater Agency, the City of Santa Cruz Water Department, and the Soquel Creek Water District are specifically commended by the Grand Jury for their collaborative work. The Grand Jury Report includes twelve (12) Findings and three (3) Recommendations. Several water agencies and the groundwater sustainability agencies were required to respond to the Findings and Recommendations. None of these respondents indicated that any changes would be made based on the report, and several of them offered explanations as to why the Recommendations were inappropriate or unnecessary. The primary explanation was that ample collaboration and development of water supply projects are already happening, as described below.

Water Supply

Water supply projects throughout the County are being developed and implemented at a pace not seen in the past 60 years. Water supply projects and activities encompass three primary categories. The first is water use efficiency and conservation, including infrastructure improvements, which reduces the amount of water used by the community. Santa Cruz County is one of the most efficient counties in the state when it comes to per capita water use, and incentives and meter upgrades by the larger water suppliers continue to encourage low water use. Replacing aging water distribution infrastructure prevents water lost to leaks in the main pipelines. The second supply category is optimization of existing supplies, for example, utilizing more surface water during the rainy season, and groundwater during the dry season. The third category is the creation of “new” water supplies through projects like groundwater recharge and wastewater recycling. All of the project categories are underway in Santa Cruz County.

Water Use Efficiency – Residential

As the effects of climate change become more pronounced, water sources will become increasingly stressed. To meet this challenge, county residents and agencies will have to continue their efforts to limit water waste. Using water as efficiently as possible will help reduce stress on our water supplies and make them more resilient to climate change. Local agencies have been tremendously successful in decreasing domestic water demand by financially supporting the transition to more efficient methods of water use and educating residents about water conservation. This success can be seen when looking at the number of water connections in the county compared to water production. Since 1984, the number of water connections – mostly households - has more than doubled while annual water production has decreased. In fact, domestic water production peaked in 1997 and has dropped nearly 30% to date (see Figure 5). This trend reflects a dramatic increase in water efficiency across indoor fixtures, like toilets and washing machines, as well as an increasing mentality of water conservation among residents.

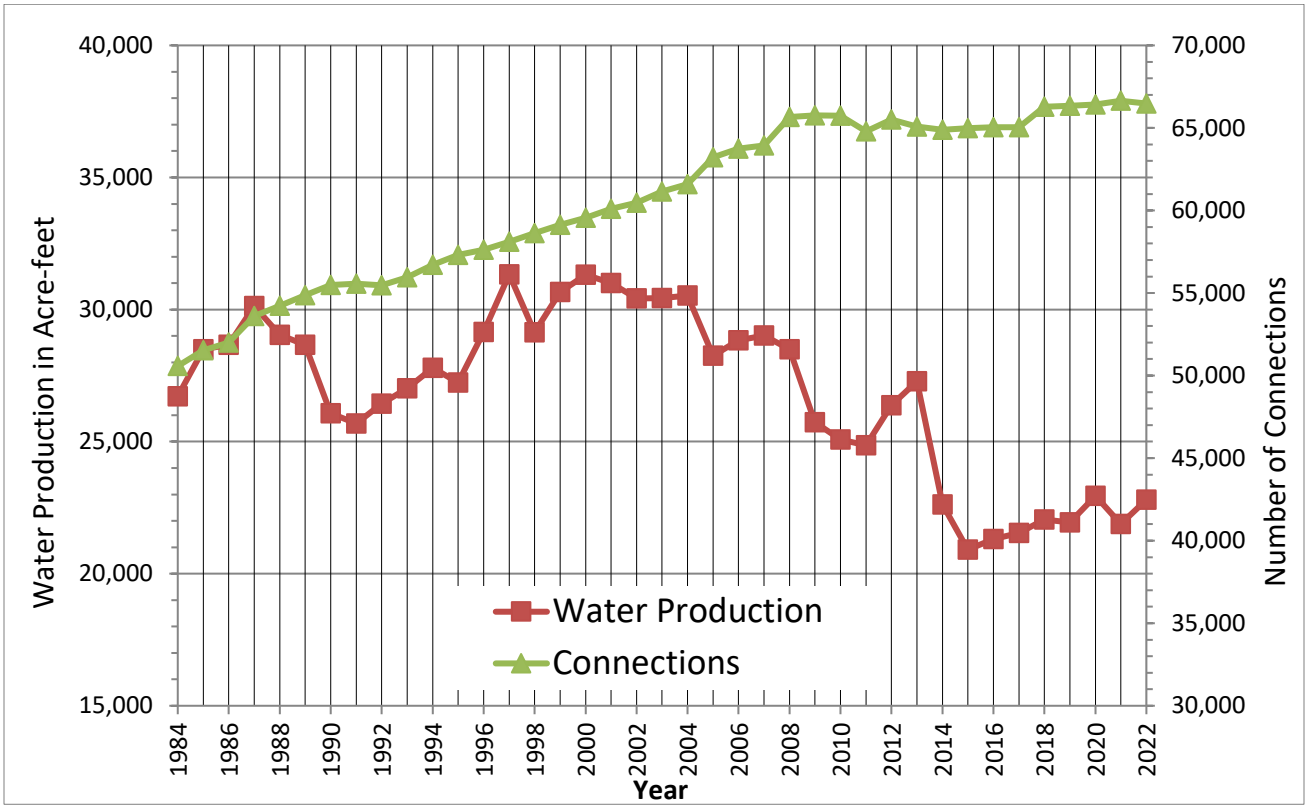


Figure 5: Water Production and Connections from large water systems, 1984-present

The region has, and will continue to promote efficient water use through the *Water Conservation Coalition of Santa Cruz County (*WCC*)*. The WCC includes the County, local public water agencies, and Ecology Action, who all collaborate on outreach and education about water conservation practices. This is primarily done through the WaterSavingTips.org website, which creates a single location for every county resident to find information on water conservation and what conservation incentives are provided by their water supplier. The WCC also manages other educational events, including a booth at the 2022 Santa Cruz County Fair that featured an educational video on the importance on water infrastructure, information on County-wide conservation programs, and free water saving devices. In 2022, the WCC also supported two training programs for landscapers that taught conservation techniques for outdoor water use. Graduates of the Green Gardner and Qualified Water Efficient Landscaper (QWEL) programs will bring valuable water conservation knowledge to every client that they serve in the county.

As indoor fixtures have become increasingly efficient, outdoor water use is becoming a larger proportion of water waste. According to the California Department of Water Resources, outdoor water use already accounts for 30-60% of household usage[8], which makes it a great candidate for further reductions. The nature of outdoor water use also makes it a particular challenge to our water resources because outdoor water use is highest during the driest times of the year, when water supplies are most stressed. This is illustrated in Figure 6, which shows the 2021 water extraction data of small Community water systems (<200 connections) in Santa Cruz County. The peak water demand in July was nearly double that of February, which can largely be attributed to increased outdoor water use.

[8] How to Save Water (saveourwater.com)

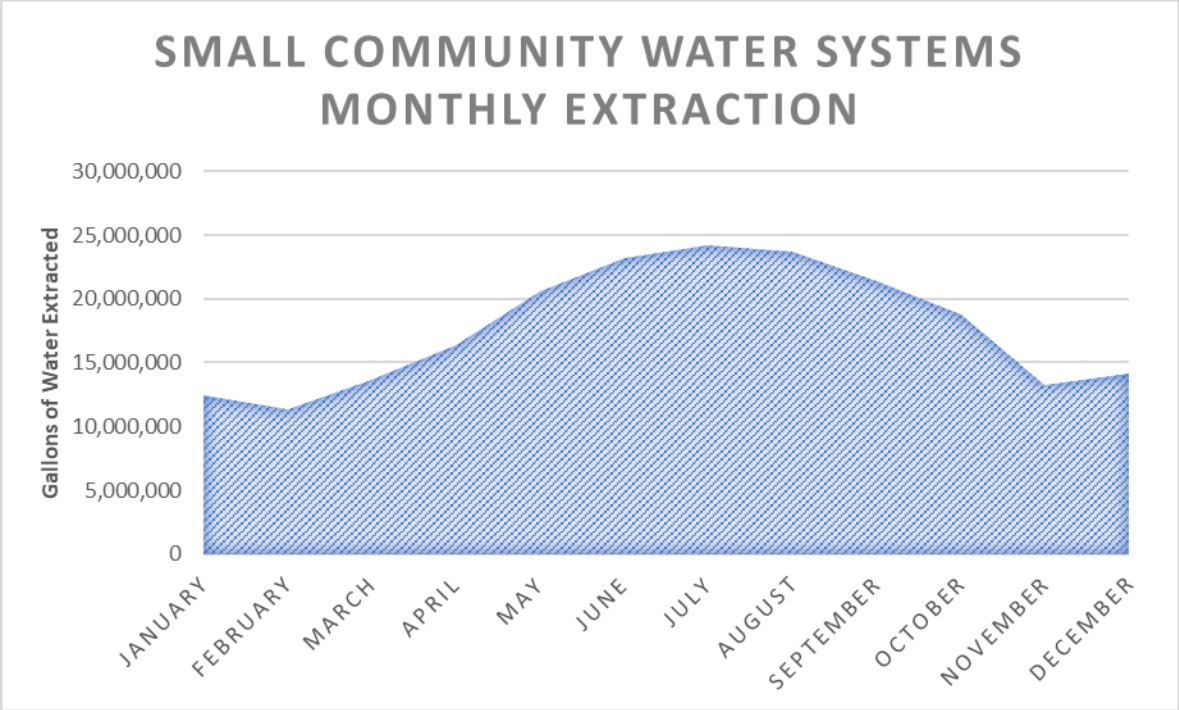


Figure 6: Small Water System water production in 2021 as reported to the County and in Electronic Annual Reports.

Improving outdoor water use efficiency will be a major priority going forward, but it is also important to recognize that low density development has greater potential for high outdoor water use. County Planning[9] continues to encourage more infill development with both multi-family housing and Accessory Dwelling Units, which are water saving relative to lower density development.

The San Lorenzo Valley Water District (SLVWD) completed its Water Master Plan and is beginning implementation. The Master Plan provides a quantification of the existing system, including pipelines, storage reservoirs, treatment plants, pump stations, wells, and surface water intakes. The Plan reflects damage suffered during the CZU fires and not repaired as of September, 2021.

In 2021, SLVWD successfully completed numerous infrastructure projects to benefit their supply by improving the movement of water and reducing water loss due to leaks. These include rerouting of CA-9 main south of Brookdale to allow Caltrans improvements, upgrade of existing 6-inch main in Quail Hollow Rd to 12-in, replacement of leaking main crossing Glen Arbor Bridge (south), the design of new pipeline to allow replacement of existing swim zone tanks in Redwood Park is complete and the project going out to bid this year for construction in 2023/2024, erosion control work required to finalize replacement of Foreman Intake raw water piping is awarded and should begin in 2022, the 2021 Capital Improvement Plan pipeline replacements have been awarded and construction will start as soon as materials are available (anticipated to be late 2023), the design of replacement pipeline crossing of the Monaco and King's Creek bridges on CA-9 to allow Caltrans replacement of the bridges is ongoing, replacement of fire-damaged Alta Via pipeline is in the preliminary stage, the replacement of failing river crossing at Huckleberry Island is in design/easement acquisition phase, the Fall Creek Fish Ladder rehabilitation is in bidding phase, replacement of Felton Heights tank is in design/land acquisition phase, design of improvements necessary for consolidation of Bracken Brae and Forest Springs is ongoing, and design of Lyon zone pipeline improvements is complete.

[9] Sustainable Santa Cruz County Plan (2014) and the Housing Element of the General Plan (2016-2023)

SLVWD customers continue to demonstrate commitment to ongoing conservation efforts, maintaining at least a 15-22% reduction in yearly water usage from 2013 consumption levels. SLVWD's 2020/2021 target water use is 85 GPCD. The SLVWD's 23,700 population served meets the 85 GPCD target with an average 80 GPCD for 2020. SLVWD actively pursues incidents of water waste by investigating, recommending corrective action, and providing follow-up documentation of resolution. As of October 2022 about 32% of the meters have been upgraded with advanced metering technology. The new meters, combined with the Badger Eye on Water engagement portal allow the customers to view hourly usage history, setup leak detection alerts and high bill notifications. In compliance with SB555, SLVWD has been conducting and submitting water loss audit reports to the Department of Water Resources (DWR). SLVWD has been improving its audit score every year from 49 in 2016 to 59 in 2020.

The majority of the SLVWD's customer accounts are residential; therefore, the SLVWD targets indoor and outdoor water savings programs toward these customers. In Fiscal Year 2021/2022 the SLVWD issued 42 rebates for grey water system, Energy Star rated washing machine, low-flow toilet, and weather-based irrigation controller installations. SLVWD conducts a variety of public education activities such as a dedicated Water Use Efficiency Page on its website, e-Newsletters, billing inserts, Instagram and Facebook postings.

Scotts Valley Water utilized WaterSmart customer engagement portal to implement new leak notification procedures and achieve continued reduction in the volume of water lost through leaks. It achieved 40% registration rate at WaterSmart and implemented Think Twice Water Use Efficiency 2022 Program in response to the Stage 2 Water Condition. Program activities included Water Saving Challenge, 2x Turf Rebate, Pool Cover Rebate, Recycled Water Fill Station and Pop-up Station.

Soquel Creek Water District (SqCWD) has a robust conservation program including: a large variety of indoor and outdoor rebates, Water Wise Home or Business calls to assist customers with high water use and provide free water saving devices like hose nozzles, faucet aerators, and low flow showerheads. The WaterSmart Customer Portal provides customers with their digital meter's daily and hourly water use, notifies them of potential leaks, and helps them diagnose the potential cause of high use. In 2022, average residential consumption was 49 gallons per person per day. New development is required to participate in Water Use Efficiency programs for indoor and outdoor fixtures and features and the Water Demand Offset (WDO) program. The WDO Program requires project applicants to offset approximately twice their expected demand by contributing towards water saving projects that would not have otherwise happened. In 2022, WDO fees went toward upgrading water meters to Advanced Metering Infrastructure which decreases demand through increased leak detection. The District also charges a Water Capacity fee for all new or upsized meters, a portion of which is allocated to future water systems facilities and infrastructure.

City of Watsonville (CoW) residents and businesses receive ongoing water conservation education and outreach provided by the City's Outreach Team via the CoW's website, social media, newsletter, events, workshops and in-person presentations. The CoW also offers bilingual programs, materials and financial incentives to encourage conservation. In the 2021-2022 fiscal year, 500 residents and students received in-person or online education about water conservation.

Last year, the CoW increased the landscape water conservation rebate from $0.75cents to $1.00 per square foot. The maximum rebate for residential customers is $1,000/year, and the maximum rebate for multi-family, commercial, and institutional customers is $2,000/year. Since January 2022, Watsonville has completed water landscape evaluations at 10 City parks that are now working to become more efficient, either through updating irrigation systems and/or replacing non-functional lawns to more drought-tolerant landscapes. CoW also provided 46 free residential water conservation

landscape consultations, resulting in 23 lawn conversion projects in motion and 9 rebates paid with an estimated water savings of 35,947 sq ft (3.09 acre-feet/year of estimated savings). In addition, there were 4 dishwashers rebates and more than 200 free water conservation devices provided to residents.

Water Use Efficiency – Agricultural

The Pajaro Valley Water Management Agency (PV Water) has set a goal to achieve 5,000 acre-feet per year of water conservation when compared to the baseline period 2006-2010. The program focuses on agricultural water conservation but also provides conservation services for domestic users. The conservation program leverages numerous partners, grants, and their programs including the Resource Conservation District of Santa Cruz County, the Natural Resources Conservation Service, UC Cooperative Extension, Resource Conservation District of Monterey County, Water Conservation Coalition of Santa Cruz County, and private consultants. The main components of the program are conservation outreach; partner collaboration, program coordination, demonstrations, rebates for efficient devices/materials; workshops and trainings; an irrigation efficiency program; and irrigation efficiency program evaluation. In December 2020, the PV Water Board of Directors approved $1.25 million agricultural conservation program to support services through December 2023. Over the most recent evaluated rolling 5-year period (2017-2021), total agricultural water use was approximately 4,200 acre-feet less than the baseline period.

The Resource Conservation District of Santa Cruz County (RCD) continues assist growers with conserving water through irrigation efficiency leveraging funds from PV Water and NRCS. Assistance with nitrogen management is often incorporated into the irrigation efficiency assistance. During 2022, RCD assisted 25 growers to monitor and/or improve the efficiency of their irrigation. The RCD also provides:

- irrigation system evaluations and recommendations,
- season-long monitoring to inform growers of how the volume of water applied to their crops compares to the volume of water required by their crops,
- irrigator trainings in English and Spanish, soil moisture monitoring, and
- technical and financial assistance to implement more efficient water use practices.

Through collaboration with PV Water, over $43,000 was issued to participants in the Agricultural Water Conservation Program. Rebates and cost-share from PV Water helps growers purchase and install more efficient irrigation equipment such as lower flow sprinklers, pressure compensating drip tape, pipe retrofits, soil moisture sensors, irrigation monitoring equipment like flow meters and data loggers, and repairs of leaky pipe joints.

Managed Aquifer Recharge (MAR) is a landscape management strategy that can help support groundwater supply by capturing stormwater in an infiltration system (typically a strategically designed basin) where it can then infiltrate into the aquifer. Since 2016, the RCD, the University of California, Santa Cruz (UCSC) and private landowners have collaborated to implement three active MAR projects in the Pajaro Valley with funding from DWR, USDA NRCS, California Coastal Conservancy and State Water Resources Control Board. Monitoring results were received for 1 of 3 systems for the 2022 water year. That system infiltrated 103 AF in the 2022 rain year. The annual monitoring results of the other 2 systems are still in progress. Additionally, water quality monitoring indicates that these projects likely help to improve groundwater quality. Data

indicate that water infiltrated in the MAR basins had lower Nitrate [NO3-N] levels than ambient groundwater.

Optimization of Sources

The SLVWD Board of Directors approved an additional budget to complete the Environmental Impact Report, associated fisheries work, and an update to the Conjunctive Use Plan for the District. The Plan includes changes to Felton's water right place of use, access to the District's Loch Lomond allotment, and the ability to move water through emergency interties in nonemergency situations.

The City of Santa Cruz Water Department (SCWD) certified two Environmental Impact Reports (EIRs) to benefit water supply. The first was the Santa Cruz Water Rights project which is now undergoing the State Water Resources Control Board water rights petition process. The project has many regional benefits to water supply reliability and the environment in general including:

- Groundwater overdraft protection.
- Improved instream flows.
- Increased resiliency against peak season demand shortages and climate change – induced hydrologic regime shifts.

The second EIR was for the Newell Creek Pipeline Replacement Project to rebuild this critical pipeline connection between Loch Lomond Reservoir and the Graham Hill Water Treatment Plant.

SqCWD continues to evaluate water transfers with the SCWD.

Creation of New Water Supplies

The SCWD continued Aquifer Storage and Recovery demonstrations at two of their well sites known as Beltz 8 and Beltz 12, with successful injection and extraction cycles. They also submitted federal and state Endangered Species Act permit applications for water operations and initiated related environmental review.

Construction is ongoing on the SqCWD Pure Water Soquel (PWS) Advanced Purified Groundwater Replenishment Project, which is expected to be operational in 2024. This project will put recycled water from the City of Santa Cruz's Wastewater Treatment Plant (WWTP) through an advanced water purification process and use it to recharge the critically overdrafted groundwater basin and protect against seawater intrusion. The District made the following progress on the three major components of PWS (conveyance, treatment and groundwater replenishment):

- Completion of about 90% of the conveyance pipeline. The conveyance pipeline will carry water from the WWTP to the Water Purification Center to the Seawater Intrusion Prevention (SWIP) wells.
- Completion of nine monitoring wells around the new seawater intrusion prevention (SWIP) wells. These monitoring wells will monitor groundwater quality during the operation of Pure Water Soquel.
- Construction of the PWS Water Purification Center is ongoing. This Water Purification center will be the location of a three-step advanced water purification process involving microfiltration, reverse osmosis, and ultraviolet light with advanced oxidation with an ozone pre-treatment.
- Initiated construction on equipping of the Seawater Intrusion Prevention wells which were installed in 2021.

PV Water's approach to stopping chronic groundwater overdraft and the resulting seawater intrusion while working to preserve the Pajaro Valley's agricultural sector has been to develop and deliver supplemental water supplies to growers in order to reduce groundwater production. PV Water commenced supplemental water deliveries in 2002 following the completion of the Harkins Slough Facility, and through September 2022, PV Water has delivered more than 62,000 acre-feet of supplemental water.

PV Water's supplemental water supply facilities, the Recharge Net Metering Program, and water conservation program are described below.

1. Coastal Distribution System (CDS): The CDS is a distribution system composed of nearly 22 miles of pipeline used to deliver supplemental water supplies to farms in coastal areas in the Pajaro Valley. The area currently served by the CDS incorporates approximately 6,100 irrigated acres and is referred to as the Delivered Water Zone or the Delivered Water Service Area. Water delivered through the CDS replaces groundwater that would otherwise be pumped from coastal wells. Delivered water provides "in-lieu recharge" to the Pajaro Valley Groundwater Basin; it helps to eliminate the problems of groundwater overdraft and seawater intrusion, while helping to keep agriculture viable in the Pajaro Valley.

2. Harkins Slough Managed Aquifer Recharge and Recovery Facility (Harkins Slough Facility): The Harkins Slough Facility diverts surface water from Harkins Slough and conveys it to a recharge basin where it percolates into the surficial aquifer of the San Andreas Terrace located near the coast. PV Water utilizes a series of wells to recover recharged water and deliver it to coastal farms through the CDS. The Harkins Slough Facility commenced operations in 2002 and has recharged approximately 10,500 acre-feet through September 2022.

3. Watsonville Area Recycled Water Treatment Facility (RWF): PV Water constructed the RWF and operates it in partnership with the City of Watsonville. Located at the Watsonville Wastewater Treatment Plant, the RWF has the capacity to produce 4,000 acre-feet per year of tertiary treated disinfected recycled water. Recycled water is augmented with water from the Harkins Slough Facility, Blend Wells, and the City of Watsonville's potable water to increase supply and improve the quality for agricultural irrigation needs. The RWF commenced operations in 2009 and has produced more than 36,000 acre-feet through September 2022.

4. Blend Wells: PV Water operates three production wells near the inland boundary of the Delivered Water Zone that augment the supplemental water supply and improve water quality.

5. Recharge Net Metering (ReNeM): PV Water, along with program partners from the University of California at Santa Cruz, the Resource Conservation District of Santa Cruz, and participating private landowners are implementing ReNeM to enhance recharge in the Pajaro Valley. The program incentivizes recharge projects by providing rebates to landowners based on the volume of water infiltrated. The rebates are intended to help offset maintenance costs incurred by landowners.

   During summer 2022, these three infiltration systems were carefully prepared by the landowners/growers to optimize infiltration during this water year (water year 2023). UCSC researchers instrumented the systems with a variety of monitoring equipment to determine volume captured, volume infiltrated, and quality of water infiltrated during this water year.

During the Spring of 2022, the RCD contracted with a geophysical survey group to deploy a towed transient electromagnetic system for assessing subsurface particle size and determine suitability for groundwater infiltration and recharge. Sites at 8 different ranches were assessed. 3 of the 8 sites had very high potential for recharge while the other sites presented average conditions. RCD program staff will use the results of this analysis to prioritize and pursue future aquifer recharge basins.

Water Supply for Small Water Systems

The Santa Cruz County Drinking Water Program oversees 109 active small water systems (SWSs), including public water systems (PWS) with no more than 199 residential connections and state small water systems. PWSs serve 25 or more people for 60 or more days per year and include both community and noncommunity systems. Community systems serve 25 or more yearlong residents, while noncommunity systems serve facilities such as schools, office buildings, outdoor camps, and stores, among others. State small water systems serve 5 to 14 residential connections with no more than 25 residents. SWSs can have greater water supply vulnerabilities than larger systems because they tend to have few sources, often just one well, and a small population to bear the cost of replacement if the source stops producing.

The water quality and reliability of these systems is of critical importance to the County residents and visitors that depend on them. The current drought conditions have heightened some of the vulnerabilities of these systems, such as lack of redundance and aging infrastructure. The State Water Resources Control Board (SWRCB) has begun conducting an annual Needs Assessment to quantify these vulnerabilities and provide a Risk Score for each PWS. These Risk Scores are used to identify struggling systems and prioritize available funding.

The County hosts meetings and workshops on a regular basis for SWSs to provide training on relevant topics and build connections between local water system representatives. Meetings held in 2022 have covered topics including the Electronic Annual Report to the SWRCB, bacteria sampling, and state resiliency requirements. The Drinking Water Program has also been providing guidance to small water systems regarding the resiliency requirements such as measuring well groundwater levels, securing backup water sources, and maintaining membership with a mutual aid organization, among other items.

Santa Cruz County Environmental Health was awarded funding through the SWRCB SAFER grant program and the DWR Urgent Drinking Water grant in 2021. Funding is expected to be available in 2023. This funding will be used to make progress to implement this plan, beginning with the tasks outlined in Table 1: Funding Received by Santa Cruz County below (subject to change as the work progresses).

Table 1: Funding Received by Santa Cruz County

Task	Funding allocated	Funding source
Purchase of new Inductively Coupled Plasma (ICP) Metal Analysis to test for heavy metals in drinking water samples	$150,000	SWRCB SAFER program
GIS database update to identify and map all parcels served by domestic wells	$5,000	SWRCB SAFER program
Small system & domestic well outreach	$11,000	SWRCB SAFER program

Create drought resources web portal	$5,000	SWRCB SAFER program
Domestic well inspections (voluntary well soundings and water quality testing)	$30,000	SWRCB SAFER program
POU/POE treatment systems* (*recipients must meet income requirements)	$250,000	SWRCB SAFER program
Create a dry well reporting tool	$5,000	SWRCB SAFER program
Contract with bulk, potable water hauler	$160,000	$80,000 SAFER program, recipients must be income limited + $80,000 DWR
Feasibility studies/planning assistance for permanent solutions	$50,000	SWRCB SAFER program

The County has secured a 3-year contract with a bulk, potable water hauler to respond to drought-related water supply problems that may affect residents. Eligible residents will receive up to 50 gallons of bottled water per person per month or 3,800 gallons of hauled water per household every 6 weeks at no cost, while a permanent solution is pursued by the property owner. Well users currently have access to other direct forms of assistance including well soundings to monitor water levels and water quality testing.

County staff are also involved with coordinating several long-term projects to improve water supply reliability for SWSs. Renaissance High School is currently working to consolidate with the Soquel Creek Water District due to a lack of backup sources for its single supply well, and water quality concerns including hexavalent chromium. The Crestwood Heights Water Association is working to consolidate with the City of Watsonville due to diminishing water supply from their source wells and a lack of funds to upgrade their system. The General Services Department is seeking funding to study options to improve source quality and reliability at the Rountree Facility.

Water Quality

As shown in Figure 7, several watersheds within Santa Cruz County have been identified by the State of California as impaired waterbodies pursuant to Section 303(d) of the Federal Clean Water Act (CWA)[10]. By definition, 303(d) listings and adopted TMDLs are related to impacts on one or more beneficial uses and the need to control the source(s) of these impairments. The Regional Water Board has oversight over these waterbodies and manages water quality through implementing Total Maximum Daily Loads (TMDLs) that are incorporated into Basin[11] Plans, the National Pollutant Discharge Elimination System (NPDES)[12] permit program, and the Storm water (MS4)[13] program. The County of Santa Cruz and the Cities of Santa Cruz, Capitola, Scotts Valley, and Watsonville conduct extensive water quality monitoring and there is ongoing collaboration to exchange data among the individual stakeholders.

[10] https://www.waterboards.ca.gov/water_issues/programs/tmdl/background.html
[11] https://www.waterboards.ca.gov/centralcoast/publications_forms/publications/basin_plan/
[12] https://www.waterboards.ca.gov/water_issues/programs/npdes/
[13] https://www.waterboards.ca.gov/water_issues/programs/stormwater/municipal.html

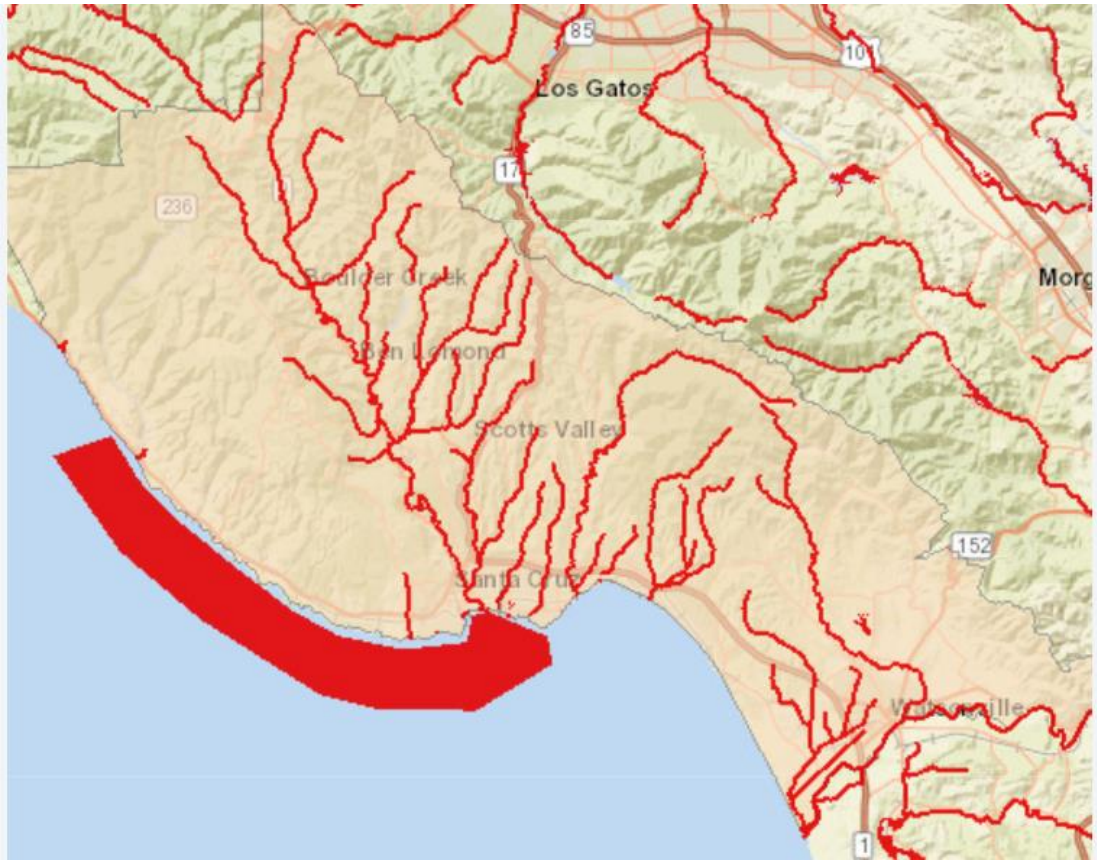


Figure 7: Map of impaired ("303(3)-listed" waterbodies in Santa Cruz County. Source: https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml

Community Development and Infrastructure (CDI) Public Works continue to review land development projects in the county and require stormwater mitigations for all projects that add or replace over 500 sq ft of impervious area with quantitative mitigations for those over 5,000 sq ft. This will help in reducing flash flooding, filter runoff from developed areas, duplicate/improve on existing conditions while also help with infiltration of rainwater to lessen the impacts on groundwater resources resulting from land developments.

In 2022, Environmental Health staff continued the process for adoption and implementation of the County's Local Agency Management Program (LAMP) for Onsite Wastewater Treatment Systems (OWTS). The LAMP is consistent with requirements of the State OWTS Policy and was developed in consultation with local stakeholders and staff from the Central Coast Regional Water Quality Control Board. The Regional Board approved the LAMP on October 14, 2021 and authorized the County to begin implementation immediately. Staff have mostly completed the process to make related updates to the General Plan and County code, which were adopted by the Board of Supervisors in August and October of 2022. The code updates go into effect the end of November 2022 outside the Coastal Zone, and will go into effect in the Coastal Zone upon certification by the Coastal Commission, expected in early 2023. Implementation of the LAMP provides for increased protection of public health and water quality by requiring increased setbacks from public water supply sources, drainageways, and karst features. The LAMP also specifies increased groundwater separation and provides detailed requirements for:

- shallow dispersal trenches,
- use of site-specific assessment and mitigation of site constraints in lieu of minimum lot sizes in broadly mapped constraint areas,
- maintenance of one-acre minimum lot size in water supply watersheds,

- increased use of enhanced treatment systems for new and replacement OWTS,
- nitrogen reduction in all nitrate constraint areas,
- locally approved and qualified service providers and designers,
- property owner requirements for proper OWTS operation and maintenance, and
- system evaluation at time of property transfer.

The SCWD continues to monitor water quality through numerous new and ongoing processes. They initiated Watershed Sanitary Survey update that looks at drinking water source watersheds and treatment processes and assesses where improvements can be made to both better protect public health. They continued ongoing monitoring of the Loch Lomond (4400912) and Santa Cruz (4410010) potable drinking water systems in compliance with drinking water permit regulations and bacteriological sample siting plan, continued ongoing monitoring of raw source water for post CZU Wildfire impacts, continued ongoing management and monitoring of Loch Lomond Reservoir for cyanobacteria and cyanotoxins, and continued ongoing monitoring of raw source water and treated finished water for unregulated contaminants of emerging concern such as PFAS, pharmaceuticals and personal care products. They monitored Beltz Wells 8 and 12 as part of the aquifer storage and recovery (ASR) demonstration, completed the 2022 Public Health Goals Report and 2021 Consumer Confidence Report, initiated Tait Diversion Salinity Study to better understand potential water quality impacts due to sea level rise and climate change, and initiated CEQA compliance for the Graham Hill Water Treatment Plant Facility Improvements Project.

Scotts Valley Water District completed Orchard Run Water Treatment Plant Improvements project that marginally enhanced the esthetics (taste and odor) of the water produced at the largest treatment plant of the District.

In 2022, SqCWD largely completed construction of nine monitoring wells around the new seawater intrusion prevention (SWIP). These monitoring wells will monitor groundwater quality during the operation of Pure Water Soquel. As part of the SqCWD's Well Master Plan, the District is redistributing groundwater pumping further inland to reduce seawater intrusion at the coast. SqCWD also maintains a network of monitoring wells along the coastline to track groundwater levels and water quality to track seawater intrusion.

The City of Watsonville worked regionally in the Pajaro River watershed to look at future TMDLs and coordinate monitoring and implementation of measures through the Stormwater programs. In an effort to improve infrastructure in the City, the Wastewater Division applied for and was awarded funding through CalOES to improve the levee embankment behind the Wastewater Treatment Facility. The embankment stabilization project will protect one of the City's most critical facilities.

The RCD completed site visits to 10 unique properties requesting technical assistance related to rural roads or drainage and erosion issues around their home. RCD staff provided recommendations based on the specific concerns and discussed improvements that would also reduce sediment runoff. They completed designs and permits for two roads projects and one streambank project, preliminary assessments/designs for two more roads projects and one rain harvesting project that will reduce runoff. Additionally, RCD assisted with designs and permits for a post-fire bridge and restoration. All projects are expected to be constructed in 2023. The RCD is planning a Living on Rural Properties workshop to be held in early January 2023 that will discuss road, home drainage, well and septic management and fire preparedness.

Ag Water Quality Programs

PV Water has multiple water quality monitoring programs in addition to operating water supply projects that achieve the dual purpose of augmenting water supply needs while helping to maintain or improve water quality. Descriptions of these programs follow.

1. Surface Water Quality: PV Water staff routinely collect and analyze water quality data from approximately 40 locations to provide information on the condition of streams, creeks, rivers, sloughs, and lakes in the Pajaro Valley Groundwater Basin. In addition, PV Water also maintains a large network of autonomous data loggers, and measures discharge to monitor hydrologic conditions.

2. Supplemental Water Quality: PV Water staff routinely collect and analyze water quality data from the CDS sources and points of delivery to provide information on changing water quality, suitability for agriculture customers, and to assess nutrient and salinity inputs into the soil and groundwater in the Delivered Water Service Area.

3. Groundwater Quality: PV Water staff routinely monitor groundwater quality from a network of over 180 public monitoring and private production wells that staff routinely visit to obtain water level and water quality information. At minimum, staff visit these wells in the spring and fall of each year with a subset of wells monitored more frequently. PV Water's monitoring network is supplemented by data collected by local water purveyors.

4. Salt and Nutrient Management Plan: PV Water also developed and is implementing the Salt and Nutrient Management Plan to ensure attainment of water quality objectives for protection of beneficial water uses and guide management of salts, nutrients, and other significant chemical compounds within the groundwater basin. As part of the plan implementation, PV Water works with community partners, such as the Resources Conservation District of Santa Cruz County and UC Cooperative Extension, to continue to offer resources and education opportunities to growers for efficient nutrient application and management.

RCD Agricultural Program staff continue to work with NRCS, researchers, management agencies, funders and industry to get effective water quality best management practices developed and on the ground. Additionally, RCD is providing assistance to growers to submit applications for funding to the California Department of Food and Agriculture (CDFA) State Water and Energy Efficiency Program (SWEEP) and the Healthy Soils Program (HSP). The SWEEP program offers growers the opportunity to apply for up to $200,000 for projects that improve water and energy use efficiency, and the HSP program offers growers up to $100,000 to help implement practices that improve soil health.

Natural Resources and Flood Management

In April 2022, the Salmonid Restoration Federation (SRF) held their 39th Annual Conference in Santa Cruz, the largest West Coast conference to advance the science and art of habitat restoration for native steelhead and salmon. The conference was attended by 530 people over 4 days of workshops and conference sessions. For the Fish Passage Workshop, County Water Resources staff completed an assessment of five fish passage projects completed between 2008-2014 on Corralitos Creek and Shingle Mill Gulch. The assessment showed that the five fish passage projects are working well and have been instrumental in improving steelhead passage into and out of Corralitos Creek and Shingle Mill Gulch. Water Resources and CDI Public Works organized and coordinated a tour of the project sites for about 40 workshop participants (Figure 8). In addition, the County, through the Fish and Wildlife Advisory

Commission, provided a small grant to support 4 conference scholarships and both Water Resources and General Services provided equipment and local knowledge to support the conference.

Figure 8: Fish Passage Tour at the Salmonid Restoration Federation conference.

The County Water Resources Program staff continue to implement various programs to benefit natural resources. Descriptions of these projects are as follows:

1. Steelhead and Coho Salmon Conservation Efforts**:** County Water Resource Program staff continue to implement various programs and projects to benefit steelhead and coho salmon habitat that is degraded due to historic and current land and water use. Coho salmon are listed as endangered under both the state and federal Endangered Species Act (ESA) and are critically endangered in Santa Cruz County. In 2022, coho salmon juveniles were abundant in North Coast streams, reflecting good ocean conditions and favorable winter storm patterns. Water Resource staff continue to assist coho salmon conservation efforts. Steelhead are listed as threatened under the Federal ESA and continue to persist in most county streams at low to moderate population numbers. Current recovery actions focus on improving dry season streamflow and habitat complexity.

2. Steelhead Monitoring: Water Resources continues to collaborate with local water agencies to monitor 41 sites for juvenile steelhead densities and stream habitat in four watersheds: San Lorenzo, Soquel, Aptos and Pajaro. In 2022, Water Resources updated the data website with both 2020 and 2021 data. Drought conditions continue to impact steelhead densities and access into the upper watershed sites. Coho salmon juveniles were not collected in any of the four watersheds in 2022.

3. Stream Wood Program: The Stream Wood Program continues to facilitate the retention of naturally recruited wood by educating landowners about the benefits of stream wood and modifying stream wood when necessary to protect property or other resources. The program experienced a moderate year with 25 requests for assessment of large wood and fallen trees in streams that were a concern for property owners. Program accomplishments included the development and launch of a new data platform, ArcGIS Survey 123, to simplify the collection of contact and location information.

4. Scott Creek Coastal Resiliency Project: County staff continue to participate in a multi-agency effort to restore natural lagoon and marsh dynamics at Scott Creek (Figure 9) while constructing a new Highway 1 bridge at this location. In 2022, the project achieved a significant milestone by completing a Caltrans Project Initiation Document that allows the project to move ahead in design and environmental review. This project is unique in how it integrates transportation planning, habitat needs for listed species and climate adaptation.

Figure 9: Scott Creek lagoon from the bluffs

5. Regional Conservation Investment Strategy (RCIS)**:** The RCD, in partnership with the Santa Cruz County Regional Transportation Commission (RTC), facilitated development of the Santa Cruz County Regional Conservation Investment Strategy (RCIS), which will be finalized by January 2023. The goal of the RCIS is to leverage the wealth of local knowledge and conservation planning into a comprehensive, regional, voluntary strategy to protect Santa Cruz County's unique biodiversity and the ecological communities that support it and promote resilience to foreseeable pressures and stressors. The RCIS will also help direct mitigation dollars to the highest and best use. The RCIS outlines conservation goals, objectives, actions and priorities for natural communities and focal species, including the following related directly to water resources: bar-built estuary, riparian and riverine, coho salmon, ponds lakes and reservoirs, Santa Cruz Long-toed salamander, freshwater wetlands, southwestern pond turtle, beaches dunes and rocky cliffs, karst formations, habitat connectivity, working lands. Water Resources staff contributed to the RCIS by participating in the Stakeholder and Technical Review committees with a focus on steelhead, coho salmon and aquatic habitats, and coordinating County review of draft documents.

6. San Vicente Stream Enhancement Project Monitoring: In 1999, the County of Santa Cruz Water Resources Program installed 20 stream wood structures into San Vicente Creek on Coast Dairies property upstream of Davenport. These structures were intended to support steelhead and coho salmon populations by improving cover habitat and increase habitat complexity. In 2021-22, Water Resources, California Department of Fish and Wildlife, and AmeriCorps Watershed Stewards, completed a study to relocate, map and evaluate the structures. During a fall snorkel survey, juvenile coho salmon and steelhead were documented using the stream wood structures as cover habitat. The completed study will be shared with the Bureau of Land Management, who currently manages this property as part of the Cotoni-Coast Dairies National Monument.

7. County of Santa Cruz Stream Crossing Inventory and Fish Passage Evaluation: The County of Santa Cruz Stream Crossing Inventory and Fish Passage Evaluation report identifies current

priorities for fish passage among the County's road stream crossings. The 2022 update identifies locations on Casserly, Lompico and East Liddell creeks where culvert replacement could improve passage for steelhead, aquatic and terrestrial animals. Community Development and Infrastructure is moving ahead with submitting a grant proposal for federal fish passage funding in 2023 to replace two culverts on Casserly Creek in the Pajaro River Watershed.

8. Caltrans FishPAC: Water Resources staff participate in the Caltrans FishPAC, a group dedicated to improving fish passage at state road crossings. In Santa Cruz County, Caltrans is actively working on 4 of the 6 highway crossings identified as high priority for replacement or remediation.

9. Update Branciforte Creek Fish Passage Inventory: In 2014, County Water Resources staff completed an inventory and assessment of steelhead passage barriers on Branciforte Creek. With this report, the Resource Conservation District of Santa Cruz County completed the removal of 3 barriers. In 2022, Water Resources staff revisited some of the barriers, updated maps and provided information and photos to the RCD to continue working with private property owners to remove these legacy structures that affect low flow passage for steelhead into this important tributary of the San Lorenzo River.

CDI Planning continued to oversee the timber harvests in the county to ensure robust water quality and habitat protection during timber harvests, and to invest staff time on enforcing violations of the erosion control, riparian and wetland protection, and grading ordinances that may impact water quality and riparian habitat where we do not post a formal notice of violation. On those violations that require a notice of violation, staff diligently pursues enforcement and restoration of riparian habitat and prevention of sediment from entering our streams. This past year also saw the extension of the Master Permit for the Partners in Restoration Program through the Resource Conservation District for another 10 years, and zone 4 funds covered much of the staff time to necessary to update and process that permit. Our Floodplain Manager is currently going through the 5-year audit by FEMA of our floodplain management program to ensure compliance with regulations ensuring we keep development out of the flood zones.

The Pajaro Regional Flood Management Agency (PRFMA) is a joint powers authority of the County of Santa Cruz, Santa Cruz County Flood Control and Water Conservation Zone No. 7, the County of Monterey, the Monterey County Water Resources Agency, and the City of Watsonville. Formed in 2021, the agency will plan, finance and implement projects and programs to reduce flood risk from the lower Pajaro River and its tributaries in Santa Cruz and Monterey Counties. Some of the PRFMA's accomplishments in 2022 include:

- Adopted a special benefit assessment for levee operations and maintenance of $1.2 million per year;
- Adopted cost-sharing agreements amongst the member agencies to provide additional revenue to the agency; and
- Adopted its first annual budget.

On Sept 29, Governor Newsom signed SB 489 into law, which allows the State of California, through the Department of Water Resources, to advance Subvention fund payments to the Pajaro River Flood Risk Management Project. This will greatly ease cash flow burden on the PRFMA in implementing the construction phase of the project. This is another historic moment for the project, as no other project has this provision within the Subventions Program.

On October 3, 2022, President Biden and the US Army Corps of Engineers appropriated $82 million to the Pajaro levee project, which adds to the $67 million awarded earlier this year. This is the second installment of construction funds to the Project, which will be used to complete construction along "Reach 5" on Salsipuedes Creek between Highway 152 downstream to the confluence with the Pajaro River. As the project moves through design and construction, additional appropriations will be made to complete the installments necessary to fully construct the Project.

SLVWD is preparing a Habitat Conservation Plan to mitigate the impacts to listed species in Sandhills habitat which result from the SLVWD's Capital Improvement Projects. The initial draft of the plan is aimed for completion in February 2023. In 2021 the District partnered with PG&E to remove approximately 5-acres of invasive species, plant native riparian species and received a commitment from PG&E to maintain the area for 4 years. SLVWD secured an AmeriCorps Team in March-April 2022 for a special project at its Kirby Water Treatment Plant for invasive removal. The District received an approximately 1.1 million dollar grant through the Proposition 1 Watershed Restoration Grant & Delta Water Quality and Ecosystem Restoration Grant Programs for rehabilitation of the District's Fall Creek Fish Ladder. Construction is slated for Spring 2023.

The SLVWD Olympia Conservation Area Management Plan was completed in 2020. This plan was developed to guide habitat management, restoration, enhancement, and related activities, (collectively, 'management') and monitoring within the Olympia Conservation Area—a 6.3-acre conservation area located within the SLVWD's 180-acre Olympia Watershed Property. The conservation area was set aside by SLVWD to mitigate impacts of its capital improvements and operations and maintenance projects on rare species and sensitive habitat in the Sandhills. Since plan completion the District has submitted two annual reports, 2020 & 2021 to the Federal Fish & Wildlife Service.

The SCWD continued ongoing monitoring related to fisheries, hydrology, water quality and rare terrestrial species relative to Water Department environmental regulatory compliance. Notable observations include:

- Coho in Laguna Creek for the 3rd year in a row.
- Coho in Majors Creek.
- Non-native chinook in the San Lorenzo River.

Over the past year, the SCWD pursued enforcement on illegal stream diversions and other unpermitted developments that have potential water resources implications. They also reinitiated Integrated Pest Management program, initiated evaluation of new watershed education and fish hatchery opportunities at Loch Lomond, finalized the Operations and Maintenance Multi-Species Habitat Conservation Plan with US Fish and Wildlife Service, and initiated National Environmental Policy Act (NEPA) and CEQA compliance for the Anadromous Salmonid HCP with National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW). The Water Department also continued ongoing resource management related work including:

- Maintenance of watershed divide and stream crossing signs.
- Fuel management around Loch Lomond Reservoir.
- Invasive species control at Loch Lomond Reservoir.
- Regulatory response to operational emergencies.
- Watershed interpretive program implementation.
- Completion of several restoration/mitigation projects.

This past year, the City of Watsonville was awarded grants for the following water quality and implementation projects in the Watsonville Slough System

- Ocean Protection Council Middle Struve Slough Water Quality and Habitat Improvement Project: This project aims to construct stormwater features that treat runoff for pathogens and sediment, restore critical habitat in the wetlands and provide enhanced public access.
- Department of Water Resources Upper Struve Slough: The aim of this project is to reduce localized flooding, improve water quality and improve and restore critical habitat in the wetlands.

To support operation of existing water supply facilities and guide development and implementation of proposed water supply facilities, PV Water works with expert biologists to observe and collect information on biological resources in and around project sites. These studies and assessments include evaluations of waterfowl/nesting birds, South-Central California Coast Steelhead, and California Red Legged Frogs. In addition, as part of an evaluation of potential project impacts, PV Water has prepared numerous resource reports and comprehensively evaluates biological resources in the project areas of the College Lake Integrated Resources Management Project and the Watsonville Slough System Managed Aquifer Recharge and Recovery Projects.

The RCD is working on numerous programs and projects to benefit natural resources as described below:

1. Stream Restoration Project Planning: In coordination with state agency partners, RCD watershed restoration program staff helped design streamwood enhancement projects on Soquel Creek (Soquel State Demo Forest) and Aptos Creek (Nisene Marks State Park) that are slated for implementation in 2023. In addition, RCD staff continue to work with private landowners to advance barrier removal projects in the Branciforte Creek watershed, a focal watershed for salmonid recovery, with two high-priority barriers expected for removal in 2023.

2. RCD watershed restoration program staff, in coordination with the City of Santa Cruz Public Works and Water departments, helped kick off the next phase of the Branciforte Creek Flood Control Channel Fish Passage Enhancement Project. With funding from the State Coastal Conservancy, the project team will complete a feasibility study to identify preferred design alternatives that will ultimately help salmonids pass through this barrier in order to access critical spawning grounds higher up in the watershed.

3. Scott Creek Coastal Resiliency Project: The Scott Creek Coastal Resiliency Project is a unique, integrated bridge replacement and ecological restoration project with multi-benefits. This project will improve community and highway resilience to climate change and sea level rise, will implement a major recovery action for endangered coho salmon and a suite of other listed species, and will improve public coastal access, amongst many other benefits. For nearly 10 years the Resource Conservation District of Santa Cruz County, the Santa Cruz County Regional Transportation Commission, and Caltrans, along with our state and federal resource agency partners, have collaborated to re-envision how we plan for major transportation infrastructure projects by focusing on first understanding the needs of the ecosystem, then designing infrastructure and restoration activities together to meet those needs. This year, with funding from CDFW, we completed the Project Initiation Document (a critical planning milestone within the Caltrans planning process). And we secured additional funds from CDFW to complete the remaining technical coastal studies identified by the Technical Advisory Committee as essential for informing bridge design and selection of a preferred alternative bridge span and alignment.

4. Forest health, wildfire resilience, ongoing post-fire recovery and forest management planning and project implementation: The RCD continued to provide post-fire site visits advising land managers on long-term recovery of their land. RCD staff also provide technical assistance and conservation planning assistance to forestland managers throughout the County. In 2022 RCD completed the planning and permitting of two forest health projects within the CZU burn area (one which will be implemented starting November 2022, the other in spring 2023). RCD also planned and began implementation of a shaded fuel break along Summit Road, and advanced a number of other priority forest health and wildfire risk reduction projects.

Activities and Projects Planned for Near-term Implementation

Water Supply

On September 21, 2021, Governor Newsom signed Senate Bill (SB) 552 into law. SB 552 places drought and water shortage planning responsibility on counties for state small water systems (a systems serving between 5-14 connections) and domestic wells (a system serving between 1-4 connections) within the county's jurisdiction. It imposes responsibilities on counties to improve drought resilience for these systems.

In December 2021, the Water Advisory Commission (Commission), responsible for advising the Board of Supervisors on water related issues, voted to adopt responsibility for implementing SB 552. In alignment with SB 552 requirements to use a comprehensive process that includes outside agencies and interested parties, the Commission formed a subcommittee, the Drought Response Working Group (Working Group). The working group was tasked with assessing risks, defining the County's responsibilities, and providing guidance to County staff to develop a Drought Response Outreach Plan (DROP).

County staff collaborated with the Working Group to develop the DROP and incorporated revisions after holding a public comment period. The DROP was approved by the Commission at the October 2022 meeting. The DROP was also incorporated into the County's Climate Action and Adaptation Plan. The Board of Supervisors are the final authority in adopting the DROP and the Climate Action and Adaptation Strategy that it folds into, which they did in December 2022.
The DROP includes the following main sections:

- Introduction: Includes background information on SB 552 and the county's approach to compliance.
- Water Resources and Vulnerabilities in Santa Cruz County: Describes the current state of water resources in the County and the physical and socioeconomic vulnerabilities faced by the populations served by domestic wells and small water systems.
- Domestic Wells: Describes the County's plans to improve data collection and provide resources to well owners.
- Small Water Systems: Describes the County's plans to improve data collection and provide resources to small water systems with a focus on state small water systems.
- Emergency response: Focuses on the County's role in providing assistance to residents that rely on wells and small water systems during emergencies. Drought is the primary focus of the legislation, however other emergencies such as wildfire are also discussed.
- Summary of recommendations of the Drought Response Working Group
- Interim and permanent well mitigation strategies

Materials related to Santa Cruz County's SB 552 process can be found at the website: https://scceh.com/NewHome/Programs/WaterResources/SenateBill552Compliance.aspx.

The SCWD Department and the SVWD received $10 million in grant funds for the development of an intertie pipeline connecting the City of Santa Cruz and Scotts Valley Water District water systems. Because Scotts Valley Water District and San Lorenzo Water District are connected, this also provides an opportunity to connect City of Santa Cruz and San Lorenzo Valley Water District water systems.

The SLVWD is working on a multi-tier effort to optimize operations, sustainably manage water supply and diversify the SLVWD's water supply portfolio to ensure a resilient water supply for a changing climate. Planned projects include the constructability Study/Conceptual Design of replacement raw water piping (5-Mile and Peavine pipeline), recoating of multiple potable water storage tanks, construction of ~7 miles of raw water pipeline, construction of improvements related to consolidations with smaller systems, design/engineering/analysis related to possible consolidation of Big Basin Water Co, completion of design and construction of 2021 FEMA Pipeline project, construction of Redwood Park Pipeline and tank (replacing Swim tanks), construction of Lyon zone pipeline improvements, construction (coordination with Caltrans) of Monaco and Kings Creek Bridges, construction of Alta Via pipeline, construction of Huckleberry Island bridge crossing (replacement of failing river crossing at Huckleberry Island, rehabilitation of Fall Creek Fish Ladder, design & construction of new Felton Heights tank, revision of plumbing at Felton Acres site to eliminate two (2) pressure tanks and incorporate areas served into Pine zone or McCloud zone, replace Lompico supply pipeline with underground HDPE pipeline, replace Bennet Spring pipeline with underground HDPE pipeline, and upgrade and re-route the South zone pipeline.

Central Water District is seeking Community Drought Funding for the development of a new water supply well.

The CoW was awarded $4,850,000 in Proposition 1 funds from the Department of Water Resources, Division of Drinking Water, through the Disadvantaged Community Involvement and Urban & Multi-benefit Drought Relief Grant program to aid in the cost of the construction of a new reservoir for the City's water system for water supply augmentation. Anticipated completion is late 2024/early 2025. The CoW completed construction of a new well in 2022. The new well pump station is expected to be completed in Fall 2023. The new station is being developed to support existing sources and maintain the water system's high level of reliability.

PV Water is currently working to implement a series of projects and programs to achieve sustainability as part of the Groundwater Sustainability Plan (GSP) Alternative it is implementing under the Sustainable Groundwater Management Act (SGMA). Under SGMA, the Pajaro Valley Groundwater Basin must achieve sustainability by 2040 and in advance of the deadline demonstrate substantial compliance by achieving interim milestones and avoiding undesirable results. To achieve this, PV Water is implementing the projects and program described below within the next five years.

1. Water Conservation: PV Water aims to achieve an annual conservation goal of 5,000 acre-feet per year relative to the baseline period 2006-2010 as described above.

2. College Lake Integrated Resources Management Project (College Lake Project): The College Lake Project includes components required to store, treat, and deliver water from College Lake, for use as an irrigation supply in-lieu of pumped groundwater. The components include an adjustable weir structure designed to accommodate safe fish passage, intake pump-station, water treatment plant, a 6-mile conveyance pipeline, and two groundwater wells to support

project operations. The weir will be capable of raising the lake water level by 2.4 feet and increasing the total storage to approximately 1,800 acre-feet. An annual average of 1,800-2,300 acre-feet will be collected through a screened intake compliant with screening criteria for anadromous salmonids. Water will then be conveyed to the water treatment plant and then to the CDS where it will offset an equal amount of groundwater production. PV Water has completed project design, is currently acquiring property rights and environmental permits. Project construction is anticipated to begin in the spring of 2023. PV Water received a $7.6 million Sustainable Groundwater Management Implementation Grant from the California Department of Water Resources to support pre-construction activities such as engineering design, environmental review, and public outreach.

3. Watsonville Slough System Managed Aquifer Recharge and Recovery Projects (WSSMARR): WSSMARR includes upgrades of the existing Harkins Slough Managed Aquifer Recharge Facility (Harkins Slough Facility) and construction of the Struve Slough Project, a new managed aquifer recharge and recovery project. WSSMARR includes components to divert, convey, filter, store, and recover surface water flows for use as an irrigation supply in-lieu of pumped groundwater. The components include upgrading the existing Harkins Slough Facility to install fisheries compliant intake screens, expanding the filter plant, upgrading the pump-station, constructing a backwash effluent/raw water pipeline, development of the Southeast Recharge Basin, and constructing recovery and monitoring wells. The Struve Slough Project includes a new screened intake and pump-station on Struve Slough as well as 7,150 foot conveyance pipeline to the expanded filter plant. Collectively, WSSMARR is designed to yield an estimated annual average of approximately 2,000 acre-feet. PV Water has completed the environmental impact report for the project, is working to complete final design and obtain all necessary permits. Construction could begin in 2024.

4. Increased Recycled Water Deliveries: PV Water continues efforts to increase recycled water deliveries to customers. PV Water is working to achieve this by increasing demand for recycled water and increasing storage to supply more water during periods of high demand. The goal aims to increase demand by approximately 1,000 acre-feet per year and shoulder season demand by approximately 250 acre-feet per year. To accomplish these goals PV Water has constructed a 1.5-million-gallon storage tank; constructed approximately 3.2 miles of additional CDS pipeline; expanded the RWF filter train capacity; improved the distribution pump station, and is working closely with customers to maximize deliveries. Efforts to increase and maximize deliveries will continue over the near future.

5. Pajaro Valley Hydrologic Modeling: PV Water continues to improve, update, and expand the capabilities of the Pajaro Valley Hydrologic Model (PVHM). The PVHM is one of the principal planning tools for the agency and in collaboration with the United States Geological Survey, will be used to evaluate historical, current, and future basin conditions and support project and program development and implementation.

Water Quality

Preparing for possible changes in regulation and a different set of water quality challenges under climate change, the SCWD performed the fifth unregulated contaminant monitoring rule (UCMR5) sampling, is preparing for installation of new oxygenation aeration system at Loch Lomond, and planning for compliance with the lead and copper rule revisions (LCRR).

Construction of the Soquel Creek Water District Cunnison Lane well and treatment facility will begin in the next few years as part of the Well Master Plan to redistribute groundwater pumping away from the coast. This project is funded through the 2022 grant awarded to the Mid-County groundwater agency.

PV Water will continue to conduct the existing water quality monitoring activities described previously, and in addition, will incorporate the following changes over the next 5-years.

1. Surface Water Quality: PV Water, as part of the College Lake Project, developed a Water Quality Monitoring Plan that describes actions related to monitoring water quality in and around College Lake. The monitoring described in the plan will provide data to enhance the understanding of the aquatic habitat under new management and hydrologic regimes, as well as provide data and insights that will support the adaptive management decision-making process

2. Supplemental Water Quality: PV Water will expand the supplemental water quality monitoring to include any new supply sources, such as the College Lake Project or WSSMARR, as well as any new points of delivery. Should any constituents of concern become a regulatory requirement, the analytical panel will be expanded to included such constituents.

3. Groundwater Quality: PV Water recently expanded its groundwater monitoring network to incorporate approximately twenty-four new monitoring sites. The expansion of the network followed an effort by PV Water to address physical spatial gaps in the network as well as gaps created by limitations in sharing confidential data collected from privately owned wells. PV Water anticipates constructing additional monitoring wells within the next five (5) years to support basin management and project implementation.

The RCD expects to complete 20 road and home drainage BMPs at multiple sites throughout Santa Cruz County with a particular focus on the San Lorenzo River Watershed. Those projects combined are expected to reduce sediment/erosion by 250-500 tons/year. Additionally, RCD will be completing one technical training, two educational workshops and one tour related to rural roads and home drainage.

Natural Resources

Throughout 2022, the Office of Response, Recovery and Resilience (OR3) led the update to the County's climate strategy through the development of a new Climate Action and Adaptation Plan (CAAP). OR3 has a deeply engaged, comprehensive and collaborative team of County staff, subject matter experts, department directors, and a consultant who supported the completion of the CAAP, which was adopted by the Board of Supervisors on December 13, 2022.

OR3 put together an internal County staff team consisting of 3 work groups (Built Environment, Natural Environment, Community and Economy) comprised of 28 subject matter experts from 10 Departments, our Agricultural Commissioner, Agricultural Extension, Community Development and Infrastructure, County Administrative Office, Health Services, Information Services, Parks, Personnel, Probation and the Sheriff's Department. This team with the additional support of 5 CAAP interns are worked collaboratively to develop the County's CAAP strategies for greenhouse gas reduction.

OR3 secured Rincon Consultants Inc. the same consulting firm that supported both the City of Watsonville and City of Santa Cruz CAAP projects. Rincon supported the County with greenhouse gas inventory, forecast and targets setting, measure development, climate and social vulnerability assessments and strategies, CAAP Report and website development and other outreach and education support. The final CAAP is available at Climate Change (santacruzcounty.us).

The impact of unsanctioned encampments on natural resources is a big concern for all the municipalities including the County. CDI Planning near term projects include working with the Sheriff and Public Works to clean up the homeless encampments on and upstream of the Emeline Campus funded by limited abatement fund, and working with a multi-department task force to address other homeless encampments that impact habitat and water quality.

CDI Planning is also in discussions with the CAO to use the new plastic cup tax to fund, and abatement fund, to further address homeless encampment cleanup on private property. They are working with Environmental Health to further that effort.

The County Zone 5 Master Plan is being updated, scheduled for completion by June 30, 2023. Zone 5 covers, generally, the urban unincorporated areas of Soquel, Live Oak and the Pleasure point areas as well as the City of Capitola. The Zone 5 Master Plan update's scope of work includes condition and capacity assessment of the large stormwater conveyances , 36" or larger in pipe diameter, within the Zone. Evaluation of the maintenance program and recommendation for improvements on that will also be made as part of the Zone 5 Master Plan update. Aside from assessing the condition and capacity of the larger storm water conveyances within the Zone, an additional goal of this Master Plan update is to generate detailed cost estimates for the current and proposed maintenance and Capital Improvement Program (CIP) upgrade of all the large drainage conveyances. That estimates will be utilized to seek additional sustainable funding sources for the improved maintenance and the CIP implementation from the benefiting property owners in the Zone. In addition, impact fee nexus analysis and impact fees calculations will be conducted based on the CIP results to evaluate the funding sources attributed to impervious area generation associated with land development projects in the Zone 5.

The SCWD is expecting completion of CEQA and NEPA compliance and finalization of the Anadromous Salmonid Habitat Conservation Plan with the National Marine Fisheries Service and California Department of Fish and Wildlife.

The CoW undertook a grant effort through the Climate Resilience Challenge through the Bay Area Council Foundation to write a Green Infrastructure and Implementation Plan in 2020-21. Over the next 5 years, the City is seeking funding opportunities to implement identified priority projects that are multi-benefit that combat localized flooding, heat island effects, and improve stormwater quality.

As part of the implementation of the College Lake Project, the PV Water Board of Directors adopted the College Lake Integrated Resources Management Project Adaptive Management Plan 2022 (AMP). The purpose of the AMP is to provide an adaptive management framework, including metrics, triggers, and management actions, to guide operations and maintenance of the Project, and in particular to mitigate impacts to the College Lake ecosystem. Each year PV Water works with experts to conduct surveys of waterfowl and other birds, South-Central Coast Steelhead, California Red Legged Frogs, and botanical species within the College Lake Basin. The results of these surveys, which also include monitoring hydrologic conditions, will be reported annually under the umbrella of the AMP.

Long-term Adaptation Planning Efforts Underway for Implementation in Five or More Years:

Water Supply

SLVWD is planning for several long-term projects that will, once planned and implemented, improve water supply reliability. SLVWD is studying opportunities to incorporate existing Bennet Spring zone into

Felton Heights zone (or construct new pump station and tank served from Felton Heights tank) to allow re-routing of Bennett Spring and Bull Creek raw water to Kirby WTP, eliminating chlorination stations and improving overall water quality, upgrade existing undersized pipelines and deficient facilities identified in the Water Master Plan, consolidation of Big Basin Water Company, consolidation of Bracken Brae and Forest Springs Mutual Water Companies.

The County and SLVWD are investigating the feasibility of consolidating SLVWD's Bear Creek Estates Wastewater System into the County's CSA7 sewer system and future projects. The current Bear Creek Wastewater system is unable to meet the 50% nitrogen reduction set by the California Regional Water Quality Control Board Central Coast (Regional Board) Waste Discharge Requirements and has been out of compliance since 2012. The costs determined in a 2020 feasibility study to upgrade to the system to meet the permit requirements ranged from $67,000 to modify existing trickling filters to $4,135,000 to construct a new collection system and packed bed filter. These costs are to serve the 57 connections, resulted in monthly wastewater rates ranging from approximately $345-$857 per month per connection dependent on the treatment system upgrades selected. Consolidation with the County may facilitate moderating a sudden increase in operations and maintenance costs while reducing nitrogen into the San Lorenzo River.

The SCWD initiated the development of new Santa Cruz Water System Model in coordination with University of Mass, Amherst research group. This new tool for water supply planning work incorporates a sophisticated approach to modeling for climate change allowing for analysis of thousands of scenarios to identify conditions that would particularly stress the water system.

The SCWD is beginning the development of a Water Supply Augmentation Implementation Plan (based upon work of the Water Supply Advisory Committee and Securing Our Water Future Policy) as roadmap to water supply augmentation development and implementation. Water supply augmentation strategies include aquifer storage and recovery and may also include water transfer and exchanges, recycled water (indirect potable reuse or direct potable reuse), and seawater desalination.

Sustainable Groundwater Management Act Compliance

The Sustainable Groundwater Management Act of 2014 (SGMA) went into effect on January 1, 2015 and is a key driver for developing long-range plans for groundwater sustainability. In addition to the work required under SGMA, the individual agencies that depend on groundwater for some or all of their water supply continue to implement projects and management actions.

While the agencies operate independently of one another, there have been some opportunities to strategically pool resources to benefit both basins. The County led a process to develop a regional data management system to help the Groundwater Sustainability Agencies (GSAs) meet the requirements of SGMA, and additionally to collect and organize data collected by all of the water agencies in the County. The system can now be viewed online at https://sccwaterdata.us/#/html/home. There are several advantages to a regional system, it provides a robust storage system for critical historical data, it makes it easier to compare data across agencies, and the portal makes it easy for interested parties to view results.

In order to relieve pressures on the partner agency staff that have, since 2015, been leading the effort to comply with SGMA, the Santa Margarita and Santa Cruz Mid-County Groundwater Agencies partnered on a joint contract with the Regional Water Management Foundation to lead ongoing administrative and planning services for the agencies. A Senior Planner was hired who will work half-time for each agency and oversee the day-to-day implementation of the Groundwater Sustainability Plans (GSPs)

The three major groundwater basins in the County are also working towards sustainability as follows:

- **Santa Margarita Basin** Management of the Santa Margarita Basin is overseen by a JPA consisting of the County of Santa Cruz (County), the Scotts Valley Water District, and the San Lorenzo Valley Water District. This JPA is referred to as the Santa Margarita Groundwater Agency (SMGWA), which is the GSA for the basin. The SMGWA governing board includes two private well representatives, two representatives from each partner agency, and one representative each from the City of Scotts Valley, the City of Santa Cruz, and the Mount Hermon Association. The Santa Margarita Groundwater Basin has experienced a significant historical decline in groundwater levels, particularly in the South part of the Basin near Scotts Valley and has likely also seen reduction in streamflow. While groundwater levels stabilized and are no longer declining, they have not seen any recovery. The analysis shows a clear need to implement at least modest projects in order to maintain sustainability. The GSP for Santa Margarita was adopted by the GSA Board in November 2021 and submitted to DWR in January 2022. DWR has until 2024 to review the GSP[14].

  The SMGWA submitted a funding request totaling $2.6 million in December 2022. The grant, if awarded, will provide the agency with support for some ongoing monitoring and reporting, implementation planning, as well as modeling for project development. Options being explored for this Basin include increased conjunctive use, aquifer storage and recovery with surface water, and developing a strategic direction for maximizing wastewater utilization in the region and for the benefit of Santa Margarita Groundwater Basin.

- **Santa Cruz Mid-County Basin** Management of the Santa Cruz Mid-County Basin is overseen by a Joint Powers Authority (JPA) consisting of the County, City of Santa Cruz, Soquel Creek Water District and Central Water District. This JPA is referred to as the Santa Cruz Mid-County Groundwater Agency (MGA), which is the GSA for the basin. The MGA governing board includes three private well representatives and two representatives from each partner agency. The Mid-County Basin is designated by the State as being in a condition of critical overdraft due primarily to the risk of seawater intrusion on the aquifers. Groundwater extraction has also likely reduced streamflow in parts of the Basin. Despite significant improvement of coastal groundwater levels due to water conservation and pumping redistribution, the groundwater modeling done for the GSP demonstrates that projects will be necessary to achieve sustainability. The Groundwater Sustainability Plan[15] was approved by Department of Water Resources (DWR) in 2021.

Figure 10: Big Check Award Picture for staff and board members from the Mid-County Groundwater Agency and partners.

  Work continues on GSP implementation. In 2022, five stream gages and six monitoring wells were deployed in the Basin to help calibrate understanding of surface water-groundwater interaction. The MGA was awarded a $7.6 million Department of Water Resources grant (Figure 10). The grant has several components including: installation of the Cunnison Lane Groundwater Well, Aquifer Storage and Recovery in the Beltz well field, improvements to the Park Avenue Transmission Main,

[14] www.smgwa.org
[15] www.midcountygroundwater.org

sustainable groundwater management evaluation and planning, and technical development of Groundwater Sustainability Plan (GSP) Project and Management Actions. The objective of the latter component is to conduct a regional water resources optimization study for the Santa Cruz Mid-County area for programs and activities that have been identified in the GSP.

- **Pajaro Valley Subbasin** PV Water's primary planning document is the GSP Alternative, which in its current iteration is named the Basin Management Plan: Groundwater Sustainability Update 2022 (GSU22). The GSU22 builds upon a long history of developing and implementing basin management plans (BMPs) dating back to the first in the early 1990s and was followed by periodic updates since. Following the signing of SGMA into law, the 2014 BMP Update, along with associated agency documents, formed the core of the GSP Alternative submitted and subsequently approved by the California Department of Water Resources (DWR). The GSU22 updated and expanded upon the original GSP Alternative submittal and was the first of a series of required 5-year updates required for the plans. The Pajaro Valley Groundwater Basin must achieve sustainability by 2040 and the GSU22 5-year update defines the sustainable management criteria by which basin condition will be evaluated for the six sustainability indicators to determine progress toward, and achievement of, sustainability.

  The next 5-year update of the GSP Alternative, the Basin Management Plan: Groundwater Sustainability Update 2027 (GSU27) will be initiated in late 2025 and must be submitted to DWR by January 1, 2027. In annual reports, as part of the SGMA annual reporting requirements, and in the GSU27, PV Water will describe progress in implementing the plan, summarize basin conditions, and evaluate basin conditions against interim milestones, minimum thresholds, and measurable objectives. At the time when preparation of the GSU27 begins, PV Water will have fully implemented all near-term projects identified in Phase I of 2014 BMP Update in the GSP Alternative. Operational data for existing and the near-term projects and programs, along with updated hydrologic modeling and climate data, will be evaluated to assess any shortcomings in achieving plan objectives. Based on information available at the time, PV Water will identify additional potential projects and management actions for implementation, and will screen them to identify the most feasible and cost effective options to proceed with to achieve sustainable groundwater resources.

On March 28, 2022, Governor Newsom signed Executive Order N-7-22 furthering the State's drought response. With every county in California declared to be in a state of drought emergency as of Governor Newsom's October 19, 2021 Executive Order, this new order implemented increased drought response actions heading into the summer months. One component of the Order that is particularly impactful to Santa Cruz County, known as Paragraph 9, is the requirement that well permits for large-capacity wells require additional information and, when applicable, approval from the appropriate Groundwater Sustainability Agency. The County developed a form in response to this requirement and the three Groundwater Sustainability Agencies have worked on policies for approval when applications are received.

Water Quality

A collaborative team of County staff including Community Development and Infrastructure, Environmental Health, Office of Response, Recovery & Resilience, and the County Administrative Office, made major advancements in planning and pursing funding for the Boulder Creek Water Quality and Recovery Project (BCWQRP). The BCWQRP would provide a County-maintained centralized sewer system to multiple neighborhoods and businesses in the Boulder Creek area, to address issues and needs within the community that have persisted for over 30 years.

The BCWQRP would include expansion of the County-maintained sewer system serving CSA-7 to include additional areas of Boulder Creek. It would increase the capacity at the existing Boulder Creek treatment plant and upgrade the level of treatment of the collected wastewater so that it can be used as recycled water for irrigation and fire protection. Water quality within the San Lorenzo Watershed, the primary drinking water source for the City of Santa Cruz, is negatively impacted by aging and poorly functioning private onsite wastewater treatment systems (OWTS, i.e. septic systems) in the Boulder Creek area. Many are subject to intermittent failure and/or require pumping and transporting of sewage.

The ability of property and business owners to adequately repair or replace their OWTS is limited by recent disasters, the current economic climate, and increasingly stringent regulatory standards. Federal, state, and local agencies have put policies and regulations in place over the last several decades to address poor water quality linked to septic systems. Although these policies and regulations are intended to aid in environmental protection and public health, they present challenges to areas such as Boulder Creek where soil conditions, parcel sizes, steep slopes, shallow groundwater, and proximity to waterbodies make if difficult and costly to replace a traditional septic system. Water quality issues associated with the poorly functioning OWTS must be addressed for the health and sustainability of the ecosystem and community. If implemented, the BCWQRP would support important beneficial uses of the San Lorenzo River Watershed. It would improve the quality of potable and non-potable water supply for the City of Santa Cruz by reducing pollution from poorly functioning septic systems. It would benefit steelhead habitat by improving water quality and baseflow in Boulder Creek and the San Lorenzo River. Improved water quality would support public health and recreational uses in the watershed.

The BCWQRP would be funded in part through new customers of an expanded CSA-7 assessment district. County staff are pursuing financial assistance to help fund costs of planning and construction, and to minimize the cost to ratepayers. This year, County staff made the following major advancements on this project:

- Completed a study of the feasibility of expanding CSA-7 sanitation district in Boulder Creek to support CZU Fire rebuilding efforts and serve downtown Boulder Creek businesses and other residents currently dependent on septic systems;
- Successfully coordinated with the office of Congresswoman Anna Eshoo to receive preliminary approval in the form of a federal earmark to support early design and planning work on the project; and
- Prepared and submitted a proposal to the Clean Water State Revolving Fund. Administered by the State Water Resources Control Board, this program provides financial assistance for wastewater infrastructure projects that improve water quality.

County staff continue to pursue financial assistance to support the development and implementation of this important project.

The SCWD initiated California Environmental Quality Act (CEQA) compliance for the Graham Hill Water Treatment Plant Facility Improvements Project. This project will allow them to treat more challenging water, for example, water with higher turbidity, to be able to increase the capture and use of water after storm events.

SqCWD is planning for construction of a treatment plant for 1,2,3 -Trichloropropane (TCP) in the Seascape area of Aptos.

PV Water's GSP Alternative, and the subsequent updates, address the water quality degradation sustainability indicator based on monitoring and criteria defined in the Salt and Nutrient Management

Plan. Assimilative capacities were defined for three broadly present constituents of concern in the basin that includes chloride, total dissolved solids, and nitrate. Two management areas were defined to identify areas that were and were not at risk of impacts from seawater intrusion. As part of SGMA annual reports and the 5-year updates, PV Water evaluates observed conditions against the sustainable management criteria, which are minimum thresholds set at 150 mg/L chloride, 1,000 mg/L total dissolved solids, and 45 mg/L of nitrate as NO_3. PV Water is implementing programs to guide efficient nutrient usage in agriculture, as well as a conservation program to minimize nutrient leaching in the groundwater basin. In addition, PV Water is implementing projects that achieve the dual purpose meeting supply needs while protecting the basin from water quality impacts due to seawater intrusion.

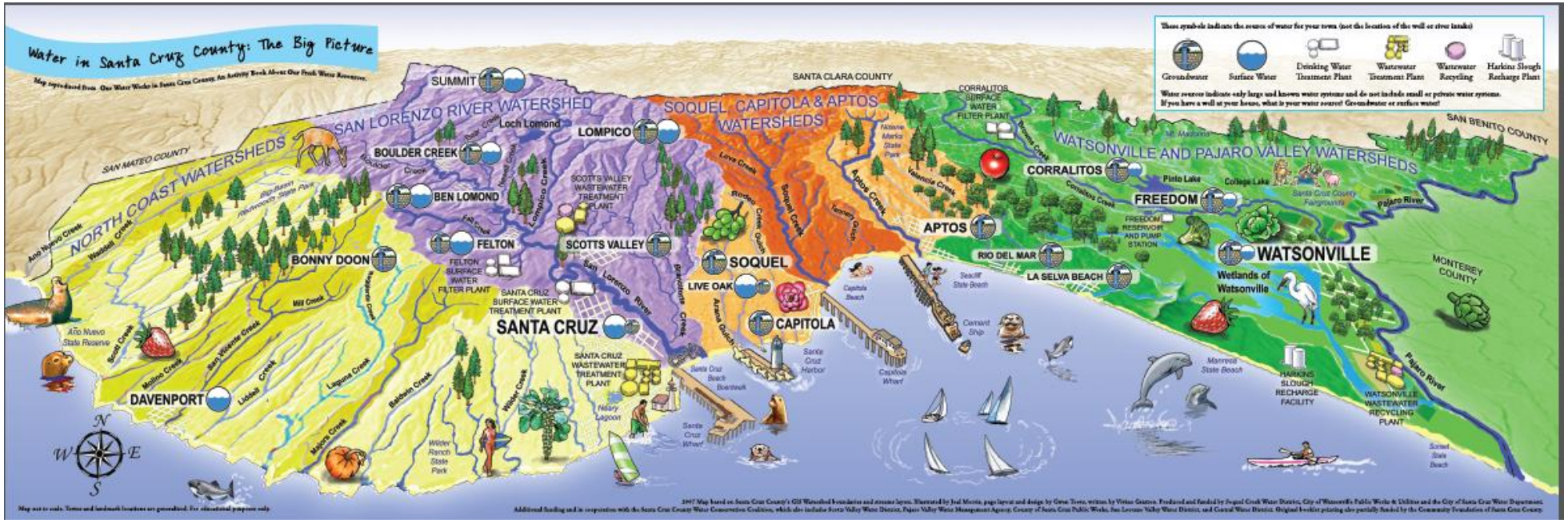
If PV Water determines that undesirable results are occurring and existing programs and projects will not eliminate them prior to 2040, PV Water will consider new projects and management actions to reduce concentrations to acceptable conditions. In addition, if new or existing constituents of concern are determined to be broadly present and at risk of affecting beneficial users at a basin-wide scale, PV Water will consider establishing sustainable management criteria and implementing programs to mitigate impacts to beneficial users.

Natural Resources

The SCWD is planning for improvements to the Tait Street and Felton Diversions on the San Lorenzo River, as well as the Majors Creek Diversion, to address sediment transport, fish screening, and/or fish bypass as described in the Anadromous Salmonid Habitat Conservation Plan.

As part of SGMA, PV Water's GSP Alternative must consider significant and undesirable impacts to all beneficial uses, including groundwater dependent ecosystems (GDEs). In the GSU22, PV Water evaluated depletion of interconnected surface water of which GDEs are reliant. It was determined that presently, there is minimal connection between surface water and groundwater and that there is no potential for significant and unreasonable depletions of interconnected surface water from pumping groundwater in the principal aquifer. However, PV Water aims to increase the frequency and duration of hydraulic connectivity between groundwater and surface water where reasonably achievable. PV Water through annual reports and future 5-year updates will evaluate basin conditions and assess progress toward achieving the objective of increasing more frequent and longer hydraulic connections. PV Water may identify and implement new projects or programs to support this goal.

Attachment 1: Big Picture of Water Sources in Santa Cruz County



Attachment 2: Water Use in Santa Cruz County, 2022 (Data for smaller systems is from 2021)

Water Supplier	Connections	Population	Water Use acre-feet/yr	Ground water	Surface Water	Recycled Water	Imported from Outside the County
Santa Cruz City Water Dept.	24,644	87,957~	9,579	5.0%	93.0%	2%	
Watsonville City Water Service	14,610	65,231	6,820	100.0%			
Soquel Creek Water District	14,492	40,659	3,031	100.0%			
San Lorenzo Valley Water District	7,900	23,700	1,746	42.0%	58.0%		
Scotts Valley Water District	4,013	10,789	1,231	86.0%		14%	
Central Water District	827	2,706	397	100.0%			
Big Basin Water Company*	482	1,120	129	100.0%			
Mount Hermon Association	494	2,850	39	100.0%			
Forest Lakes Mutual Water Company	326	1,067	152	100.0%			
Smaller Water Systems (5-199 conn.)	2,544	7,994	916	80.0%	10.0%		10%
Individual Users*	8,000	21,000	2,350	95.0%	5.0%		
Pajaro Agriculture (SC Co only)**†			24,250	93.0%	1.0%	6%	
Mid- & North-County Agriculture*			2,400	90.0%	10.0%		
Totals	**78,332**	**177,116**	**53,040**	**76%**	**20%**	**3%**	**0.2%**
Summary by Water Source (acre-feet/year)				**40,517**	**10,613**	**1,819**	**92**
Summary of Non-Agricultural Use (acre-feet/year)			**26,390**	**15,804**	**10,130**	**364**	**92**

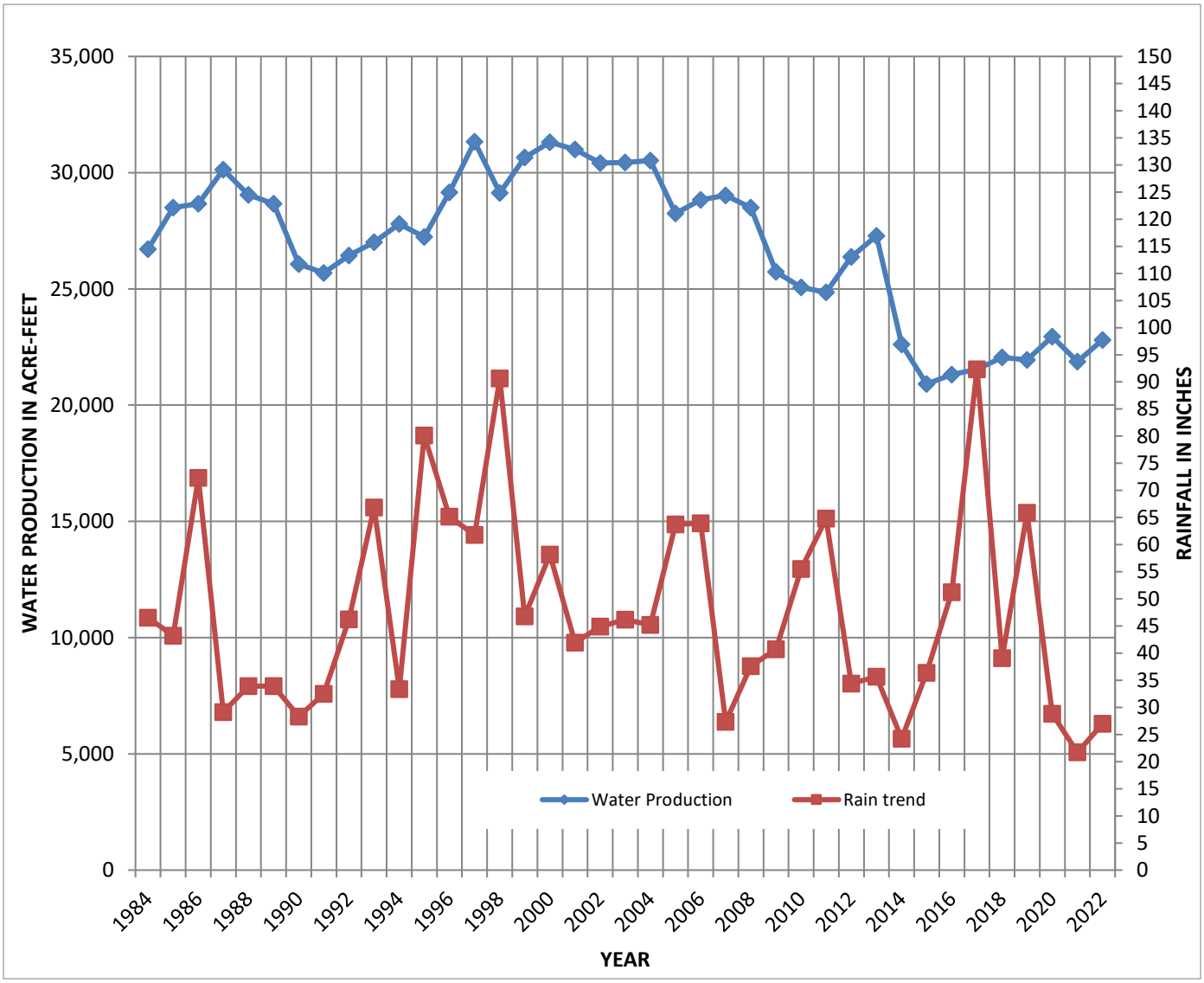
*Values are Estimates

** Includes a small number of water systems

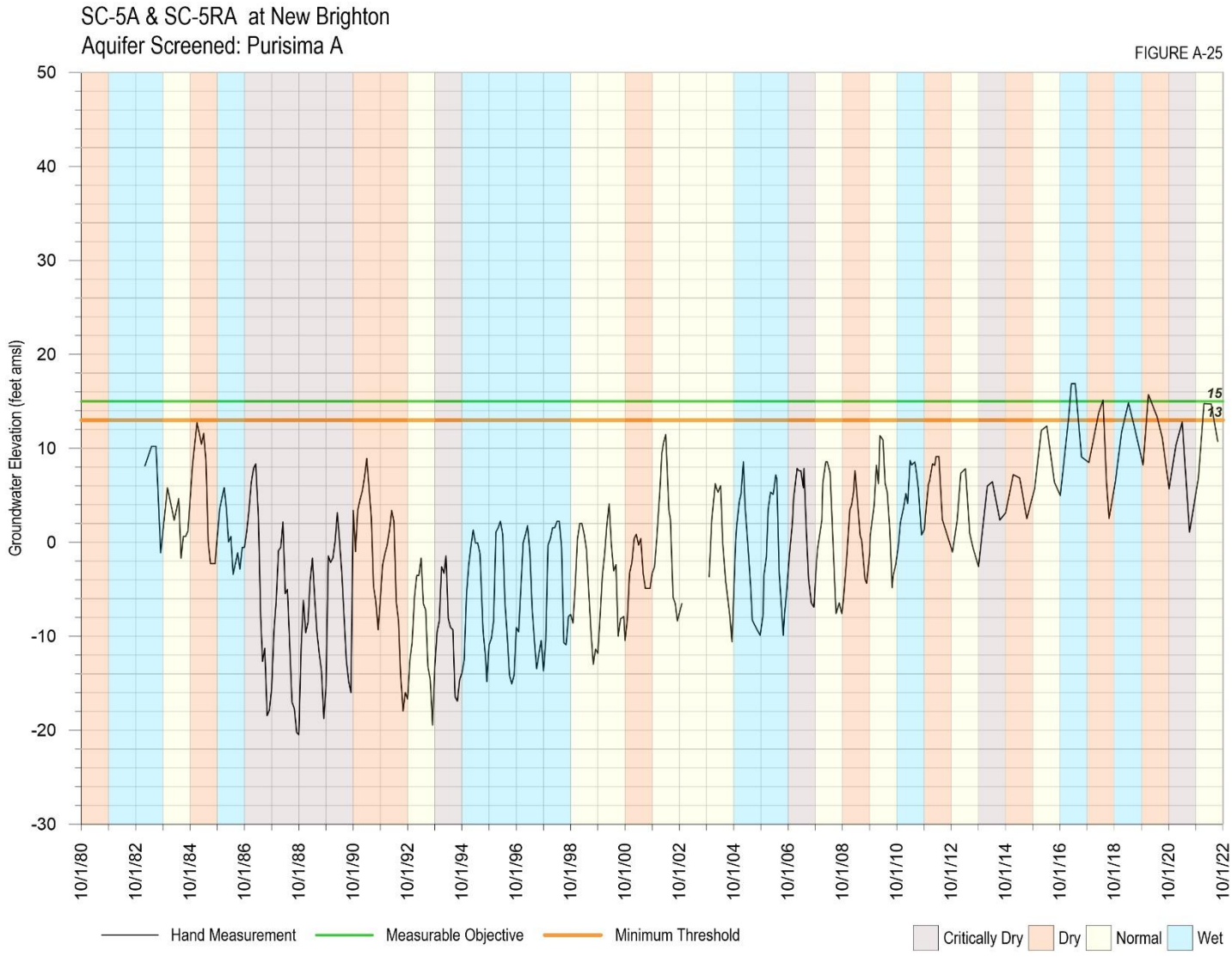
† Recycled water source is the City of Watsonville

~Reflects reduced population due to UCSC pandemic-related remote learning

Attachment 3: Water Use Relative to Rainfall for all Major Municipal Suppliers, Combined, 1984-2022



Attachment 4: Coastal Groundwater Levels, Mid-County Basin, New Brighton area



Attachment 5: Common Acronyms

AF	**Acre Foot**
AFY	**Acre Foot per Year**
BMP	**Best Management Practices**
CDI	**Community Development and Infrastructure Department**
CEQA	**California Environmental Quality Act**
CWD	**Central Water District**
DMS	**Data Management System**
DPW	**Santa Cruz County Department of Public Works**
DWR	**Department of Water Resources**
EIR	**Environmental Impact Report**
GSA	**Groundwater Sustainability Agency**
GSP	**Groundwater Sustainability Plan**
IRWM	**Integrated Regional Water Management**
JPA	**Joint Powers Agreement**
LAFCO	**Local Agency Formation Commission**
LID	**Low Impact Development**
MGA	**Santa Cruz Mid-County Groundwater Agency**
MGD	**Million Gallons per Day**
MGY	**Million Gallons per Year**
O&M	**Operations and Maintenance**
OR3	**Office of Response, Recovery, and Resiliency**
PPB	**Parts Per Billion**
PV Water	**Pajaro Valley Water Management Agency**
RCD	**Resource Conservation District of Santa Cruz County**
RWMF	**Regional Water Management Foundation**
SCWD	**City of Santa Cruz Water Department**
SGMA	**Sustainable Groundwater Management Act**
SLVWD	**San Lorenzo Valley Water District**
SMGWA	**Santa Margarita Groundwater Agency**
SqCWD	**Soquel Creek Water District**
SVWD	**Scotts Valley Water District**

Attachment 6: Online Resources

County Water Resources Program	http://scceh.com/Home/Programs/WaterResources.aspx
County Water Quality Map	http://scceh.com/waterquality.aspx
County Steelhead Monitoring Program	http://scceh.com/steelhead.aspx
Santa Cruz County Office of Response, Recovery, and Resiliency	https://www.co.santa-cruz.ca.us/OR3.aspx
Central Water District	https://sites.google.com/view/centralwaterdistrict
City of Santa Cruz Water Department	https://www.cityofsantacruz.com/government/city-departments/water
City of Watsonville Public Works and Utilities	https://www.cityofwatsonville.org/590/Public-Works-Utilities
San Lorenzo Valley Water District (SLVWD)	https://www.slvwd.com/
Scotts Valley Water District (SVWD)	https://www.svwd.org/
Soquel Creek Water District (SqCWD)	https://www.soquelcreekwater.org/
Pajaro Valley Water Management Agency (PV Water)	https://www.pvwater.org/
Santa Cruz Mid-County Groundwater Agency (MGA)	https://www.midcountygroundwater.org/
Santa Margarita Groundwater Agency (SMGWA)	https://smgwa.org/
Resource Conservation District of Santa Cruz County (RCD)	http://www.rcdsantacruz.org/
Santa Cruz Integrated Regional Water Management Plan (IRWM)	http://www.santacruzirwmp.org/
Water Conservation Coalition of Santa Cruz County	https://watersavingtips.org/