

CITY OF SANTA CRUZ
City Hall
809 Center Street
Santa Cruz, California 95060



WATER COMMISSION

Regular Meeting

March 6, 2023

7:00 P.M. GENERAL BUSINESS AND MATTERS OF PUBLIC INTEREST, COUNCIL CHAMBERS

*Denotes written materials included in packet.

The City of Santa Cruz does not discriminate against persons with disabilities. Out of consideration for people with chemical sensitivities, please attend the meeting fragrance free. Upon request, the agenda can be provided in a format to accommodate special needs. Additionally, if you wish to attend this public meeting and will require assistance such as an interpreter for American Sign Language, Spanish, or other special equipment, please call Water Administration at 831-420-5200 at least five days in advance so that arrangements can be made. The Cal-Relay system number: 1-800-735-2922.

APPEALS: Any person who believes that a final action of this advisory body has been taken in error may appeal that decision to the City Council. Appeals must be in writing, setting forth the nature of the action and the basis upon which the action is considered to be in error, and addressed to the City Council in care of the City Clerk.

Other - Appeals must be received by the City Clerk within ten (10) calendar days following the date of the action from which such appeal is being taken. An appeal must be accompanied by a fifty dollar (\$50) filing fee.

Call to Order

Roll Call

Statements of Disqualification - Section 607 of the City Charter states that...All members present at any meeting must vote unless disqualified, in which case the disqualification shall be publicly declared and a record thereof made. The City of Santa Cruz has adopted a Conflict of Interest Code, and Section 8 of that Code states that no person shall make or participate in a governmental decision which he or she knows or has reason to know will have a reasonably foreseeable material financial effect distinguishable from its effect on the public generally.

Oral Communications

Announcements

Consent Agenda (Pages 1.1 - 3.3) Items on the consent agenda are considered to be routine in nature and will be acted upon in one motion. Specific items may be removed by members of the advisory body or public for separate consideration and discussion. Routine items that will be found on the consent agenda are City Council Items Affecting Water, Water Commission Minutes, Information Items, Documents for Future Meetings, and Items initiated by members for Future Agendas. If one of these categories is not listed on the Consent Agenda then those items are not available for action.

1. City Council Actions Affecting the Water Department (Pages 1.1 - 1.2)
Accept the City Council actions affecting the Water Department.
2. Water Commission Minutes from February 6, 2023 (Pages 2.1 - 2.5)
Approve the February 6, 2023 Water Commission Minutes.
3. 2nd Quarterly FY 2023 Financial Report (Pages 3.1 - 3.3)
Accept the 2nd Quarterly FY 2023 Financial Report.

Items Removed from the Consent Agenda

General Business (Pages 4.1 - 5.2) Any document related to an agenda item for the General Business of this meeting distributed to the Water Commission less than 72 hours before this meeting is available for inspection at the Water Administration Office, 212 Locust Street, Suite A, Santa Cruz, California. These documents will also be available for review at the Water Commission meeting with the display copy at the rear of the Council Chambers.

4. Updated Water Demand Forecast (Pages 4.1 - 4.38)
Receive information about revised housing assumptions that have been integrated into an updated 2020-2045 Long Term Water Demand Forecast.
5. Update on the 2023 San Lorenzo River and North Coast Watersheds Sanitary Survey (Pages 5.1 - 5.2)
Receive information about work on the 2023 San Lorenzo River and North Coast Watersheds Sanitary Survey and provide feedback to staff.

Subcommittee/Advisory Body Oral Reports

6. Santa Cruz Mid-County Groundwater Agency

7. Santa Margarita Groundwater Agency

Director's Oral Report

Information Items (Pages 8.1 - 8.11)

Adjournment

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WATER COMMISSION INFORMATION REPORT

DATE: 03/06/2023

AGENDA OF: 03/06/2023
TO: Water Commission
FROM: Rosemary Menard, Water Director
SUBJECT: City Council Actions Affecting the Water Department

RECOMMENDATION: That the Water Commission accept the City Council actions affecting the Water Department.

BACKGROUND/DISCUSSION:

February 14, 2023

Resolution to Apply for U.S. Department of the Interior Bureau of Reclamation Funds (WT)

Resolution No. NS-30,104 was adopted authorizing the submittal, acceptance, and appropriation of a U.S. Department of the Interior Bureau of Reclamation grant under the WaterSMART Water Recycling and Desalination Planning funding opportunity for FY 2023.

Award of Professional Services Agreement to Black & Veatch for the Water Quality and Corrosion Study (WT)

Motion **carried** authorizing the City Manager to execute an agreement in a form to be approved by the City Attorney with Black & Veatch (Rancho Cordova, CA) for Engineering Services for a Water Quality and Corrosion Study and to authorize the Water Director to execute future contract amendments within the approved budget.

Groundwater Modeling – Award of Professional Services Agreement to Errol L. Montgomery & Associates, Inc. (WT)

Motion **carried** authorizing the City Manager to execute a contract agreement in a form to be approved by the City Attorney with Errol L. Montgomery & Associates, Inc. (Oakland, CA) for Engineering Services for Groundwater Modeling and to authorize the Water Director to execute future contract amendments within the approved budget.

February 28, 2023

Branciforte Creek Bank Stabilization – Professional Services Agreement (WT)

Motion carried to:

- Accept the proposal of Cal Engineering & Geology (Walnut Creek, CA) for design, permitting, and construction-support services of the Branciforte Streambank Repair Project in the amount of \$111,310, and to authorize the City Manager to execute an agreement in a form to be approved by the City Attorney; and
- Authorize the Water Director to approve change orders with Cal Engineering & Geology in a form to be approved by the City Attorney for amounts that are within the approved project budget.

Rodriguez Street Water Main Replacement Project - Notice of Completion (WT)

Motion **carried** to accept the work of Anderson Pacific Engineering Construction, Inc. (Santa Clara, CA) as complete per the plans and specifications, authorize the filing of a Notice of Completion for the Rodriguez Street Water Main Replacement Project, and further authorize the Water Director to sign the Notice of Completion as the Owner's Authorized Agent.

PROPOSED MOTION: Accept the City Council actions affecting the Water Department.

ATTACHMENTS: None.



Water Department

Water Commission
7:00 p.m. – February 6, 2023
Zoom Teleconference

Summary of a Water Commission Meeting

Call to Order: 7:03 PM

Roll Call

Present: J. Burks (via Zoom), T. Burns (Via Zoom), M. Duncan-Merrell (via Zoom) (arrived at 7:10 p.m), D. Engfer (via Zoom), G. Roffe (via Zoom) S. Ryan (via Zoom)

Absent: A. Páramo, with notification

Staff: R. Menard, Water Director (via Zoom); D. Baum, Water Chief Financial Officer (via Zoom); H. Cagliero, Adiministrative Assistant III (via Zoom); C. Coburn, Deputy Water Director/Operations Manager (via Zoom); K. Crossley, Senior Professional Engineer (via Zoom); K. Fitzgerald, Management Analyst (via Zoom); M. Kaping, Principal Management Analyst (via Zoom); H. Luckenbach, Deputy Water Director/Engineering Manager (via Zoom); B. Pink, Environmental Programs Analyst (via Zoom); Sarah Perez, Principal Planner (via Zoom); K. Petersen, Customer Service Manager (via Zoom);

Others: Two members of the public (via Zoom)

1. Election of Officers

Chair Ryan opened nominations for Chair and Vice Chair of the Water Commission.

Commissioner Engfer nominated Commissioner Burks for Chair.

Commissioner Burks nominated Commissioner Engfer for Vice Chair.

Commissioner Burns moved to close nominations. Commissioner Roffe seconded.

Commissioner Ryan called the vote for Chair of the Water Commission for 2023.

VOICE VOTE: MOTION CARRIED

AYES: All

NOES: None

ABSTAIN: None

Chair Burks called the vote for Commissioner Engfer as Vice Chair of the Water Commission for 2023.

VOICE VOTE: MOTION CARRIED
AYES: All
NOES: None
ABSTAIN: None

Presentation: None.

Statements of Disqualification: None.

Oral Communications: None.

Announcements:

Chair Burks announced and welcomed Maggie Duncan-Merrell as a new member of the Water Commission.

Consent Agenda:

Item 4 was pulled for further discussion.

2. City Council Items Affecting the Water Department
3. Water Commission Minutes From December 5, 2022
5. Working Draft, 2023 Water Commission Work Plan

Commissioner Burks suggested that the following changes be made to the December minutes:

- On page 3.3, update statement “Santa Cruz uses 35 gallons per household” to “be 35 gallons per person per day”.
- On page 3.5, change the question that begins “Why is the department continuing dishwasher, toilet rebates, and etc” to “Why is the department continuing dishwater and toilet rebates and not considering outdoor conservation programs to mitigate the financial burden of water rates and to fix irrigation leaks?” and append the second sentence in the the response bullet starting with “We’re not just continuing with dishwasher rates”to include feedback with benefit of outdoor conservation programs received by staff.

Commissioner Burns moved the Consent Agenda as amended. Commissioner Engfer seconded.

VOICE VOTE: MOTION CARRIED
AYES: All
NOES: None

DISQUALIFIED: None

Items removed from the Consent Agenda

4. Request for Water Service - APN 068-121-27, Branciforte Drive, Santa Cruz CA 95065

Is language requiring one home on this lot unduly restrictive, and is this enforceable?

- Most restrictions based on County parcels that have some kind of associated zoning that dictates how the parcel can be developed.

No public comments were received.

Vice Chair Engfer made a motion to support staff's recommendation on item 4 with the addition of clear language around City reimbursement for its work related to this item and nonavailability of alternate water sources. Commissioner Ryan seconded.

VOICE VOTE: MOTION CARRIED
AYES: All
NOES: None
DISQUALIFIED: None

General Business

6. Initial Water Supply Outlook for 2023

R. Menard introduced Ben Pink for the discussion of the Initial Water Supply Outlook for 2023.

If further rainfall is not received this year, would there be potential for restrictions and is there concern that we would begin using the lake sooner than expected, or is there enough base flow at this point to sustain us throughout the summer comfortably?

- The lake is used throughout the year, it is more a matter of when than if it will be used as a resource. If we use 2017 as a model, which was when we last saw a similar deluge in January and February, the amount of saturation in the watershed area could contribute a base flow robust enough that the lake may not be used until a month or two later than normal even if no further rainfall is received.

No public comments were received.

7. Presentation of 2023 Capital Investment Projects

R. Menard introduced Kevin Crossley and Heidi Luckenbach for the presentation and discussion of the 2023 Capital Investment Projects.

Kevin Crossley presented the Scotts Valley Intertie project.

Leah Van Der Maaten presented the Aquifer Storage and Recovery project.

How far forward will testing for this alternative proceed before it is known which of these projects will be part of the long-term plan?

- Thus far, there have been no fatal flaws identified with this project,, but the testing to date has highlighted the importance of understanding the correlation of the various projects occurring within the Mid-County Groundwater basin (MCGB) including the Water Quality and Corrosion Study, Beltz 12 Ammonia Treatment Study, Soquel Dr. Main Replacement, as well as non-City projects by Soquel Creek Water District (SqCWD) and the Private Well Monitoring Program as these relate to both ASR and water transfers and exchanges.

Pilot and demonstration studies have revealed a variety of things that we will need to fully understand before fully implementing ASR in the MCGB and these studies have prompted us to do additional work. With respect to the Beltz 12 Ammonia Treatment Study, we are not only studying this but are also currently under contract to implement an ammonia treatment system at Beltz 12.

While the MCGB ASR project will not fill the entire supply gap, along with the work Kennedy Jenks is doing under the Water Supply Augmentation Plan, it will help us understand where that next increment will be going. Whether that increment is in the MCGB, partnering with SqCWD, or in the Santa Margarita Groundwater basin remains to be seen.

Kyle Petersen presented the Meter Replacement project.

Taylor Kihoi presented the U4 Tank Replacement project.

Kevin Crossley presented information on the recent storms and their impacts to the water system and its facilities.

How do these storm-related projects described impact the five year rate study? Has responding to storm related projects caused other projects to run behind schedule?

- These projects have caused us to be a little behind, however, the projects reviewed in this presentation are factored into that five-year period that the rates were built on. There hasn't been any major resequencing or delays.

Also, it is worth noting that major progress on implementing two major projects has been made during the last two years - the Newell Creek Dam Inlet/Outlet Project will be wrapping up in May and two of the three concrete tanks have been constructed as part of the Concrete Tanks Replacement Project at the Graham Hill Water Treatment Plant.

Does the River Bank Filtration project provide a supply benefit?

- Under certain conditions, this project could provide a secondary supply benefit. The water quality improvements through the river bank filtration process are one of the main reasons this is being investigated. During winter storms it is often feasible to access water from the Tait wellfield even though the river is too turbid to treat. For example, during January of this year, the river wells were isolated from the river and staff continued to operate them even though the river was not available due to storm impacts. In cases such as this, river bank filtration would represent a beneficial secondary or supplemental source of water supply if the river is having poor water quality conditions and would allow lake water to be reserved for later use, which is important if the lake is filling or partially full.

Are there security considerations being made around changes we are making to the CMMS and SCADA systems?

- The CMMS project is a City-wide collaboration between Water, Public Works, and IT and we are partnering with the IT Department in a very effective way on cyber security issues. Even so, cyber security is always an important focus in project planning and, in addition, overall the City is making investments in technology to improve cyber security. A recent example is the City's recent implementation of Microsoft 365 and its migration of its email to a .gov extension, both of which provide additional security advantages.

No public comments were received.

Subcommittee/Advisory Body Oral Reports

8. Santa Cruz Mid-County Groundwater Agency (MGA)

The City of Santa Cruz Mayor Fred Keeley appointed himself and reappointed David Baskin as City representatives on the MGA for 2023- Commissioner Doug Engfer was appointed as alternate City representative. The MGA met on December 15th and the agenda was mostly administrative. The next meeting will take place on March 15, 2023 and will be held in-person. The agenda will include an update on the SGMA grant management as well preliminary budget information for next fiscal year. The updated GSP will need to be submitted by 2025.

9. Santa Margarita Groundwater Agency (SMGWA)

The City of Santa Cruz Mayor Fred Keeley reappointed Commissioner Doug Engfer as the City's representative on the SMGWA. The SMGWA met on January 27, 2023 and discussed the SGMA grant proposal and elements of the projects and programs being proposed for funding. The next meeting will be held on March 23, 2023.

Director's Oral Report:

R. Menard announced that as of March 6, 2023 all advisory body meetings will be held in-person at Council Chambers.

Information Items: None.

Adjournment: The meeting was adjourned at 8:45 PM

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WATER COMMISSION INFORMATION REPORT

DATE: 3/2/2023

AGENDA OF: 3/06/2023

TO: Water Commission

FROM: David Baum, Chief Financial Officer
Malissa Kaping, Principal Management Analyst

SUBJECT: FY 2023 2nd Quarter Unaudited Financial Report

RECOMMENDATION: That the Water Commission accept the FY 2023 2nd Quarter Unaudited Financial Report.

BACKGROUND: On June 6, 2016, the Water Commission approved the Water Department's Long-Range Financial Plan (LRFP) which created a framework to ensure financial stability and maintain the credit rating needed to debt finance major capital investments planned for the utility. An updated LRFP was approved by the Water Commission on August 23, 2021. The LRFP includes financial targets for debt service coverage ratio (1.5x), a combined 180 days cash on hand, \$3.1 million in an Emergency Reserve, and a \$10 million Rate Stabilization Reserve.

The data in the Quarterly Financial Report provides a snapshot in time and represents the time period of July 1, 2022 through December 31, 2022. The City operates on a fiscal year basis, which closes on June 30th.

In 2019, an Ad Hoc Subcommittee of the Water Commission and Water Department staff worked together to update the quarterly financial report. The purpose of the update was to provide a clearer picture of financial trends and results to the Water Commission. By conveying better information, we are able to show successes, identify problem areas and provide information to demonstrate that appropriate responses are being implemented. With each successive financial report, Department staff have updated the report to reflect Commissioners' comments and further refine the information presented.

DISCUSSION: The attached financial report presents the Department's unaudited fiscal outlook through the second quarter of FY 2023 and reflects the transactions posted during the time period of July 1, 2022 through December 31, 2022. Page 1 of the attached Financial Report is focused on the Operating budget and Page 2 summarizes the Capital budget. Noteworthy items are discussed on the following pages.

Operating Revenues

Water sales are recovering from the impact of the COVID-19 pandemic and drought and are 4% above budgeted amounts. The 4% revenue growth occurred due to the planned 6.9% increase in water rates on July 1 and a 5% increase in consumption. Residential consumption was up 3% while commercial consumption has increased by 22%. UCSC and Irrigation revenue are down 8% and 23%, respectively, but, together, represent less than 10% of total consumption.

In FY 2023, the Department received \$490,020 from a Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant and from Cal Office of Emergency Services for the Brackney Landslide Pipeline Risk Reduction project to address the 2017 winter storm damage.

In the period FY 2021 to February 28, 2023, Water Department staff submitted 43 Drinking Water State Revolving Fund (SRF) disbursement claims to the State Water Resources Control Board (SWRCB) for the Newell Creek Inlet/Outlet Pipeline Replacement and Concrete Tanks Replacement projects totaling \$100.4 million. Through February 24, 2023, \$90.5 million was received and \$9.9 million is owed to SCWD.

A \$50 million line of credit was obtained on June 15, 2021 and will supplement cash flow while SCWD awaits reimbursement from SRF. \$21 million was drawn from the line of credit. \$5 million was repaid on December 1, 2022. \$16 million remains outstanding.

On July 28, 2021, staff submitted a Letter of Interest (LOI) to the United States Environmental Protection Agency (EPA) to solicit a Water Infrastructure Finance and Innovation Act (WIFIA) Loan. If approved, the Loan would provide approximately \$164 million for the Graham Hill Water Treatment Plant improvements, Newell Creek Pipeline Replacement, University Tank 4 Replacement, and Aquifer Storage and Recovery projects. This loan program has produced loans for other water agencies with more favorable terms than are available in traditional capital markets. The next step is a loan application, which is expected to be approved in March 2023.

The expected reimbursements, line of credit and grants described above will help improve cash flow and cash reserves contemplated by the LRFP.

Operating Expenses

Operating expenses are trending 27% below the Adopted Budget. Personnel costs are down 18% due primarily to the 10-14 vacant positions during the first six months. The vacancy rate is approximately 12% of budgeted positions; the budget assumes no vacancies.

Significant operating expenses trending lower than the budget are as follows:

- Maintenance Water Systems is under budget by \$308,000. Funding in this account is primarily spent on water quality monitoring and regulatory compliance, such as the Endangered Species Act. The total budget of \$1,602,000 is expected to be spent during the fiscal year.

- Legal, training, printing/binding and postage are under budget by \$149,000. The ongoing reduction of outside services is attributed to the drought-related reduction in revenues, which reduces funds available for third-party services.
- Other professional services are trending \$253,000 below budget. This category includes the Badger meter reading software which is the largest encumbrance for the year at \$158,000 and is paid monthly. Other expenses pertain to landscape management, communications and graphics, emergency programmer analyst, water program advisor and laboratory service vendors. The largest expense paid in this category totaled \$172,000 for JV Lucas Paving to complete Distribution projects. The next largest expense was paid to Clean Lakes Inc. in the amount of \$51,000 for algaecide chemical treatment of Loch Lomond.
- Electricity costs for the period was \$686,000, which is under budget by \$126,000 compared to the Adopted Budget. Electricity is trending higher by less than 1 percent, when compared to the same period last year. As improvements are designed for the water system, we will comply with the City's Climate Action Plan, as electricity is currently a large producer of green house gases in the production of drinking water.
- Purchases for water inventory-materials is trending over budget by approximately \$150,000 due to increase in leak repair and inflation induced by supply chain shortages.

These highlighted operating expenses are paid from the Services, Supplies and Other line items.

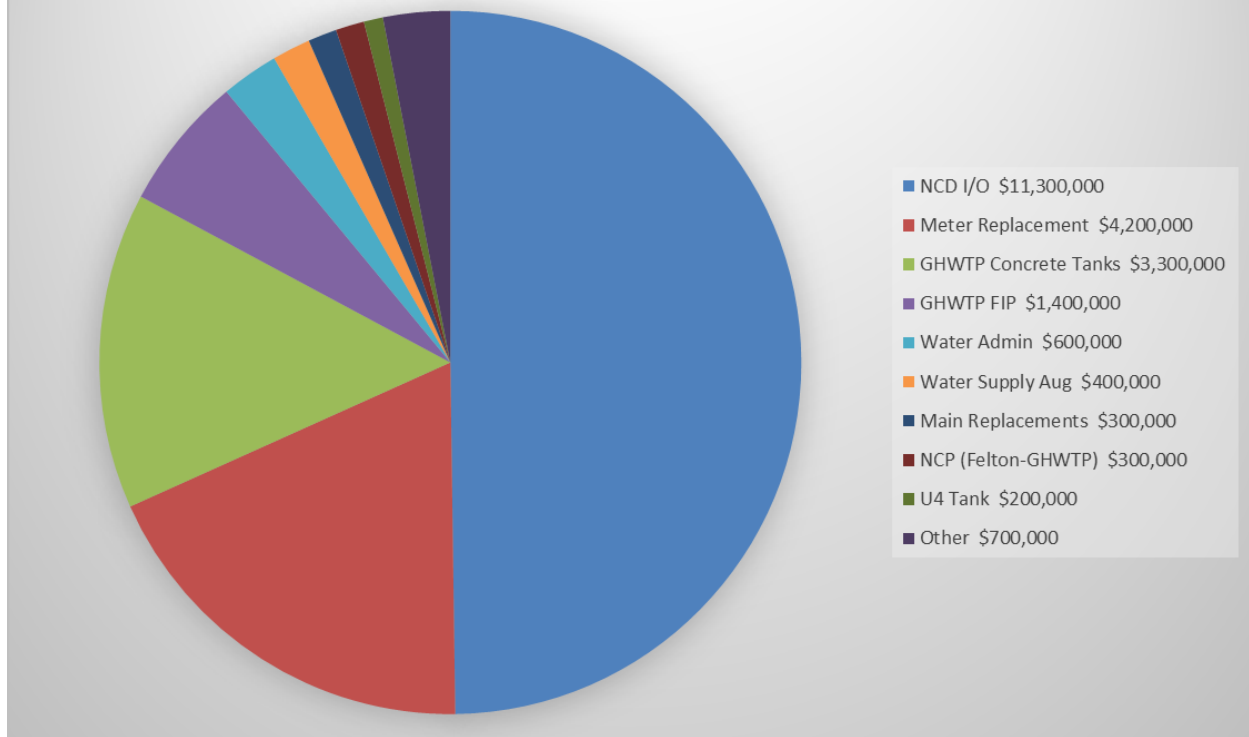
CIP Highlights

Slightly over \$22.7 million was spent on CIP projects from 7/1/22 through 12/31/22. This is nearly a 40% increase over spending from the same period of FY 2022. This increase in spending was anticipated and remains below the current budget appropriations of \$96.6 million. The 12/31/22 estimate for total FY 2023 spending is now \$61.1 million with remaining budget appropriations to reduce the FY 2024 recommended budget.

Top CIP Spending

Nearly half of the FY 2023 spend was for the Newell Creek Dam Inlet/Outlet (NCD I/O) project which reached 90% completion on construction. The next largest spend was for the Meter Replacement Project which is also nearing completion of the construction phase of the project (to have Utility Partners of America, the City's meter installation contractor, replace all old 5/8" – 2" meters). The next largest project under construction is the GHWTP Concrete Tanks Replacement which spent \$3.3 million and is approximately 43% complete with construction.

**CIP Spending FY23 Thru 12/31/22
Top Ten (Total: \$22.7M)**



The \$700,000 spent on “Other” projects is the total of the 24 other projects shown on the financial report that had spending in FY 2023. The largest spent in this category includes ASR projects, the Brackney Landslide Area Pipeline project, CMMS Software Replacement, Tait Diversion Retrofit project, and the Beltz 12 Ammonia Removal project.

One new project, Beltz Water Treatment Plant Upgrades, was added and approved for initial funding of \$500,000 by the City Council on 12/13/22. The total project estimate for this project through construction is nearly \$17.7 million and will upgrade the aging Beltz groundwater treatment plant to improve reliability. The project will also accommodate ASR treatment objectives. This project is currently scheduled for completion in 2027.

Grant revenue received

Work on Phase 1 of the Brackney Landslide Area Pipeline Risk Reduction was completed in December and \$490,020 was received during the 2nd quarter of FY 2023. In total, the grant funded 67%, or \$1.2 million, of Phase 1 expenses. FEMA is in-process of reviewing Phase 1 submittals and may provide funding for up to 75% of Phase 2 costs.

Other grants include:

- A \$7,600,000 award from the California Department of Water Resources to the Santa Cruz Mid-County Groundwater Agency (MGA) for development of projects and management actions included in the MGA Groundwater Sustainability Plan (GSP).

Direct awards to the City (although reimbursed through the MGA) include approximately \$950,000 for groundwater modeling and approximately \$1,600,000 for advancement of ASR in the Santa Cruz Mid-County Basin.

- A \$9,500,000 award from the California Department of Water Resources benefitting the City and Scotts Valley Water District (SVWD) for an intertie between the two agencies, and a new production well for the SVWD.

FISCAL IMPACT: None.

PROPOSED MOTION: Motion to accept the FY 2023 2nd Quarter Financial Report.

ATTACHMENTS:

1. Santa Cruz Water Department Financial Report

SANTA CRUZ WATER DEPARTMENT FINANCIAL REPORT

Fiscal Year 2022-23 through December 31, 2022

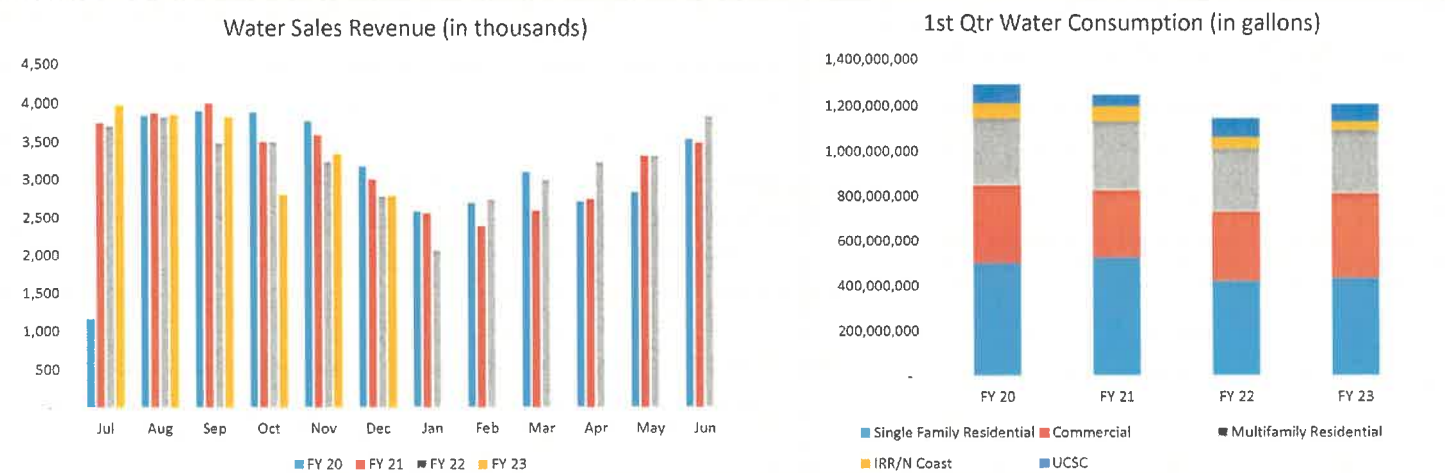
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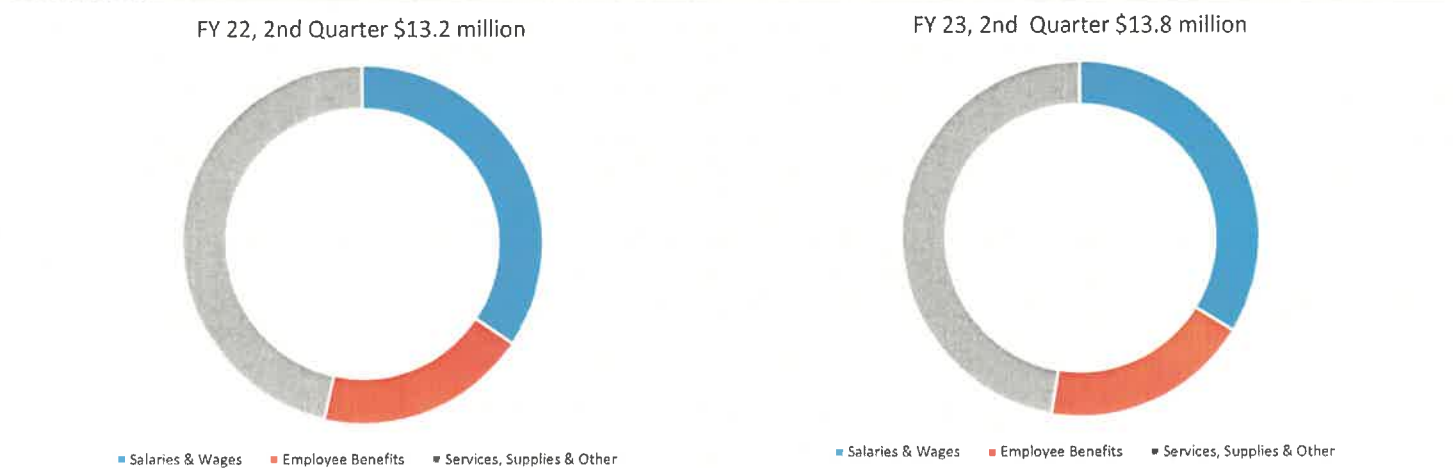
Financial Summary

	FY 2023 Adjusted Budget	YTD Budget	Actual	Actual vs. YTD Budget	
				Variance \$ +/-	Variance % +/-
Operating Revenues					
Water Sales	39,793,705	19,896,853	20,622,753	725,901	4%
Other Charges for Services	1,219,800	609,900	609,900	-	0%
Other Revenues	575,883	287,942	351,253	63,312	22%
Grants	60,664	30,332	490,020	459,688	-
Investment Earnings	6,600	3,300	3,300	-	-
Total Operating Revenues	41,656,652	20,828,326	22,077,226	1,248,900	6%
Operating Expenses					
Salaries & Wages	11,220,210	5,610,105	4,656,692	(953,413)	(17%)
Employee Benefits	6,471,622	3,235,811	2,591,069	(644,742)	(20%)
Services, Supplies & Other	16,773,050	8,386,525	6,439,928	(1,946,597)	(23%)
Capital Outlay	570,523	285,262	74,048	(211,214)	(74%)
Debt Service - Principal & Interest	5,090,698	2,545,349	822,210	(1,723,139)	(68%)
Total Operating Expenses	40,126,103	20,063,052	14,583,947	(5,479,105)	(27%)
Net Operating Revenue (Loss)	1,530,548	765,274	7,493,279	-	-
Debt Service Coverage (Target >= 1.50x)	1.30x	1.30x	10.11x		

Revenues



Expenses



Cash

Fund Balances	YTD Balance	Year End Target Balance
711 - Enterprise Operations	314,503	8,638,867
713 - Rate Stabilization	11,732,485	10,000,000
715 - System Development Charges	6,324,259	N/A
716 - 90 Day Operating Reserve	8,231,575	8,638,867
717 - Emergency Reserve	3,018,880	3,000,000
718 - Mount Hermon June Beetle Endowment	145,870	144,000
719 - Equipment Replacement	589,060	700,000
Days' Cash (Includes only Funds 711 & 716)	89	180
Days' Cash Target	180	180

CIP Summary: Fiscal Year 2023 2 nd Quarter		Prior Year Actuals	Project Cost Estimate ⁽¹⁾ (escalated dollars)	FY23 Actuals thru 12/31/22	FY23-38 Estimate To Complete	Project Schedule
Project Titles						
WATER SUPPLY RESILIENCY & CLIMATE ADAPTATION PROJECTS						
<i>Water Supply Augmentation Strategy</i>						
<i>Beltz Wellfield Aquifer Storage and Recovery</i>						
ASR Planning		3,250,079	5,151,696	32,371	1,869,246	2019-2023
ASR Mid County Existing Infrastructure		383,887	8,971,750	138,575	8,449,288	2020-2025
ASR Mid County New Wells		-	26,696,860	-	26,696,860	2021-2027
<i>Santa Margarita Aquifer Storage and Recovery and In Lieu Water Transfers and Exchanges</i>						
ASR Santa Margarita Groundwater		-	456,381	-	456,381	2020-2027
ASR New Pipelines		-	-	-	-	2022-2027
<i>In Lieu Transfers and Exchanges</i>						
Studies, Recycled Water, Climate Change, Aquifer Storage and Recovery		-	-	-	-	
Water Supply Augmentation		1,613,222	89,876,215	404,263	87,858,731	2018-2032
Recycled Water Feasibility Study		847,884	1,792,224	15,441	928,900	2018-2023
<i>Subtotal Water Supply Augmentation Strategy</i>		6,095,072	132,945,127	590,649	126,259,406	
<i>Subtotal Water Supply Resiliency and Climate Adaptation Projects</i>		6,095,072	132,945,127	590,649	126,259,406	
INFRASTRUCTURE RESILIENCY AND CLIMATE ADAPTATION						
<i>Raw Water Storage Projects</i>						
NCD I/O Replacement Project		74,224,158	105,378,613	11,324,210	19,830,245	2018-2024
Aerators at Loch Lomond		460,791	741,911	-	281,120	
<i>Subtotal Raw Water Storage Projects</i>		74,684,949	106,120,524	11,324,210	20,111,365	
<i>Raw Water Diversion and Groundwater System Projects</i>						
Laguna Creek Diversion Retrofit		2,935,396	3,130,276	28,771	166,110	2018-2023
Tait Diversion Retrofit		385,639	7,642,148	86,286	7,170,223	2018-2030
Coast Pump Station Rehab/Replacement		-	9,777,912	-	9,777,912	2029-2033
Felton Diversion Pump Station Improvements		351,872	4,408,650	1,667	4,055,111	2020-2029
Beltz 12 Ammonia Removal		177,281	1,915,818	58,769	1,679,769	2021-2025
Beltz WTP Filter Rehabilitation		465,370	987,062	20,300	501,392	2022-2023
Beltz WTP Upgrades *NEW* ⁽⁴⁾		-	17,663,985	603	17,663,382	2022-2027
<i>Subtotal Raw Water Diversion and Groundwater System Projects</i>		4,315,558	45,525,851	196,395	41,013,898	
<i>Raw Water Transmission</i>						
Newell Creek Pipeline Rehab/Replacement - Planning		1,568,669	1,627,564	2,983	55,912	2018-2023
Newell Creek Pipeline Felton/GHWTP		2,555,890	33,194,375	295,152	30,343,333	2019-2027
Newell Creek Pipeline Felton/Loch Lomond		-	38,458,126	-	38,458,126	2027-2033
Newell Creek Pipeline Grant Management		10,371	30,000	7,498	TBD	
Brackney Landslide Area Pipeline Risk Reduction ⁽²⁾		1,604,376	11,540,345	175,188	9,760,781	2020-2026
North Coast Pipeline Repair/Replacement - Planning (w/ Major Div)		907,956	943,724	67	35,701	2018-2021
North Coast Pipeline Repair/Replacement - Ph 4		-	90,802,291	-	90,802,291	2025-2032
<i>Subtotal Raw Water Transmission</i>		6,647,262	176,596,425	480,888	169,456,144	
<i>Surface Water Treatment</i>						
GHWTP Flocculator & Tube Settler Replacement		3,285,958	3,373,941	3,077	84,906	2018-2022
GHWTP Concrete Tanks Replacement		16,663,399	46,673,142	3,291,546	26,718,197	2018-2025
GHWTP Facilities Improvement Project		9,852,383	151,592,006	1,378,938	140,360,685	2018-2029
River Bank Filtration Study		998,601	7,028,637	343	6,029,693	2018-2027
GHWTP SCADA Radio System Replacement		-	240,000	-	240,000	On-going
GHWTP SCADA IO Hardware & Wiring Upgrade		-	230,000	-	230,000	2022-TBD
GHWTP Chlorination Station Improvements		-	250,000	-	-	2022-TBD
<i>Subtotal Surface Water Treatment</i>		30,800,341	209,387,726	4,673,903	173,663,482	
<i>Distribution System Storage, Water Main and Pressure Regulation, and Metering Projects</i>						
University Tank No. 4 Rehab/Replacement		371,278	6,246,806	204,328	5,671,200	2018-2026
Meter Replacement Project		6,901,970	14,910,502	4,238,603	3,769,929	2018-2023
Engineering and Distribution Main Replacement Projects ⁽³⁾		13,539,850	34,405,775	258,607	20,607,318	On-going
Distribution System Water Quality Improvements		33,725	107,427	7,614	66,087	2021-TBD
Facility & Infrastructure Improvements		8,753	5,020,972	778	5,011,441	On-going
Intertie 1: Santa Cruz - Scotts Valley ⁽⁴⁾		-	8,720,261	37,664	8,682,597	2022-2026
<i>Subtotal Distribution Storage, Wmain Pressure Reg, and Metering</i>		20,855,577	69,411,743	4,747,594	43,808,572	
<i>Subtotal Infrastructure Resiliency and Climate Adaptation</i>		137,303,687	607,042,269	21,422,990	448,053,460	
OTHER RISK MANAGEMENT AND RISK REDUCTION PROJECTS						
<i>Site Safety and Security</i>						
Security Camera & Building Access Upgrades		315,490	550,996	-	235,506	On-going
GHWTP Gate Entrance Upgrades		878,212	903,067	13,898	10,958	2020-2023
CMMS Software Replacement - Water Share		64,479	390,000	118,126	207,395	2022-2023
<i>Subtotal Site Safety and Security</i>		1,258,181	1,844,063	132,024	453,858	
<i>Staff Augmentation</i>						
Water Program Administration ⁽⁵⁾		1	16,969,426	589,023	16,380,402	On-going
<i>Subtotal Staff Augmentation</i>		1	16,969,426	589,023	16,380,402	
<i>Contingency</i>						
Management Reserve ⁽⁶⁾		-	36,196,820	-	36,196,820	On-going
<i>Subtotal Contingency</i>		-	36,196,820	-	36,196,820	
<i>Storage for Emergency Facility and System Repair Tools and Equipment</i>						
Union/Locust Admin Building Back Up Power Generator		1,970	110,000	5,112	102,918	TBD
<i>Subtotal Storage for Emergency and System Repair</i>		1,970	110,000	5,112	102,918	
<i>Other Projects</i>						
Branciforte Streambank Restoration ⁽⁴⁾		-	780,143	2,551	777,592	TBD
<i>Subtotal Other Projects</i>		-	780,143	2,551	777,592	
<i>Subtotal Other Risk Management and Risk Reduction Projects</i>		1,260,152	55,900,452	728,710	53,911,590	
GRAND TOTAL		144,658,912	795,887,848	22,742,349	628,224,456	

⁽¹⁾ Project Cost Estimates are estimates from FY23 budget request process plus current FY23 adjustments/carry-forwards.

⁽²⁾ Expenses are not adjusted for FEMA HMGP grant funding.

⁽³⁾ Prior year actuals for Main Replacements start in FY19.

⁽⁴⁾ Intertie 1, Branciforte Streambed, and Beltz WTP Upgrades project cost estimates established after FY23 budget adoption and are as of 12/31/22.

⁽⁵⁾ Staff augmentation budget appropriations and actual expenses are transferred to specific projects during year-end process.

⁽⁶⁾ Management Reserve budget appropriations are transferred to specific projects upon approval.

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WATER COMMISSION INFORMATION REPORT

DATE: 3/6/2023

AGENDA OF: 3/06/2023

TO: Water Commission

FROM: Sarah Easley Perez, Principal Planner

SUBJECT: 2023 Update to City of Santa Cruz Long-Range Water Demand Forecast

RECOMMENDATION: That the Water Commission accept the 2023 Update to City of Santa Cruz Long-Range Water Demand Forecast.

BACKGROUND: The Water Department’s Long-Range Demand Forecast was last updated in September 2021 to support the development of the 2020 Urban Water Management Plan. In that forecast, the Association of Monterey Bay Area Governments (AMBAG) 2022 Regional Growth Forecast and the University of California Santa Cruz 2021 Long Range Development Plan were utilized to forecast population and associated demand for the water service area within the City of Santa Cruz and unincorporated Santa Cruz County. Planned development information from City of Capitola was utilized to forecast population and associated demand for the water service area within the City of Capitola.

Since that forecast was developed, each jurisdiction has identified or updated plans and projects within the water service area that exceed the projections in the 2020 Urban Water Management Plan. Additionally, in October 2022, AMBAG released the Final 6th Cycle Regional Housing Needs Allocation (RHNA) Plan 2023 – 2031 which determined that Santa Cruz and Monterey Counties must zone to accommodate a minimum of 33,274 new housing units during this period. State law requires that AMBAG allocates existing and projected housing needs to local jurisdictions (cities and counties). Based on the RHNA Plan, each jurisdiction must update its General Plan Housing Element to demonstrate how the RHNA will be met.

While AMBAG has stated that the RHNA should not be used for demographic projections, state law requires that jurisdictions plan to accommodate this level of growth. As such the City of Santa Cruz, Santa Cruz County, and City of Capitola are all in the process of updating their housing elements to accommodate the increased housing reflected in the RHNA Plan.

DISUSSION: Water Department has updated its Long-Range Demand Forecast to reflect the current understanding of projected population, housing, and land use within its service area. For this update, for the service area in the City of Santa Cruz, the following sources of information provided by the city’s Planning and Community Development Department were utilized to update the forecast:

- projects approved and/or under construction;
- estimated construction of accessory dwelling units (ADUs);
- the Library Mixed Use Project; and
- the Downtown Plan Expansion Project.

For the service area in unincorporated Santa Cruz County, the 2022 Final Environmental Impact Report for its General Plan Update, the “County of Santa Cruz Sustainability Policy and Regulatory Update” was utilized to update the forecast. For the service area within the City of Capitola, an updated estimate of the Capitola Mall Redevelopment received from the city’s Community Development Department was utilized to update the forecast. While each of these jurisdictions are currently in the process of updating their General Plan Housing Elements to reflect the RHNA Plan, it is not anticipated those updates will include zoning within the water service area for new housing beyond what is considered in this 2023 Update to the City of Santa Cruz Long-Range Demand Forecast (2023 Update).

Key findings of the 2023 Update include an increase in the total water demand from current demand of 2.6 billion gallons per year to a forecasted demand of 2.9 billion gallons per year in 2045. This represents an increase of 126 million gallons, or 4.5%, over the total water demand forecast for 2045 in the 2020 Urban Water Management Plan. Overall, the updated projection includes 5,096 more dwelling units by 2045 than was assumed in the 2020 Urban Water Management Plan. The modest increase of 279 million gallons in water demand from 2020 to 2045 forecasted in the 2023 Update is primarily due to the increased projection of ADUs and mutli-family housing in the region.

While the 2023 Update will be utilized for ongoing Water Department planning purposes, including water supply augmentation planning as described in the recently adopted Securing Our Water Future Policy (SOWF), anticipated longer dry periods is the primary challenge driving the need to augment the City’s water supply. As noted in the SOWF, increases in housing in the water service area are not expected to drive the size or timing of needed water supply augmentation projects. The SOWF was structured to incorporate changing demands and climate projections over time, and includes a reliability goal based on adequate supply to meet all customer demand under plausible worst-case conditions.

FISCAL IMPACT: None.

PROPOSED MOTION: Motion to accept the 2023 Update to City of Santa Cruz Long-Range Water Demand Forecast.

ATTACHMENTS:

1. 2023 Update to City of Santa Cruz Long-Range Water Demand Forecast
2. M.Cubed Presentation on 2023 Update to the City of Santa Cruz Long-Range Demand Forecast

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Technical Memorandum

Date: February 28, 2023
Prepared For: City of Santa Cruz Water Department
Prepared By: David Mitchell (M.Cubed)
Subject: 2023 Update to the City of Santa Cruz Long-Range Demand Forecast

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Background

In 2020, the Water Department contracted with M.Cubed to update its long-range water demand forecast. The scope of work specified completion of the following tasks:

1. Update service area population, land use, and housing projections consistent with local planning documents and AMBAG projections.
2. Using customer-level billing data, update the baseline estimates of average water use per service connection by customer class.
3. Apply adjustments to the baseline average use estimates to account for the effects of plumbing codes, on-going conservation, and marginal water service costs on average water use over the course of the forecast.
4. Adjust the projections of future UCSC water demands to be consistent with the university's Long-Range Development Plan (University of California, Santa Cruz 2021).
5. Account for effects of the covid-19 pandemic on current and future water use.
6. Prepare a technical memorandum documenting the data and procedures used to update the demand forecast and provide side-by-side comparisons of the original and updated forecasts. Prepare an Excel workbook containing the datasets and calculations used to update the water demand forecast.

The results of these tasks were summarized in a Technical Memorandum dated September 10, 2021, which provided the basis for the population and water demand projections contained in the City of Santa Cruz's 2020 Urban Water Management Plan (UWMP).¹

In 2022, the Water Department contracted with M.Cubed to make additional revisions to its long-range water demand forecast to incorporate revised projections for housing and commercial development associated with already approved or under construction projects, the Downtown Plan Expansion, the Library Mixed-Use Project, the Capitola Mall Redevelopment Project, and projected future development in unincorporated parts of the service area contained in the County of Santa Cruz's updated General Plan/Local Coastal Program.²

This technical memorandum summarizes the data and methods that were used to update the housing, population, and water demand projections, and provides a side-by-side comparison of the updated projections to those contained in the 2020 UWMP.

¹ Update of the City of Santa Cruz's Long-Range Water Demand Forecast, Technical Memorandum dated September 10, 2021, prepared by David Mitchell, M.Cubed.

² As reflected in the County of Santa Cruz Sustainability Policy and Regulatory Update Final EIR (<https://www.sccoplanning.com/Portals/2/County/Planning/policy/Sustainability%20Update%20Final%20EIR/Final%20EIR%20-%20Complete%20Document.pdf>).

Summary of Updated Water Demand Projections

A comparison of the updated demand projections to those in the 2020 UWMP is provided in Table 1. The following is noted:

- Updates were made to the single-family (SFR), multi-family (MFR), accessory dwelling unit (ADU), business (BUS), and industrial (IND) demand projections. The projections for the other categories of water use are the same as in the 2020 UWMP.
- The MFR and ADU demand projections are combined and reported as MFR because the two housing categories are assumed to have the same average household size and per capita water uses.
- The Water Department’s current new residential and non-residential development projections were used to update the service area water demands. These projections were provided to M.Cubed in the Excel workbook “Growth Combined 2023-01-11.xlsx.”
- System water loss is assumed to proportionally scale with total demand.
- Overall, the updated demand projection is 4.5% larger in 2045 than was assumed in the 2020 UWMP. All of the increase is due to higher projected rates of MFR and ADU construction.

Table 1. Updated and 2020 UWMP Demand Projections

Updated Demand	Units	2020	2025	2030	2035	2040	2045
SFR	MG	952	947	938	937	939	939
MFR	MG	588	659	718	743	781	781
BUS	MG	388	500	478	453	445	445
IND	MG	39	39	39	39	39	39
MUN	MG	66	54	51	47	47	47
IRR	MG	77	77	69	59	58	59
GOLF	MG	39	44	40	36	35	35
UC Coastal	MG	4	10	15	21	26	26
UC Main	MG	106	152	199	245	292	292
Total Demand	MG	2,257	2,480	2,548	2,581	2,661	2,663
MISC/LOSS	MG	348	201	207	209	216	216
Coastal Irrigation	MG	6	12	12	12	12	12
Total Production	MG	2,612	2,694	2,767	2,802	2,889	2,891

2020 UWMP	Units	2020	2025	2030	2035	2040	2045
SFR	MG	952	955	954	959	967	976
MFR	MG	588	605	610	604	609	614
BUS	MG	388	504	488	464	458	462
IND	MG	39	37	37	37	37	37
MUN	MG	66	54	51	47	47	47
IRR	MG	77	77	69	59	58	59
GOLF	MG	39	44	40	36	35	35
UC Coastal	MG	4	10	15	21	26	26
UC Main	MG	106	152	199	245	292	292
Total Demand	MG	2,257	2,437	2,463	2,473	2,529	2,547
MISC/LOSS	MG	348	198	200	200	205	206
Coastal Irrigation	MG	6	12	12	12	12	12
Total Production	MG	2,612	2,647	2,675	2,685	2,746	2,765

% Difference	Units	2020	2025	2030	2035	2040	2045
SFR	%	0.0%	-0.9%	-1.6%	-2.3%	-3.0%	-3.8%
MFR	%	0.0%	8.9%	17.8%	22.9%	28.1%	27.3%
BUS	%	0.0%	-0.8%	-2.0%	-2.3%	-2.8%	-3.6%
IND	%	0.0%	4.6%	5.5%	5.5%	5.5%	5.5%
MUN	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
IRR	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
GOLF	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
UC Coastal	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
UC Main	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Demand	%	0.0%	1.8%	3.5%	4.4%	5.2%	4.6%
MISC/LOSS	%	0.0%	1.8%	3.5%	4.4%	5.2%	4.6%
Coastal Irrigation	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Production	%	0.0%	1.8%	3.5%	4.4%	5.2%	4.5%

Residential Water Demand Update

The residential water demand projections are based on the projected number of occupied single- and multi-family dwelling units. For a given year t , residential demand is:

$$Demand_t = DU_t \cdot OccupancyRate_t \cdot PersonsPerHousehold_t \cdot GPCD_t$$

Where DU is the number of dwelling units, $OccupancyRate$ is the average occupancy rate of the housing stock, $PersonsPerHousehold$ is the average household size, and $GPCD$ is residential per capita water use. These parameters vary by year. For example, $GPCD$ is adjusted to capture the ongoing effects of plumbing and water appliance efficiency codes and changes in marginal water costs. Separate parameter estimates were prepared for single- and multi-family dwelling units.

Housing Stock Update

The projections of single- and multi-family dwelling units have been updated in order to align them with the Water Department's current planning estimates. The other parameters used to estimate residential demand are unchanged from the values used for the 2020 UWMP.³

The 2020 UWMP used dwelling unit projections from the 2022 Regional Growth Forecast prepared by the Association of Monterey Bay Area Governments (hereinafter AMBAG 2022 RGF) to project residential demand. In this update, the Water Department's current planning projections for new residential development to 2045 are used instead of the AMBAG 2022 RGF. These projections were provided to M.Cubed in the Excel workbook "Growth Combined 2023-01-11.xlsx." This workbook contained the total number of projected dwelling units and the construction timeframe for three categories of housing: single-family residential (SFR), multi-family residential (MFR), and accessory dwelling unit (ADU). Dwelling units were apportioned over the forecast period based on the construction timeframe, as follows:

- If the timeframe extended out 10 years, dwelling units are evenly apportioned between 2020 and 2030.
- If the timeframe extended out 18 to 20 years, dwelling units are evenly apportioned between 2020 and 2040.
- If a project was marked as completed or under construction, the dwelling units were assumed to be online by 2025.

Table 2 shows the apportionment of planned dwelling units in five year increments between 2020 and 2045.

³ As reported in Update of the City of Santa Cruz's Long-Range Water Demand Forecast, Technical Memorandum dated September 10, 2021, prepared by David Mitchell, M.Cubed.

Table 2. Planned Cumulative Additions to Housing Stock: 2020-2045

Downtown Plan Expansion	DU	Constr. Timeframe	2020	2025	2030	2035	2040	2045
			SFR	0		0	0	0
MFR	1,734	4-20 Years	0	434	867	1,301	1,734	1,734
ADU	0		0	0	0	0	0	0
Subtotal	1,734		0	434	867	1,301	1,734	1,734
Under Construction/Approved								
SFR	38	1-10 years	0	25	38	38	38	38
MFR	1,618	1-10 years	0	1,011	1,618	1,618	1,618	1,618
ADU	0		0	0	0	0	0	0
Subtotal	1,656		0	1,036	1,656	1,656	1,656	1,656
Other Pending/Planned								
SFR	5	4-10 years	0	3	5	5	5	5
MFR	930	4-10 years	0	465	930	930	930	930
ADU	1,800	1-18 years	0	450	900	1,350	1,800	1,800
Subtotal	2,735		0	918	1,835	2,285	2,735	2,735
Capitola Mall Redevelopment								
SFR	0		0	0	0	0	0	0
MFR	637	1-5 years	0	319	637	637	637	637
ADU	0		0	0	0	0	0	0
Subtotal	637		0	319	637	637	637	637
Capitola 38th Ave Development								
SFR	0		0	0	0	0	0	0
MFR	80	1-5 years	0	40	80	80	80	80
ADU	0		0	0	0	0	0	0
Subtotal	80		0	40	80	80	80	80
Unincorporated County								
SFR	100	2-20 years	0	25	50	75	100	100
MFR	1,902	2-20 years	0	475	951	1,426	1,902	1,902
ADU	0		0	0	0	0	0	0
Subtotal	2,002		0	500	1,001	1,501	2,002	2,002
Grand Total								
SFR	143		0	53	93	118	143	143
MFR	6,901		0	2,743	5,083	5,992	6,901	6,901
ADU	1,800		0	450	900	1,350	1,800	1,800
Total	8,844		0	3,246	6,076	7,460	8,844	8,844

Table 3 compares the updated cumulative additions to the housing stock to the cumulative additions used in the 2020 UWMP. The MFR and ADU housing categories are grouped together because the residential demand forecast assumes the two housing categories share the same average occupancy, household size, and per capita water use. Overall, the updated projection includes 5,096 more dwelling units by 2045 than was assumed in the 2020 UWMP. All of the increase is due to higher projected rates of MFR and ADU construction.⁴ Compared to the assumptions used for the 2020 UWMP, the rate of SFR construction in the updated projection is much lower.

Table 3. Updated and 2020 UWMP Cumulative Additions to Housing Stock

SFR	2020	2025	2030	2035	2040	2045
Updated	0	53	93	118	143	143
2020 UWMP	0	245	433	618	772	909
Difference	0	-192	-340	-500	-629	-766
% Difference	0%	-79%	-79%	-81%	-81%	-84%
MFR + ADU	2020	2025	2030	2035	2040	2045
Updated	0	3,193	5,983	7,342	8,701	8,701
2020 UWMP	0	1,396	2,210	2,507	2,718	2,839
Difference	0	1,797	3,773	4,835	5,983	5,862
% Difference	0%	129%	171%	193%	220%	206%
Total	2020	2025	2030	2035	2040	2045
Updated	0	3,246	6,076	7,460	8,844	8,844
2020 UWMP	0	1,641	2,643	3,125	3,491	3,748
Difference	0	1,605	3,433	4,335	5,353	5,096
% Difference	0%	98%	130%	139%	153%	136%

Table 4 compares the updated housing stock projection to the one used in the 2020 UWMP. Overall, the updated housing stock is 12% larger by 2045 than was assumed in the 2020 UWMP. As noted above, the increase is entirely due to higher projected rates of MFR and ADU construction.

⁴ The AMBAG 2022 RGF did not include the ADU housing category.

Table 4. Updated and 2020 UWMP Housing Stock Projections

SFR	2020	2025	2030	2035	2040	2045
Updated	20,578	20,631	20,671	20,696	20,721	20,721
UWMP	20,578	20,823	21,011	21,196	21,351	21,487
Difference	0	-192	-340	-500	-629	-766
% Difference	0%	-1%	-2%	-2%	-3%	-4%
MFR + ADU	2020	2025	2030	2035	2040	2045
Updated	18,173	21,366	24,156	25,515	26,874	26,874
UWMP	18,173	19,569	20,383	20,680	20,892	21,013
Difference	0	1,797	3,773	4,835	5,983	5,862
% Difference	0%	9%	19%	23%	29%	28%
Total	2020	2025	2030	2035	2040	2045
Updated	38,751	41,997	44,827	46,211	47,595	47,595
UWMP	38,751	40,392	41,394	41,876	42,242	42,500
Difference	0	1,605	3,433	4,335	5,353	5,096
% Difference	0%	4%	8%	10%	13%	12%

Table 5 compares the updated projection of occupied housing to the one used in the 2020 UWMP. The occupied housing projection provides the basis for the residential population and water demand projections. Occupied housing is calculated by multiplying the housing stock by the occupancy rates for City of Santa Cruz, City of Capitola, and unincorporated county portions of the service area. The occupancy rate assumptions are unchanged from those used in the 2020 UWMP. Overall, the updated occupied housing projection is 13% larger by 2045 than was assumed in the 2020 UWMP.

Table 5. Updated and 2020 UWMP Occupied Housing Projections

SFR	2020	2025	2030	2035	2040	2045
Updated	19,119	19,167	19,204	19,226	19,248	19,248
UWMP	19,119	19,249	19,380	19,511	19,644	19,777
Difference	0	-82	-176	-285	-396	-529
% Difference	0%	0%	-1%	-1%	-2%	-3%
MFR + ADU	2020	2025	2030	2035	2040	2045
Updated	16,861	19,830	22,408	23,650	24,898	24,900
UWMP	16,861	18,065	18,773	19,014	19,203	19,325
Difference	0	1,765	3,635	4,636	5,695	5,576
% Difference	0%	10%	19%	24%	30%	29%
Total	2020	2025	2030	2035	2040	2045
Updated	35,980	38,997	41,612	42,876	44,146	44,149
UWMP	35,980	37,314	38,152	38,525	38,846	39,102
Difference	0	1,683	3,459	4,351	5,300	5,047
% Difference	0%	5%	9%	11%	14%	13%

Residential Population Update

Table 6 compares the updated projection of residential population to the one used in the 2020 UWMP. Residential population is calculated by multiplying the occupied housing projection by the average household sizes for City of Santa Cruz, City of Capitola, and unincorporated portions of the service area. The average household size assumptions are unchanged from those used in the 2020 UWMP. Overall, the updated residential population is 8% larger by 2045 than was assumed in the 2020 UWMP. The percentage increase in residential population is less than the percentage increase in occupied housing because the updated housing projection has proportionately more MFR and ADU dwelling units than the 2020 UWMP projection and these housing categories have lower average household sizes. The overall average household size in the updated projection is 2.27 in 2045 compared to 2.37 in the 2020 UWMP projection.

Table 6. Updated and 2020 UWMP Residential Population Projections

SFR	2020	2025	2030	2035	2040	2045
Updated	54,124	54,262	54,368	54,432	54,496	54,496
UWMP	54,124	54,735	55,271	55,702	56,193	56,680
Difference	0	-472	-904	-1,270	-1,697	-2,184
% Difference	0%	-1%	-2%	-2%	-3%	-4%
MFR + ADU	2020	2025	2030	2035	2040	2045
Updated	30,919	36,370	41,138	43,445	45,785	45,821
UWMP	30,919	33,270	34,677	35,151	35,567	35,856
Difference	0	3,100	6,461	8,294	10,218	9,965
% Difference	0%	9%	19%	24%	29%	28%
Total	2020	2025	2030	2035	2040	2045
Updated	85,043	90,632	95,506	97,877	100,280	100,317
UWMP	85,043	88,004	89,949	90,852	91,760	92,535
Difference	0	2,628	5,557	7,024	8,521	7,782
% Difference	0%	3%	6%	8%	9%	8%

Service Area Population Update

Table 7 compares the updated projection of service area population to the one used in the 2020 UWMP. Note that only the residential populations projections have been updated. The population projections for group quarters and UCSC are unchanged from the 2020 UWMP.

Table 7. Updated and 2020 UWMP Service Area Population Projections

SFR	2020	2025	2030	2035	2040	2045
Updated	54,124	54,262	54,368	54,432	54,496	54,496
UWMP	54,124	54,735	55,271	55,702	56,193	56,680
Difference	0	-472	-904	-1,270	-1,697	-2,184
% Difference	0%	-1%	-2%	-2%	-3%	-4%
MFR + ADU	2020	2025	2030	2035	2040	2045
Updated	30,919	36,370	41,138	43,445	45,785	45,821
UWMP	30,919	33,270	34,677	35,151	35,567	35,856
Difference	0	3,100	6,461	8,294	10,218	9,965
% Difference	0%	9%	19%	24%	29%	28%
Group Quarters	2020	2025	2030	2035	2040	2045
Updated	1,375	2,309	2,374	2,391	2,443	2,464
UWMP	1,375	2,309	2,374	2,391	2,443	2,464
Difference	0	0	0	0	0	0
% Difference	0%	0%	0%	0%	0%	0%
UCSC	2020	2025	2030	2035	2040	2045
Updated	9,750	11,650	13,750	15,950	18,650	18,650
UWMP	9,750	11,650	13,750	15,950	18,650	18,650
Difference	0	0	0	0	0	0
% Difference	0%	0%	0%	0%	0%	0%
Total	2020	2025	2030	2035	2040	2045
Updated	96,168	104,591	111,629	116,217	121,374	121,432
UWMP	96,168	101,964	106,072	109,193	112,853	113,650
Difference	0	2,628	5,557	7,024	8,521	7,782
% Difference	0%	3%	5%	6%	8%	7%

Updated Residential Demand Projection

Table 8 compares the updated projection of residential water demand to the one used in the 2020 UWMP. Residential water demand is calculated by multiplying the residential population projection by residential per capita water use factors. These factors are unchanged from the ones used in the 2020 UWMP. Overall, the updated residential water demand is 8% larger by 2045 than was assumed in the 2020 UWMP.

Table 8. Updated and 2020 UWMP Residential Water Demand Projections (MG)

SFR	2020	2025	2030	2035	2040	2045
Updated	952	947	938	937	939	939
UWMP	952	955	954	959	967	976
Difference	0	-8	-15	-22	-29	-37
% Difference	0%	-1%	-2%	-2%	-3%	-4%
MFR + ADU	2020	2025	2030	2035	2040	2045
Updated	588	659	718	743	781	781
UWMP	588	605	610	604	609	614
Difference	0	54	109	138	171	168
% Difference	0%	9%	18%	23%	28%	27%
Total	2020	2025	2030	2035	2040	2045
Updated	1,539	1,606	1,657	1,680	1,719	1,720
UWMP	1,539	1,560	1,563	1,563	1,577	1,589
Difference	0	45	93	117	143	131
% Difference	0%	3%	6%	7%	9%	8%

Business and Industrial Water Demand Update

The business and industrial water demand projections in the 2020 UWMP are based on the projected number of business and industrial services. For a given year t , business and industrial demand is:

$$Demand_t = Accounts_t \cdot WDF_t$$

where $Accounts$ is the number of business or industrial accounts and WDF is the water demand factor in gallons per year per account. The projected number of business accounts is proportional to service area population while the projected number of industrial accounts is proportional to projected City of Santa Cruz manufacturing employment. The water demand factors, WDF , vary by year in order to capture the ongoing effects of plumbing and water appliance efficiency codes and changes in marginal water costs.

The updated business and industrial water demand projections are based on the Water Department’s current planning assumptions for new commercial and industrial development. For a given year t , business and industrial demand is:

$$Demand_t = [Accounts_{2020} \cdot WDF_t] + [NewSqft_t \cdot WDF_{sqft}] + [NewHotelRms \cdot WDF_{room}]$$

where $[Accounts_{2020} \cdot WDF_t]$ represents projected water use by existing business/industrial accounts, $[NewSqft_t \cdot WDF_{sqft}]$ represents projected water use for new business/industrial development other than lodging, and $[NewHotelRms \cdot WDF_{room}]$ represents projected water use for new lodging development.

Projected Water Use by New Business and Industrial Development

Projected new business/industrial square footage and hotel rooms were provided to M.Cubed in the Excel workbook “Growth Combined 2023-01-11.xlsx.” Water factors were provided for some of the categories of development and in other cases M.Cubed developed new water factors, as described below.

Tables 9 to 13 summarize the projected new business/industrial development and associated water use. The negative square footage values in Table 9 indicate conversion of existing commercial space to non-commercial (primarily residential) uses. The sources for the water factors used in the tables are as follows:

- **Commercial Development (Table 9):** The water factor of 66 gal/sf/year was provided to M.Cubed via email (01/18/2023) by Water Department staff and is the same factor being used in the Downtown Plan Expansion EIR.
- **Office Development (Table 10):** The water factor of 18 gal/sf/year was provided to M.Cubed via email (01/18/2023) by Water Department staff and is the same factor being used in the Downtown Plan Expansion EIR.
- **Other Development (Table 11):** The water factor in the table is a weighted average of three different water factors:
 - The Downtown Plan Expansion square footage is for the new Golden State Warriors facility. The water factor for the new facility is 3.2 gal/sf/year, which is twice the water use intensity as the existing temporary facility.
 - The Library Mixed Use Project square footage uses the water factor for new office space, which is 18 gal/sf/year.
 - The County Sustainability DEIR square footage is for expansion of the Dominican Hospital. The water factor for it and the new Kaiser facility is 36 gal/sf/year which comes from the GBA 2021 Hospital Benchmarking Report Part 2.⁵
- **Lodging Development (Table 12):** The water factor of 33,945 gal/rm/year was provided to M.Cubed via email (01/18/2023) by Water Department staff and is the same factor being used in the Downtown Plan Expansion EIR. This factor aligns with hotel water use benchmarks reported in AWWA Research Foundation’s Commercial and Institutional End Uses of Water Report.⁶

⁵ <https://mailchi.mp/grummanbutkus.com/gba-hospital-benchmarking-survey-pt2>

⁶ Dziegielewski, B., et al. (2000). Commercial and Institutional End Uses of Water. AWWA Research Foundation: Denver.

- **Industrial Development (Table 13):** The water factor of 12 gal/sf/year was provided to M.Cubed via email (01/18/2023) by Water Department staff and is the same factor being used in the Downtown Plan Expansion EIR.

Table 9. Updated New Commercial Development (Sqft)

Year	Downtown Plan Expansion	Under Construction/Approved			Other Pending/Planned				Total	Water Use Factor (gal/sf/yr)	Change in Water Use (MG)
		Under Constr.	Finaled 2021-2022	Approved	Pending Applications	Library Mixed Use Project	County Sustain. DEIR	Kaiser Facility			
2020	0	0	0	0	0	0	0	0	0	66	0
2025	-4,193	-2,606	49,282	-20,885	-17,758	2,300	7,850	0	13,991	66	1
2030	-8,385	-2,606	49,282	-41,770	-35,515	4,600	15,700	0	-18,694	66	-1
2035	-12,578	-2,606	49,282	-41,770	-35,515	4,600	23,550	0	-15,037	66	-1
2040	-16,770	-2,606	49,282	-41,770	-35,515	4,600	31,400	0	-11,379	66	-1
2045	-16,770	-2,606	49,282	-41,770	-35,515	4,600	31,400	0	-11,379	66	-1

Table 10. Updated New Office Development (Sqft)

Year	Downtown Plan Expansion	Under Construction/Approved			Other Pending/Planned				Total	Water Use Factor (gal/sf/yr)	Change in Water Use (MG)
		Under Constr.	Finaled 2021-2022	Approved	Pending Applications	Library Mixed Use Project	County Sustain. DEIR	Kaiser Facility			
2020	0	0	0	0	0	0	0	0	0	18	0
2025	0	0	0	1,570	-1,611	0	50,081	0	50,040	18	1
2030	0	0	0	3,140	-3,222	0	100,161	0	100,079	18	2
2035	0	0	0	3,140	-3,222	0	150,242	0	150,160	18	3
2040	0	0	0	3,140	-3,222	0	200,322	0	200,240	18	4
2045	0	0	0	3,140	-3,222	0	200,322	0	200,240	18	4

Table 11. Updated New Other Development (Sqft)

Year	Downtown Plan Expansion	Under Construction/Approved			Other Pending/Planned				Total	Water Use Factor (gal/sf/yr)	Change in Water Use (MG)
		Under Constr.	Finaled 2021-2022	Approved	Pending Applications	Library Mixed Use Project	County Sustain. DEIR	Kaiser Facility			
2020	0	0	0	0	0	0	0	0	0	0	
2025	145,000	0	0	0	0	21,850	20,000	16,000	202,850	11	2
2030	145,000	0	0	0	0	43,700	40,000	16,000	244,700	13	3
2035	145,000	0	0	0	0	43,700	60,000	16,000	264,700	15	4
2040	145,000	0	0	0	0	43,700	80,000	16,000	284,700	17	5
2045	145,000	0	0	0	0	43,700	80,000	16,000	284,700	17	5

Table 12. Updated New Lodging Development (Rooms)

Year	Downtown Plan Expansion	Under Construction/Approved			Other Pending/Planned				Total	Water Use Factor (gal/rm/yr)	Change in Water Use (MG)
		Under Constr.	Finaled 2021-2022	Approved	Pending Applications	Library Mixed Use Project	County Sustain. DEIR	Kaiser Facility			
2020	0	0	0	0	0	0	0	0	0	33,945	0
2025	0	252	40	0	114	0	0	0	406	33,945	14
2030	0	252	40	0	228	0	0	0	520	33,945	18
2035	0	252	40	0	228	0	0	0	520	33,945	18
2040	0	252	40	0	228	0	0	0	520	33,945	18
2045	0	252	40	0	228	0	0	0	520	33,945	18

Table 13. Updated New Industrial Development (Sqft)

Year	Downtown Plan Expansion	Under Construction/Approved			Other Pending/Planned				Total	Water Use Factor (gal/sf/yr)	Change in Water Use (MG)
		Under Constr.	Finaled 2021-2022	Approved	Pending Applications	Library Mixed Use Project	County Sustain. DEIR	Kaiser Facility			
2020	0	0	0	0	0	0	0	0	0	12	0
2025	0	8,935	107,845	14,735	11,008	0	0	0	142,523	12	2
2030	0	8,935	107,845	29,470	22,015	0	0	0	168,265	12	2
2035	0	8,935	107,845	29,470	22,015	0	0	0	168,265	12	2
2040	0	8,935	107,845	29,470	22,015	0	0	0	168,265	12	2
2045	0	8,935	107,845	29,470	22,015	0	0	0	168,265	12	2

Projected Water Use by Existing Business and Industrial Customers

The projection of business and industrial water demand for existing customers is shown in Table 14. This projection uses the same water factors (in gallons/account/year) as were used in the 2020 UWMP and incorporate adjustments for plumbing and water appliance efficiency codes and changes in marginal water costs. Note that the lower business water factor in 2020 is due to reductions in business water use related to Covid shelter-in-place orders.

Table 14. Water Demand Projection for Existing Business and Industrial Accounts

Business	2020	2025	2030	2035	2040	2045
Accounts	1,874	1,874	1,874	1,874	1,874	1,874
WDF (gal/acct/yr)	206,797	257,193	243,607	229,499	224,165	224,165
Demand (MG)	388	482	457	430	420	420
Industrial	2020	2025	2030	2035	2040	2045
Accounts	38	38	38	38	38	38
WDF (gal/acct/yr)	1,018,796	973,747	973,747	973,747	973,747	973,747
Demand (MG)	39	37	37	37	37	37

Updated Business and Industrial Demand Projection

Table 15 compares the updated projection of business and industrial water demand to the one used in the 2020 UWMP. Overall, the updated business and industrial water demand projection is 3% lower by 2045 than was assumed in the 2020 UWMP.

Table 15. Updated and 2020 UWMP Business and Industrial Water Demand Projections (MG)

Business	2020	2025	2030	2035	2040	2045
Updated	388	500	478	453	445	445
UWMP	388	504	488	464	458	462
Difference	0	-4	-10	-11	-13	-17
% Difference	0%	-1%	-2%	-2%	-3%	-4%
Industrial	2020	2025	2030	2035	2040	2045
Updated	39	39	39	39	39	39
UWMP	39	37	37	37	37	37
Difference	0	2	2	2	2	2
% Difference	0%	5%	5%	5%	5%	5%
Total	2020	2025	2030	2035	2040	2045
Updated	426	538	517	492	484	484
UWMP	426	541	525	501	495	499
Difference	0	-2	-8	-9	-11	-15
% Difference	0%	0%	-1%	-2%	-2%	-3%

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Update to City of Santa Cruz Long-Range Water Demand Forecast

DAVID MITCHELL
M.CUBED
MARCH 6, 2023

Why Demand Forecast was Updated

- Align service area population, housing, and land use projections with updated projections from:
 - Approved/Under Construction Projects
 - Downtown Plan Expansion
 - Library Mixed Use Project
 - Capitola Mall Redevelopment
 - County of Santa Cruz Sustainability Policy and Regulatory Update EIR
- Update service area water demands based on these changes

What Changed and What Stayed the Same

Forecast Element

Population
Housing
Commercial/Industrial Development

Updated/Unchanged

Updated
Updated
Updated

Water Demands

Single-Family Residential
Multi-Family Residential
Business/Industrial
Municipal
Irrigation/Golf Courses
Coastal Irrigation
UC Santa Cruz
System Losses

Updated/Unchanged

Updated
Updated
Updated
Unchanged
Unchanged
Unchanged
Unchanged
Updated

These Changes are Documented in:



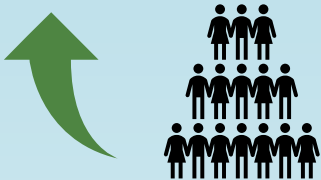
Technical Memorandum: **Update to 2020 UWMP Demand Forecast**

Date: February 23, 2023

Prepared by: David Mitchell, M.Cubed

Prepared for: City of Santa Cruz Water Department

Change in 2045 Projections Relative to 2020 UWMP



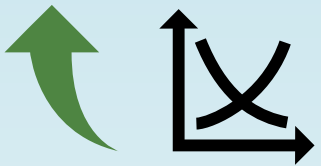
Service Area
Population **+7%**



Occupied Single-
Family
Households **-3%**



Occupied Multi-
Family
Households **+29%**



Total Water
Demand **+4.5%**



Residential
Water Demand
+8.2%



Business/
Industrial Water
Demand **-3.0%**

Housing Stock Update

- 2020 UWMP projection based on AMBAG 2022 Regional Growth Forecast
- Update uses Current Planning Estimates from Water Department
- Construction Timeframe used to Apportion New Dwelling Units over Forecast Period:
 - Approved/Under Construction – Online by 2025
 - 10 Year Construction Timeframe – Evenly Apportioned between 2020 and 2030
 - 18-20 Year Construction Timeframe – Evenly Apportioned between 2020 and 2040
- Update includes New ADUs

Planned Cumulative Additions to Housing Stock 2020-2045

Downtown Plan Expansion	DU	Constr. Timeframe	2020	2025	2030	2035	2040	2045
SFR	0		0	0	0	0	0	0
MFR	1,734	4-20 Years	0	434	867	1,301	1,734	1,734
ADU	0		0	0	0	0	0	0
Subtotal	1,734		0	434	867	1,301	1,734	1,734
Under Construction/Approved								
SFR	38	1-10 years	0	25	38	38	38	38
MFR	1,618	1-10 years	0	1,011	1,618	1,618	1,618	1,618
ADU	0		0	0	0	0	0	0
Subtotal	1,656		0	1,036	1,656	1,656	1,656	1,656
Other Pending/Planned								
SFR	5	4-10 years	0	3	5	5	5	5
MFR	930	4-10 years	0	465	930	930	930	930
ADU	1,800	1-18 years	0	450	900	1,350	1,800	1,800
Subtotal	2,735		0	918	1,835	2,285	2,735	2,735
Capitola Mall Redevelopment								
SFR	0		0	0	0	0	0	0
MFR	637	1-5 years	0	319	637	637	637	637
ADU	0		0	0	0	0	0	0
Subtotal	637		0	319	637	637	637	637
Capitola 38th Ave Development								
SFR	0		0	0	0	0	0	0
MFR	80	1-5 years	0	40	80	80	80	80
ADU	0		0	0	0	0	0	0
Subtotal	80		0	40	80	80	80	80
Unincorporated County								
SFR	100	2-20 years	0	25	50	75	100	100
MFR	1,902	2-20 years	0	475	951	1,426	1,902	1,902
ADU	0		0	0	0	0	0	0
Subtotal	2,002		0	500	1,001	1,501	2,002	2,002
Grand Total								
SFR	143		0	53	93	118	143	143
MFR	6,901		0	2,743	5,083	5,992	6,901	6,901
ADU	1,800		0	450	900	1,350	1,800	1,800
Total	4.27		0	3,246	6,076	7,460	8,844	8,844

Updated and 2020 UWMP Cumulative Additions to Housing Stock

SFR	2020	2025	2030	2035	2040	2045
Updated	0	53	93	118	143	143
2020 UWMP	0	245	433	618	772	909
Difference	0	-192	-340	-500	-629	-766
% Difference	0%	-79%	-79%	-81%	-81%	-84%
MFR + ADU	2020	2025	2030	2035	2040	2045
Updated	0	3,193	5,983	7,342	8,701	8,701
2020 UWMP	0	1,396	2,210	2,507	2,718	2,839
Difference	0	1,797	3,773	4,835	5,983	5,862
% Difference	0%	129%	171%	193%	220%	206%
Total	2020	2025	2030	2035	2040	2045
Updated	0	3,246	6,076	7,460	8,844	8,844
2020 UWMP	0	1,641	2,643	3,125	3,491	3,748
Difference	0	1,605	3,433	4,335	5,353	5,096
% Difference	0%	98%	130%	139%	153%	136%

Updated and 2020 UWMP Occupied Housing Projections

SFR	2020	2025	2030	2035	2040	2045
Updated	19,119	19,167	19,204	19,226	19,248	19,248
UWMP	19,119	19,249	19,380	19,511	19,644	19,777
Difference	0	-82	-176	-285	-396	-529
% Difference	0%	0%	-1%	-1%	-2%	-3%
MFR + ADU	2020	2025	2030	2035	2040	2045
Updated	16,861	19,830	22,408	23,650	24,898	24,900
UWMP	16,861	18,065	18,773	19,014	19,203	19,325
Difference	0	1,765	3,635	4,636	5,695	5,576
% Difference	0%	10%	19%	24%	30%	29%
Total	2020	2025	2030	2035	2040	2045
Updated	35,980	38,997	41,612	42,876	44,146	44,149
UWMP	35,980	37,314	38,152	38,525	38,846	39,102
Difference	0	1,683	3,459	4,351	5,300	5,047
% Difference	0%	5%	9%	11%	14%	13%

Occupied Housing = Housing Stock x Occupancy Rate

Occupancy Rates from DOF Housing Estimates/Projections

Updated and 2020 UWMP Service Area Population Projections

Residential Population = Occupied
Housing x Avg. Household Size

*Avg. Household Size from DOF
Housing Estimates/Projections*

SFR	2020	2025	2030	2035	2040	2045
Updated	54,124	54,262	54,368	54,432	54,496	54,496
UWMP	54,124	54,735	55,271	55,702	56,193	56,680
Difference	0	-472	-904	-1,270	-1,697	-2,184
% Difference	0%	-1%	-2%	-2%	-3%	-4%

MFR + ADU	2020	2025	2030	2035	2040	2045
Updated	30,919	36,370	41,138	43,445	45,785	45,821
UWMP	30,919	33,270	34,677	35,151	35,567	35,856
Difference	0	3,100	6,461	8,294	10,218	9,965
% Difference	0%	9%	19%	24%	29%	28%

Group Quarters	2020	2025	2030	2035	2040	2045
Updated	1,375	2,309	2,374	2,391	2,443	2,464
UWMP	1,375	2,309	2,374	2,391	2,443	2,464
Difference	0	0	0	0	0	0
% Difference	0%	0%	0%	0%	0%	0%

UCSC	2020	2025	2030	2035	2040	2045
Updated	9,750	11,650	13,750	15,950	18,650	18,650
UWMP	9,750	11,650	13,750	15,950	18,650	18,650
Difference	0	0	0	0	0	0
% Difference	0%	0%	0%	0%	0%	0%

Total	2020	2025	2030	2035	2040	2045
Updated	96,168	104,591	111,629	116,217	121,374	121,432
UWMP	96,168	101,964	106,072	109,193	112,853	113,650
Difference	0	2,628	5,557	7,024	8,521	7,782
% Difference	0%	3%	5%	6%	8%	7%

Updated and 2020 UWMP Residential Demand Projections

SFR	2020	2025	2030	2035	2040	2045
Updated	19,119	19,167	19,204	19,226	19,248	19,248
UWMP	19,119	19,249	19,380	19,511	19,644	19,777
Difference	0	-82	-176	-285	-396	-529
% Difference	0%	0%	-1%	-1%	-2%	-3%
MFR + ADU	2020	2025	2030	2035	2040	2045
Updated	16,861	19,830	22,408	23,650	24,898	24,900
UWMP	16,861	18,065	18,773	19,014	19,203	19,325
Difference	0	1,765	3,635	4,636	5,695	5,576
% Difference	0%	10%	19%	24%	30%	29%
Total	2020	2025	2030	2035	2040	2045
Updated	35,980	38,997	41,612	42,876	44,146	44,149
UWMP	35,980	37,314	38,152	38,525	38,846	39,102
Difference	0	1,683	3,459	4,351	5,300	5,047
% Difference	0%	5%	9%	11%	14%	13%

Residential Demand = Residential Population x Per Capita Water Use

Per capita water use projection unchanged. ADU and MFR assumed to have the same per capita use.

Business/Industrial Demands

2020 UWMP Approach:

$$\text{Demand}_t = \text{Business/Industrial Accounts}_t \times \text{WDF}_t$$

Business accounts proportional to service area population

Industrial accounts proportional to Santa Cruz manufacturing employment

WDFs adjusted over time for changes in marginal water cost and conservation.

Updated:

$$\text{Demand}_t = \text{Accounts}_{2020} \times \text{WDF}_t + [\text{New Devel. (sqft)} \times \text{WDF}_{\text{sqft}}] + [\text{New Hotel (rms)} \times \text{WDF}_{\text{rm}}]$$

New development square footage, new hotel rooms, and associated water factors provided by Water Department

Planned Commercial and Office Development

Table 9. Updated New Commercial Development (Saft)

Year	Downtown Plan Expansion	Under Construction/Approved			Other Pending/Planned				Total	Water Use Factor (gal/sf/yr)	Change in Water Use (MG)
		Under Constr.	Finaled 2021-2022	Approved	Pending Applications	Library Mixed Use Project	County Sustain. DEIR	Kaiser Facility			
2020	0	0	0	0	0	0	0	0	0	66	0
2025	-4,193	-2,606	49,282	-20,885	-17,758	2,300	7,850	0	13,991	66	1
2030	-8,385	-2,606	49,282	-41,770	-35,515	4,600	15,700	0	-18,694	66	-1
2035	-12,578	-2,606	49,282	-41,770	-35,515	4,600	23,550	0	-15,037	66	-1
2040	-16,770	-2,606	49,282	-41,770	-35,515	4,600	31,400	0	-11,379	66	-1
2045	-16,770	-2,606	49,282	-41,770	-35,515	4,600	31,400	0	-11,379	66	-1

Table 10. Updated New Office Development (Saft)

Year	Downtown Plan Expansion	Under Construction/Approved			Other Pending/Planned				Total	Water Use Factor (gal/sf/yr)	Change in Water Use (MG)
		Under Constr.	Finaled 2021-2022	Approved	Pending Applications	Library Mixed Use Project	County Sustain. DEIR	Kaiser Facility			
2020	0	0	0	0	0	0	0	0	0	18	0
2025	0	0	0	1,570	-1,611	0	50,081	0	50,040	18	1
2030	0	0	0	3,140	-3,222	0	100,161	0	100,079	18	2
2035	0	0	0	3,140	-3,222	0	150,242	0	150,160	18	3
2040	0	0	0	3,140	-3,222	0	200,322	0	200,240	18	4
2045	0	0	0	3,140	-3,222	0	200,322	0	200,240	18	4

Planned Other and Lodging Development

Table 11. Updated New Other Development (Sqft)

Year	Downtown Plan Expansion	Under Construction/Approved			Other Pending/Planned				Total	Water Use Factor (gal/sf/yr)	Change in Water Use (MG)
		Under Constr.	Finalized 2021-2022	Approved	Pending Applications	Library Mixed Use Project	County Sustain. DEIR	Kaiser Facility			
2020	0	0	0	0	0	0	0	0	0	0	0
2025	145,000	0	0	0	0	21,850	20,000	16,000	202,850	11	2
2030	145,000	0	0	0	0	43,700	40,000	16,000	244,700	13	3
2035	145,000	0	0	0	0	43,700	60,000	16,000	264,700	15	4
2040	145,000	0	0	0	0	43,700	80,000	16,000	284,700	17	5
2045	145,000	0	0	0	0	43,700	80,000	16,000	284,700	17	5

Table 12. Updated New Lodging Development (Rooms)

Year	Downtown Plan Expansion	Under Construction/Approved			Other Pending/Planned				Total	Water Use Factor (gal/rm/yr)	Change in Water Use (MG)
		Under Constr.	Finalized 2021-2022	Approved	Pending Applications	Library Mixed Use Project	County Sustain. DEIR	Kaiser Facility			
2020	0	0	0	0	0	0	0	0	0	33,945	0
2025	0	252	40	0	114	0	0	0	406	33,945	14
2030	0	252	40	0	228	0	0	0	520	33,945	18
2035	0	252	40	0	228	0	0	0	520	33,945	18
2040	0	252	40	0	228	0	0	0	520	33,945	18
2045	0	252	40	0	228	0	0	0	520	33,945	18

Planned Industrial Development & Existing Bus/Ind Accts

Table 13. Updated New Industrial Development (Sqft)

Year	Downtown Plan Expansion	Under Construction/Approved			Other Pending/Planned				Total	Water Use Factor (gal/sf/yr)	Change in Water Use (MG)
		Under Constr.	Finald 2021- 2022	Approved	Pending Applications	Library Mixed Use Project	County Sustain. DEIR	Kaiser Facility			
2020	0	0	0	0	0	0	0	0	0	12	0
2025	0	8,935	107,845	14,735	11,008	0	0	0	142,523	12	2
2030	0	8,935	107,845	29,470	22,015	0	0	0	168,265	12	2
2035	0	8,935	107,845	29,470	22,015	0	0	0	168,265	12	2
2040	0	8,935	107,845	29,470	22,015	0	0	0	168,265	12	2
2045	0	8,935	107,845	29,470	22,015	0	0	0	168,265	12	2

Table 14. Water Demand Projection for Existing Business and Industrial Accounts

Business	2020	2025	2030	2035	2040	2045
Accounts	1,874	1,874	1,874	1,874	1,874	1,874
WDF (gal/acct/yr)	206,797	257,193	243,607	229,499	224,165	224,165
Demand (MG)	388	482	457	430	420	420
Industrial	2020	2025	2030	2035	2040	2045
Accounts	38	38	38	38	38	38
WDF (gal/acct/yr)	1,018,796	973,747	973,747	973,747	973,747	973,747
Demand (MG)	39	37	37	37	37	37

Updated and 2020 UWMP Business & Industrial Demand Projections

Business	2020	2025	2030	2035	2040	2045
Updated	388	500	478	453	445	445
UWMP	388	504	488	464	458	462
Difference	0	-4	-10	-11	-13	-17
% Difference	0%	-1%	-2%	-2%	-3%	-4%
Industrial	2020	2025	2030	2035	2040	2045
Updated	39	39	39	39	39	39
UWMP	39	37	37	37	37	37
Difference	0	2	2	2	2	2
% Difference	0%	5%	5%	5%	5%	5%
Total	2020	2025	2030	2035	2040	2045
Updated	426	538	517	492	484	484
UWMP	426	541	525	501	495	499
Difference	0	-2	-8	-9	-11	-15
% Difference	0%	0%	-1%	-2%	-2%	-3%

Updated and 2020 UWMP Demand Projections

Table 1. Updated and 2020 UWMP Demand Projections

Updated Demand	Units	2020	2025	2030	2035	2040	2045
SFR	MG	952	947	938	937	939	939
MFR	MG	588	659	718	743	781	781
BUS	MG	388	500	478	453	445	445
IND	MG	39	39	39	39	39	39
MUN	MG	66	54	51	47	47	47
IRR	MG	77	77	69	59	58	59
GOLF	MG	39	44	40	36	35	35
UC Coastal	MG	4	10	15	21	26	26
UC Main	MG	106	152	199	245	292	292
Total Demand	MG	2,257	2,480	2,548	2,581	2,661	2,663
MISC/LOSS	MG	348	201	207	209	216	216
Coastal Irrigation	MG	6	12	12	12	12	12
Total Production	MG	2,612	2,694	2,767	2,802	2,889	2,891

2020 UWMP	Units	2020	2025	2030	2035	2040	2045
SFR	MG	952	955	954	959	967	976
MFR	MG	588	605	610	604	609	614
BUS	MG	388	504	488	464	458	462
IND	MG	39	37	37	37	37	37
MUN	MG	66	54	51	47	47	47
IRR	MG	77	77	69	59	58	59
GOLF	MG	39	44	40	36	35	35
UC Coastal	MG	4	10	15	21	26	26
UC Main	MG	106	152	199	245	292	292
Total Demand	MG	2,257	2,437	2,463	2,473	2,529	2,547
MISC/LOSS	MG	348	198	200	200	205	206
Coastal Irrigation	MG	6	12	12	12	12	12
Total Production	MG	2,612	2,647	2,675	2,685	2,746	2,765

% Difference Updated and 2020 UWMP Demand Projections

% Difference	Units	2020	2025	2030	2035	2040	2045
SFR	%	0.0%	-0.9%	-1.6%	-2.3%	-3.0%	-3.8%
MFR	%	0.0%	8.9%	17.8%	22.9%	28.1%	27.3%
BUS	%	0.0%	-0.8%	-2.0%	-2.3%	-2.8%	-3.6%
IND	%	0.0%	4.6%	5.5%	5.5%	5.5%	5.5%
MUN	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
IRR	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
GOLF	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
UC Coastal	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
UC Main	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Demand	%	0.0%	1.8%	3.5%	4.4%	5.2%	4.6%
MISC/LOSS	%	0.0%	1.8%	3.5%	4.4%	5.2%	4.6%
Coastal Irrigation	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total Production	%	0.0%	1.8%	3.5%	4.4%	5.2%	4.5%

Questions/Discussion

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WATER COMMISSION INFORMATION REPORT

DATE: 03/01/2023

AGENDA OF: 03/06/2023

TO: Water Commission

FROM: Zeke Bean, Associate Planner II

SUBJECT: 2023 San Lorenzo River and North Coast Watersheds Sanitary Survey Update

RECOMMENDATION: Receive information about work on the 2023 San Lorenzo River and North Coast Watersheds Sanitary Survey and provide feedback to staff.

BACKGROUND: This report provides an overview of the 2023 update to the San Lorenzo Valley and North Coast Watersheds Sanitary Survey Update. The City and the San Lorenzo Valley Water District (SLVWD) contracted with Kennedy Jenks Consultants to complete the required update, which provides a review of the previous five years (2017 – 2021) of source water quality data, identifies potential contaminant sources, and discusses watershed management practices and controls to maintain and improve source water quality in the San Lorenzo River and North Coast watersheds. As has been the case in the past, the City partnered with SLVWD on this update as the San Lorenzo River watershed supports both City and SLVWD source waters.

Sanitary surveys are required by the State Water Resources Control Board, Division of Drinking Water (DDW) to be completed for each watershed that is a drinking water source. The first San Lorenzo River and North Coast Watersheds Sanitary Survey was completed in 1996, with updates commissioned approximately every 5 years since, as required by the State of California Surface Water Treatment Regulations (CCR §64665). State regulations incorporate the provisions of the federal Surface Water Treatment Rules mandated by the US Environmental Protection Agency (EPA) and administered by DDW as a primary agency for federal regulations. State and federal Surface Water Treatment Rules and all drinking water treatment use the multi-barrier strategy as a foundation. The premise behind this strategy is that having multiple, robust barriers in the form of a well understood and, to the degree feasible, protected source water, well designed and operated water treatment, and effective operations and maintenance of the water distribution system make for a winning combination for protecting public health. The watershed sanitary survey is the analysis and reporting tool focused on the source water protection barrier.

A watershed sanitary survey is a detailed evaluation of surface water sources and an assessment of vulnerability of watershed lands and waterways to contamination that could or would affect source water quality. The primary objectives of the update are to:

- identify any changes in the watershed that have the potential to cause contamination of the source water bodies;
- identify key sources that can be categorized as significant to the watershed; and
- provide recommendations to address those contaminant sources.

While management programs for the City’s source watersheds are well-established and take a comprehensive approach to watershed protection, changes in land use or concentration of certain types of activities can raise new issues or require modification to existing programs.

DISCUSSION: The primary objectives of the 2023 Watershed Sanitary Survey update are to identify key changes in the watershed, identify key sources of contamination, and provide recommendations to address those contaminant sources.

Key Changes in the Watershed

In general, there have been limited changes to land uses in the watershed since the last Watershed Sanitary Survey. Most notably, the 2020 CZU Lightning Complex fires resulted in tens of thousands of acres of watershed lands in Santa Cruz County being burned. With over 900 structures and hundreds of vehicles, propane tanks, septic systems, and water and wastewater pipes and other infrastructure burned in the fires, there is a real threat that contaminants such as benzene, toluene, ethylbenzene and xylene, as well as plastics and other common household materials will exist well into the future. However, data through 2021 (the period covered for this update) show that SLVWD and City drinking water source waters are so far uncontaminated, in large part due to a proactive initial cleanup and erosion control response by the EPA, the County, the Santa Cruz County Resource Conservation District, SLVWD and the City, combined with a lack of any substantial storm events and associated landslides in winter of 2020-2021.

Additionally, two key County land-use policy changes occurred in 2022. The Santa Cruz County Board of Supervisors adopted the Local Area Management Program (LAMP) for onsite wastewater treatment systems in August of 2022 and approved the Sustainability Policy and Regulatory Update (Sustainability Update or General Plan Update) in December of 2022. Both of these changes have components that, if implemented and enforced, have the potential to help improve source water quality in the San Lorenzo Valley and North Coast watersheds.

Key Sources of Contaminants

Of the four key groups of contaminant types that exist in the San Lorenzo River and North Coast watersheds (sediment, pathogens, nutrients, and inorganic chemicals), seven significant sources were recorded in the update:

- landslides/geologic hazards;
- unauthorized/illegal activities such as homeless encampments and illegal mountain bike/motor bike access;
- wastewater, including discharge from failing septic systems;
- confined animal facilities/stables;
- wildfire;
- urban runoff; and
- agriculture including cannabis cultivation.

Key Recommendations to Address Contaminant Sources

Current City efforts to address contaminant sources consists of a diverse program that includes:

- regular water quality monitoring;
- coordination and collaboration with regulatory agencies, local municipalities and non-profits;
- policy advocacy;
- public education and outreach;
- watershed lands surveillance;
- watershed lands road improvements; and
- riparian protection.

While these efforts have been shown to be effective, managing the San Lorenzo River and North Coast watersheds is an ongoing challenge, with multiple parties of governmental, non-governmental, and private stakeholders carrying responsibility and interest in the management programs. While the City can influence water quality management activities within the lands they control, protection of the majority of watershed lands requires the engagement of outside entities including the County of Santa Cruz, California State Parks, and various non-profit organizations. Additionally, the City depends on enforcement actions where needed by regulatory agencies such as the California Department of Fish and Game, CalFire, the Regional Water Quality Control Board and other regulatory agencies in order to effectively protect watershed lands for water quality benefit.

The Watershed Sanitary Survey Update recommends continuation of existing efforts, with an added emphasis in the following areas:

- coordination of acquisition and review of water quality monitoring data;
- coordination with the County's wastewater management activities including implementation of the Local Agency Management Program (LAMP) for onsite wastewater treatment systems and other wastewater management activities;
- review of developments in the watersheds;

- support of local agencies and non-profits doing watershed protection work such as the Santa Cruz County Resource Conservation District and the Coastal Watershed Council; and
- continuing to improve collaboration with local, state and federal regulatory agencies on watershed protection and regulatory enforcement.

FISCAL IMPACT: None

PROPOSED MOTION: Receive information about work on the 2023 San Lorenzo River and North Coast Watersheds Sanitary Survey and provide feedback to staff.

ATTACHMENT(S):

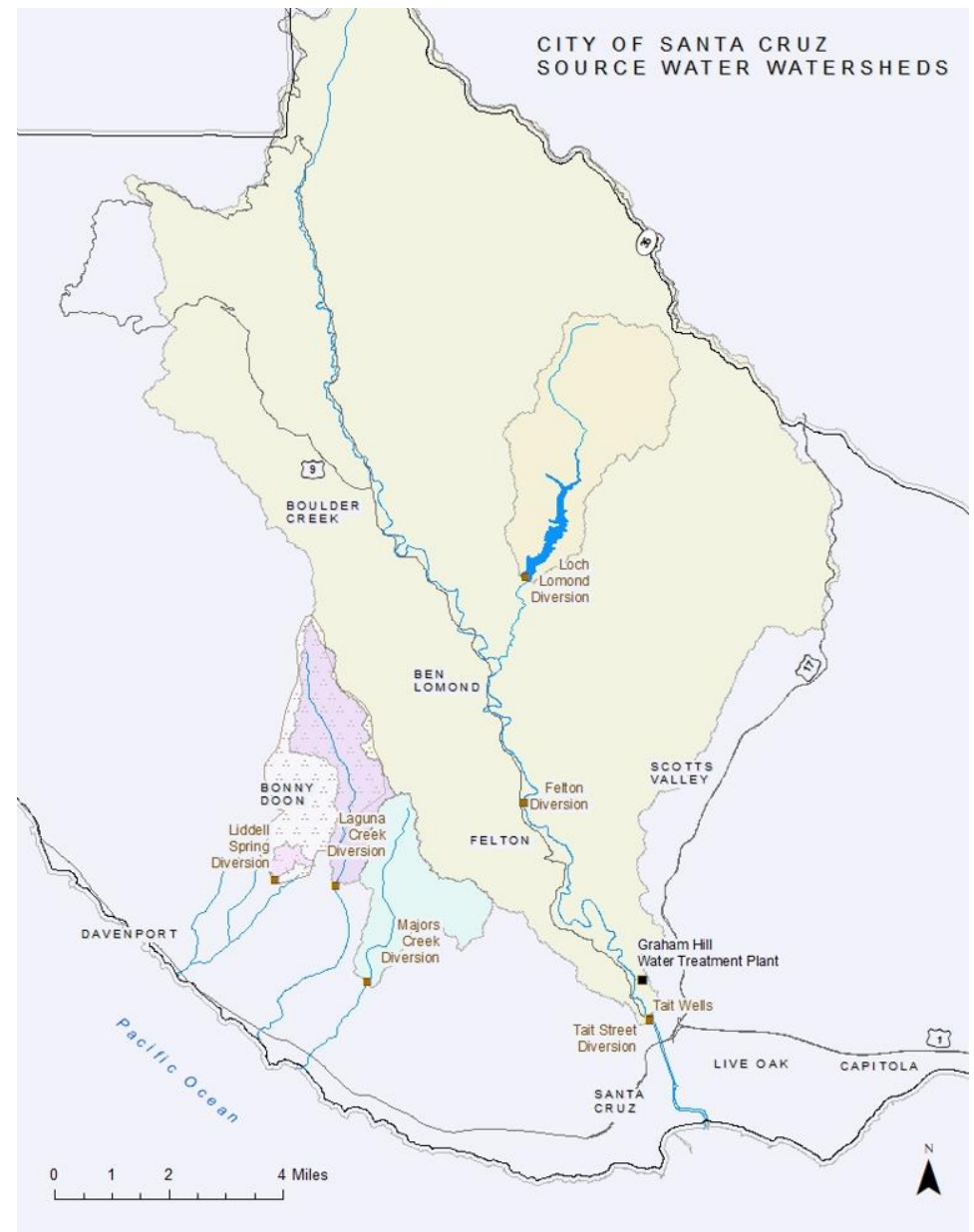
1. San Lorenzo River and North Coast Watersheds Sanitary Survey Update Presentation



2023 San Lorenzo River
and North Coast Watersheds
Sanitary Survey Update

Our Water, Our Future

A watershed sanitary survey is a detailed evaluation of surface water sources and an assessment of vulnerability of watershed lands and waterways to contamination that could affect source water quality



Context

CDM Camp Dresser & McKee Inc.

environmental
services

One Walnut Creek Center
100 Pringle Avenue, Suite 300
Walnut Creek, California 94596
Tel: 510 933-2900 Fax: 510 933-4174

July 10, 1996

Mr. Richard Lee
Water Quality Project Manager
Santa Cruz Water Department
City of Santa Cruz
715 Graham Hill Road
Santa Cruz, California 95060

Subject: *San Lorenzo Valley and North Coast Watersheds
Sanitary Survey Final Report*

Dear Mr. Lee:

Camp Dresser & McKee Inc. (CDM) is pleased to submit the final report for the *San Lorenzo Valley and North Coast Watersheds Sanitary Survey*. This report provides a comprehensive evaluation of existing conditions, management practices, and contaminant sources in the subject watersheds. The key recommendations are:


- Augment current water quality monitoring programs including raw water coliform bacteria sampling and routine data analysis.
- Increase watershed surveillance and inspections to stop unauthorized and other problematic activities which adversely influence water quality.
- Complete a confined animal facility program to identify best management practices which will minimize contamination in runoff from these sites.
- Coordinate efforts among participating agencies and water purveyors to implement watershed management and protection practices.

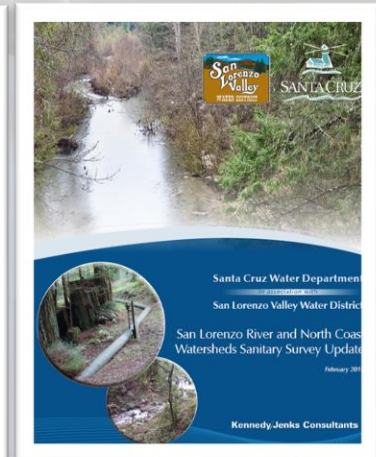
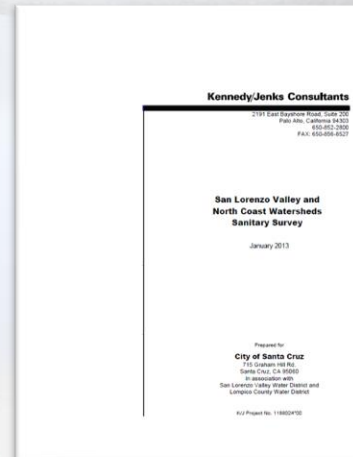
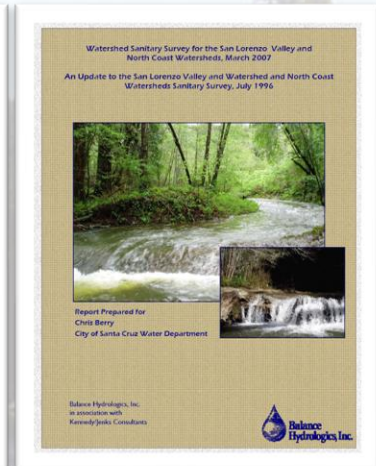
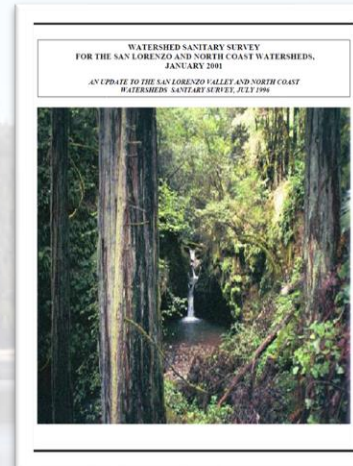
CDM sincerely appreciates the valuable contributions and assistance of the Santa Cruz Water Department staff and all participating utilities and agencies in conducting this study.

Very truly yours,

CAMP DRESSER & MCKEE INC.


Paul Meyerhofer, P.E.
Project Manager


Steve Price, P.E.
Project Engineer



2023 Update

Partners



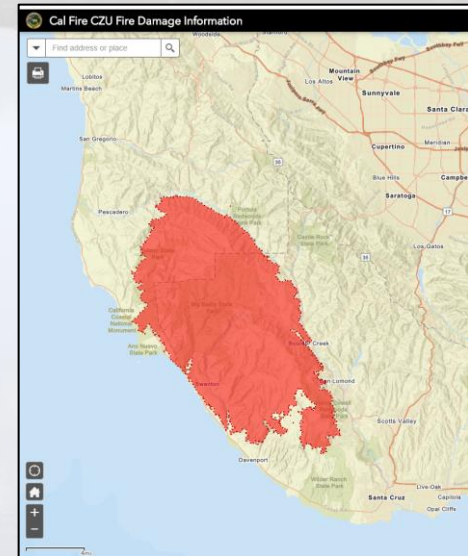
2023 Update

Findings and Recommendations

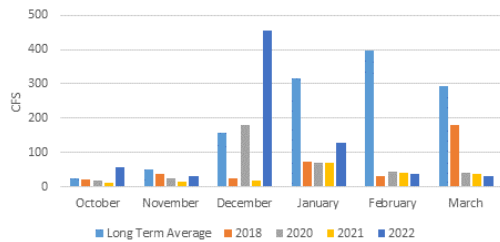
Key changes since 2017



ELEVATION: (reservoir spills at 577.15 ft)	
🌊 Currently:	552.05ft
🌊 Last year:	570.00ft
SEASONAL RAINFALL: (inches)	
💧 For the past week:	0.00
💧 This week last year:	0.00
💧 For the season:	20.19
💧 This point last season:	28.96



Dry/Critically Dry Fall and Winter Mean Stream Flow at Big Trees Gage



2023 Update


Findings and Recommendations

Key changes since 2017

Santa Cruz County Local Agency Management Program
Approved by the Central Coast Regional Water Quality Board October 14, 2021, Board of Supervisors August 23, 2022

County of Santa Cruz Health Services Agency
Environmental Health Division

**Onsite Wastewater
Treatment Systems**
Local Agency Management Program



Approved by Central Coast Regional Water Quality Control Board,
October 14, 2021

Approved by Santa Cruz County Board of Supervisors with Minor Updates,
August 23, 2022

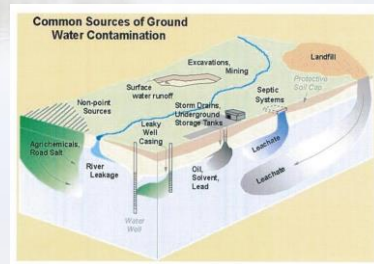
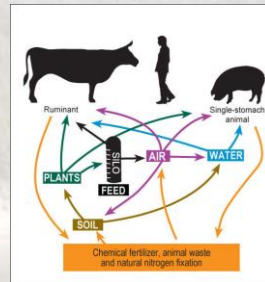
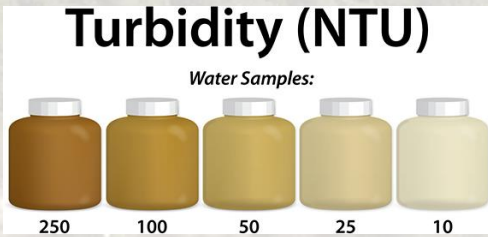
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2023 Update

Findings and Recommendations

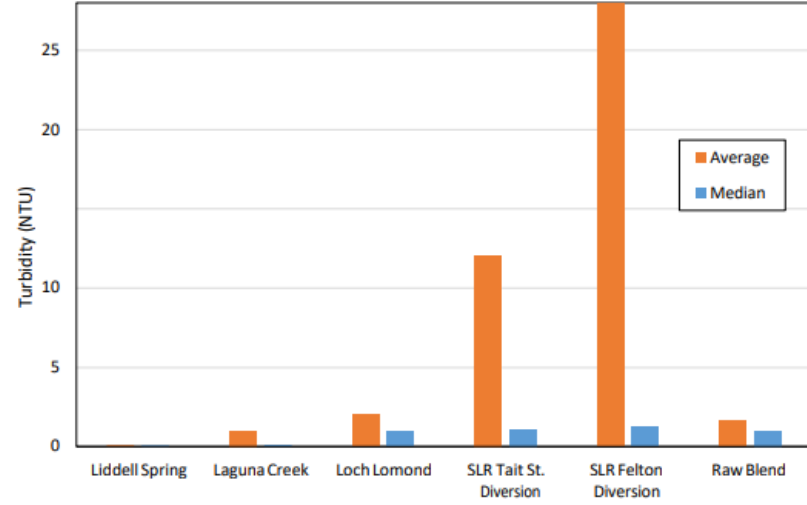
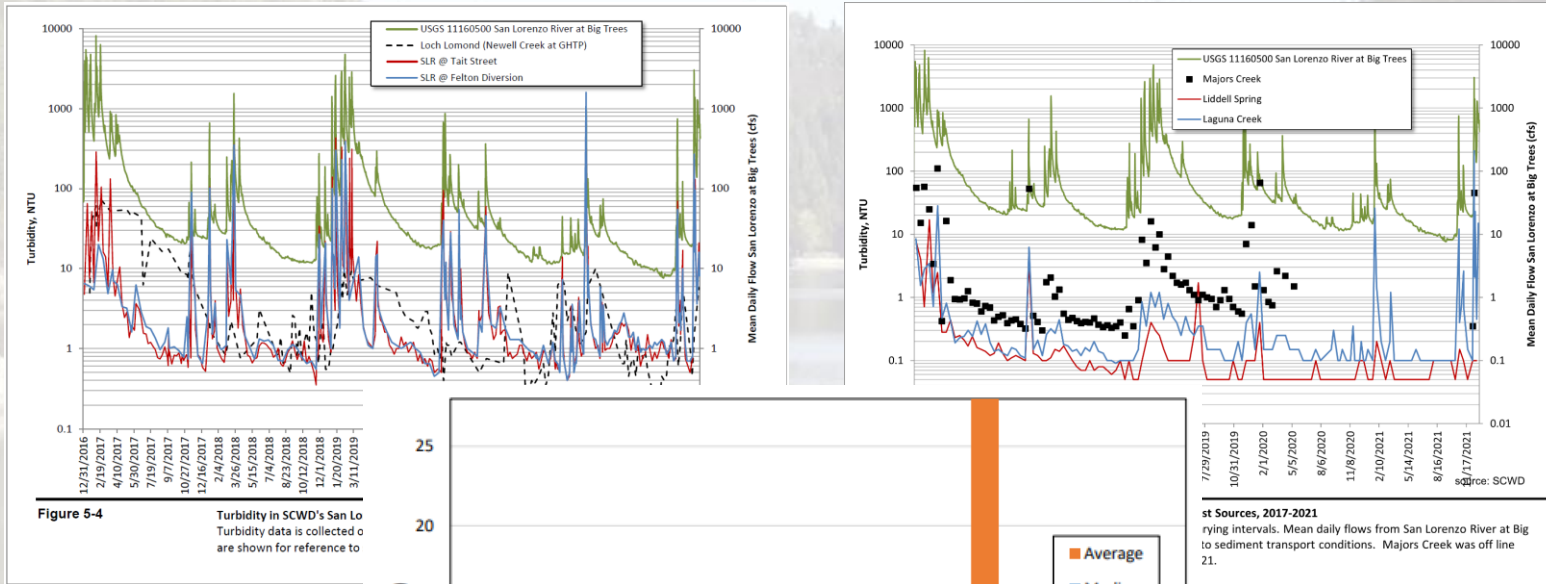
Contaminant Groups, significant sources, and contributing factors



2023 Update

Findings and Recommendations

Sediment and Turbidity

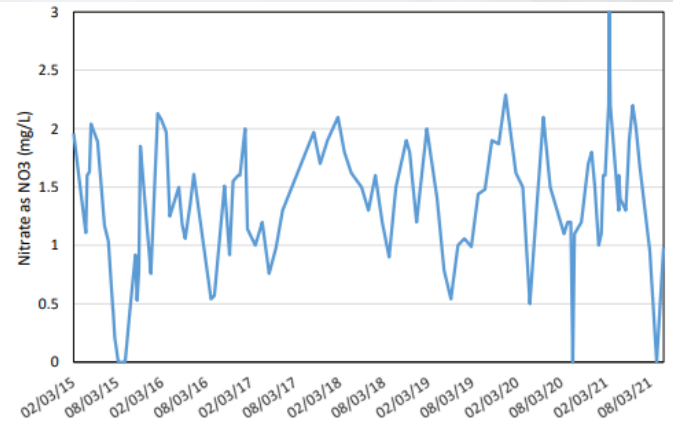
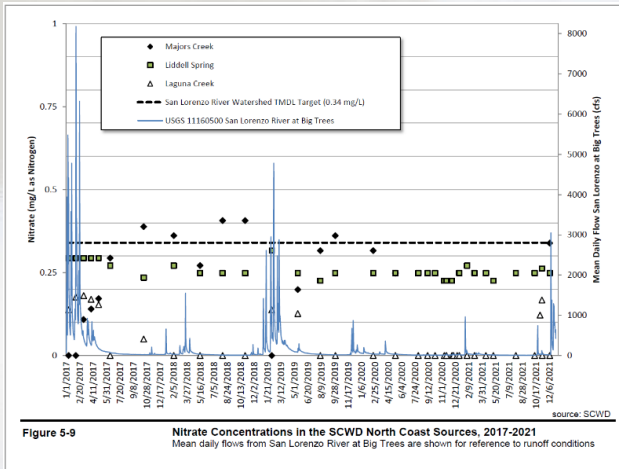
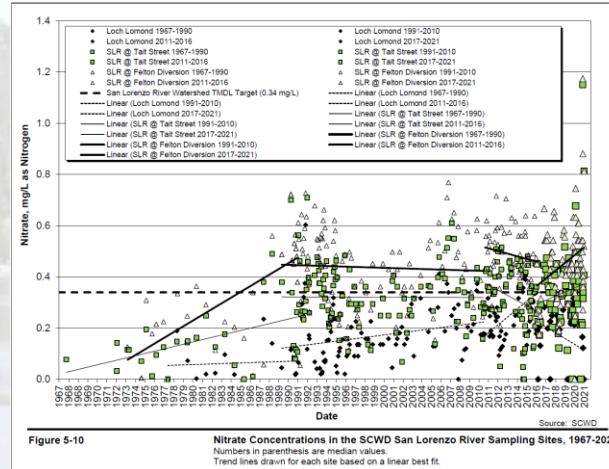
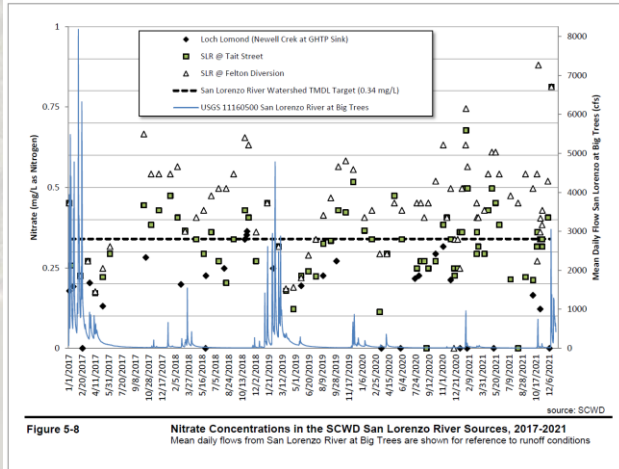


Average and median source water turbidity data for WY 2021

2023 Update

Findings and Recommendations

Nutrients



Summary of nitrate as NO₃ from the San Lorenzo River Tait St. Diversion during January 2015 and September 2021

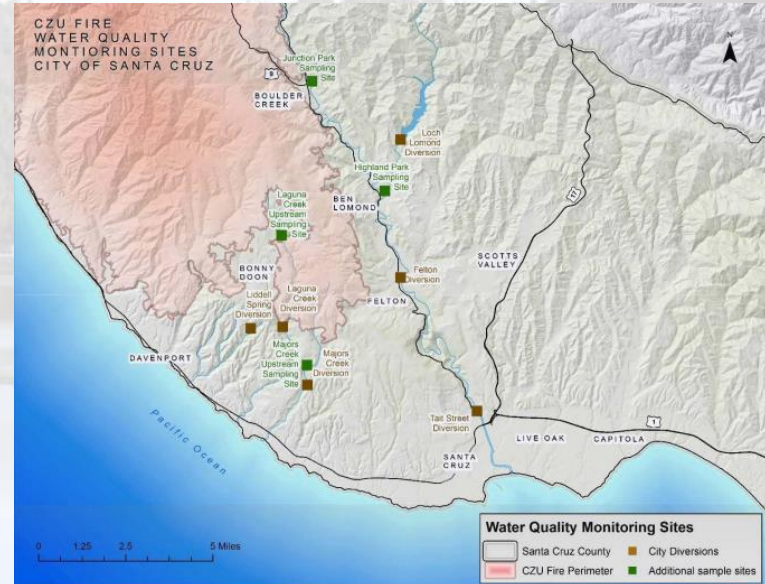
2023 Update

Findings and Recommendations

Contaminants of Emerging Concern

WY 2021 Source Water Monitoring Program Storm Event Sampling Frequency								
Water Quality Parameter	Laguna Creek	Liddell Spring	SLR Felton Diversion	SLR Tait St. Diversion	SLR Highlands	Upper Laguna Creek	SLR Junction	Upper Majors
Volatile Organic Compounds	X		X	X	X	X	X	X
Synthetic Organic Compounds	X		X	X	X	X	X	
Radiological	X		X	X	X	X	X	
Inorganics	X		X	X	X	X	X	X
Anions			X	X	X		X	
General Physical	X	X	X	X	X	X	X	X
Metals	X		X	X	X	X	X	X
MBAS	X		X	X	X	X	X	X
TOC/DOC	X	X	X	X	X	X	X	X
UV254/SUVA	X	X	X	X	X	X	X	X
TSS	X	X	X	X	X	X	X	X
Asbestos	X		X	X	X	X	X	X
Microbial Profile			X	X				
Total Coliform/ <i>E. coli</i>	X	X	X	X	X	X	X	X
Enterococci	X	X	X	X	X	X	X	X
PFAS/PFOS	X		X	X	X	X	X	
CEC	X		X	X	X	X	X	
Bromide	X		X	X	X	X	X	X
Dioxin/Furan	X		X	X	X	X	X	X

X indicates that samples were collected



Analytes	Acronym	California Notification Level (ppt)	10/06/21		10/21/21		10/25/21	10/27/21		11/02/21		11/03/21		11/09/21	
			SLR Tait St. Diversion	SLR Felton Diversion	SLR Tait St. Diversion	SLR Felton Diversion	Laguna Creek	SLR Tait St. Diversion	SLR Felton Diversion	SLR Tait St. Diversion	SLR Felton Diversion	SLR Tait St. Diversion	SLR Felton Diversion	SLR Tait St. Diversion	SLR Felton Diversion
Perfluorobutanesulfonic acid	PFBS	500				2.2	2.5	3.0	2.6	2.1	2.2	2.1	2.0		2.1
Perfluorooctanesulfonic acid	PFOS	6.5	2.2	2.3	4.2	4.7				3.1	2.3	2.0	2.0	4.0	3.2
Perfluorooctanoic acid	PFOA	5.1			2.6	3.0		2.5	2.1	2.9	2.0		2.0	2.5	2.3

Summary of Per- and Polyfluoroalkyl Substances (PFAS) Measured in Source Waters and Finished Water between October 1, 2021 and November 31, 2021. All results are reported in parts per trillion (ppt)

2023 Update

Findings and Recommendations

Pathogens

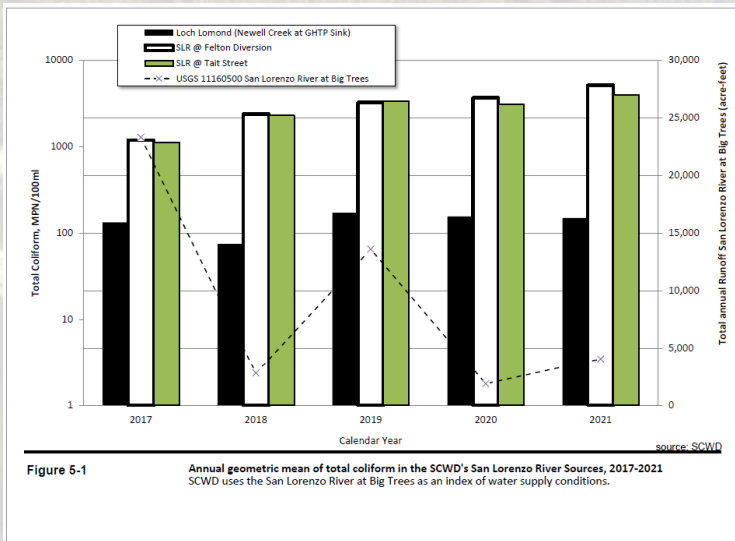


Figure 5-1 Annual geometric mean of total coliform in the SCWD's San Lorenzo River Sources, 2017-2021
SCWD uses the San Lorenzo River at Big Trees as an index of water supply conditions.

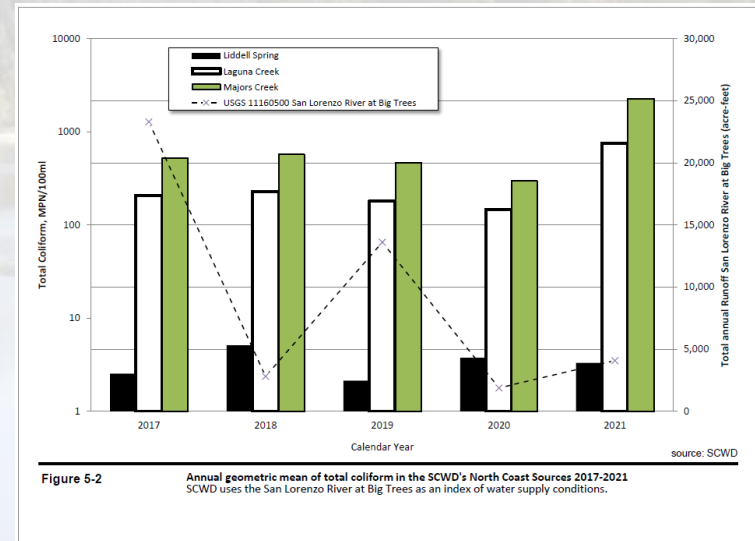


Figure 5-2 Annual geometric mean of total coliform in the SCWD's North Coast Sources 2017-2021
SCWD uses the San Lorenzo River at Big Trees as an index of water supply conditions.

Source Water Protection Outreach and Education



**EIGHTH ANNUAL
State of the San Lorenzo
River Symposium**

March 18
Symposium
9 AM - 12 PM

A Tale of Two Rivers:
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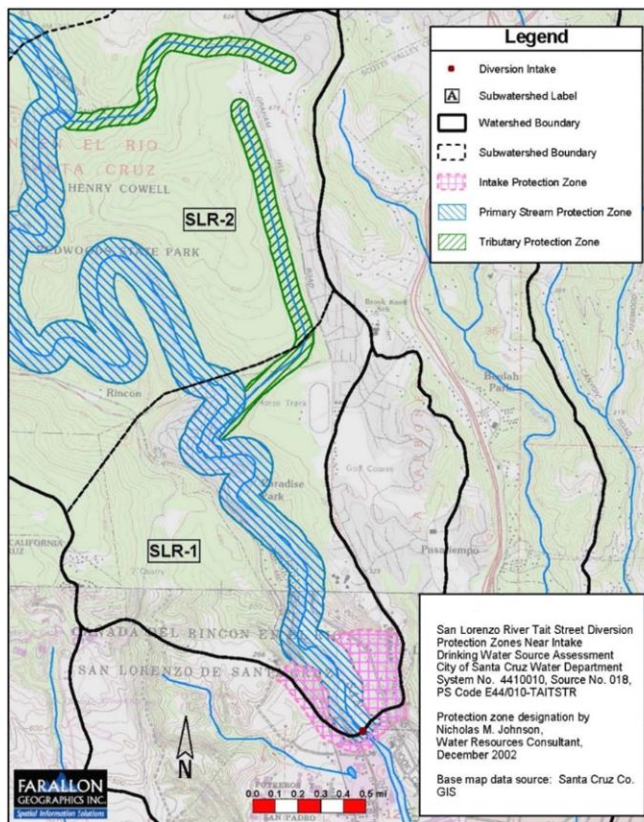
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Source Water Protection

Riparian Protection and Restoration



San Lorenzo River Riparian Conservation Program



May 2018

Developed by:

City of Santa Cruz Water Department
 Coastal Watershed Council
 County of Santa Cruz Water Resources Division
 Resource Conservation District of Santa Cruz County
 San Lorenzo Valley Water District

With assistance from:

Conservation Collaborative
conservecollab@gmail.com

Source Water Protection *Stakeholder Engagement*



215 Mountain Springs Drive
Santa Cruz, CA 95060
10/12/22

TO: THE COUNTY OF SANTA CRUZ
1) The Board of Supervisors;
2) Mr. Matt Machado,
Director of Community Development and Infrastructure Dept.;
3) Ms. Carolyn Burke,
Assistant Director - Permit Center;
4) Ms. Stephanie Hansen,
Assistant Director - Code Compliance;
5) Mr. Marcus Mendez,
Code Compliance Investigator
701 Ocean Street
Santa Cruz, CA 95060

TO: THE CALIFORNIA COASTAL COMMISSION
1) Mr. Dan Carl,
District Director;
2) Mr. Pat Veesart,
Northern California Enforcement Supervisor;
3) Ms. Ellie Oliver,
Enforcement Investigator
725 Front Street #300,
Santa Cruz, CA 95060

TO: THE CITY OF SANTA CRUZ
1) Mr. Chris Berry,
Watershed Compliance Manager
212 Locust Street
Santa Cruz, CA 95060

RE: APN 062-181-10
5187 Empire Grade, Santa Cruz, CA 95060

Dear Members of the Board of Supervisors; County Administrators and Staff;
Coastal Commission Administrators and Staff; and City Watershed Management
Staff:

We are writing as Bonny Doon residents and neighbors of the subject 82-acre
property. We are writing about a zoning violation, a general plan violation, a
public nuisance, a noise nuisance, a night time lighting nuisance, a potential fire

1



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Regulator Engagement



Source Water Protection

Policy Maker Engagement



212 Locust Street, Suite A, Santa Cruz, CA 95060 • 831-420-5200

Central Coast Water Board
Attn: John Inman
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401

October 7, 2021

Subject: Comments - 2021 Triennial Review of the Water Quality Control Plan for the Central Coastal Basin

Dear John Inman and Central Coast Water Board Staff,

The City of Santa Cruz Water Department appreciates the opportunity to comment on the 2021 Triennial Review of the Water Quality Control Plan for the Central Coastal Basin. As a domestic drinking water provider to over 96,000 customers served primarily by surface water, the City of Santa Cruz Water Department is very interested in the current Basin Plan review process. Please consider the following comments as you proceed.

Brief Issue Descriptions, Issue 36: Revise Storm Season Start Date to October 1

Regarding the revision of the storm season start date to October 1, while the City supports a policy that compels project sites to be prepared for early season rains, an October 1st start date is inconsistent with several TMDLs and with other state agencies' standards. An October 15th or November 1st start date would allow for flexibility and would be better aligned with our changing climate, where significant rains prior to November are an increasingly rare occurrence. A later date would also spare many organizations from having to use extra resources on preparation and revision of winter operation plans which are generally unnecessary since projects are often completed in mid-October.

Create site-specific turbidity and pathogen objects extending 5-miles upstream of the City's San Lorenzo River surface water diversion at Tait Street

As the San Lorenzo River is the primary water source for the City of Santa Cruz, we would like increased focus on protecting the Municipal and Domestic Supply (MUN) beneficial uses that are currently incorporated into the basin plan. To better protect the MUN beneficial uses we suggest lowering acceptable turbidity and pathogen levels for reaches upstream of the main diversion near Crossing Street in the City of Santa Cruz (<https://qoo.gl/maps/baP8bJvZrM/HaiE7>) with site specific objectives. For instance, using a value of 15 NTU, which is in between the secondary MCL for turbidity of 5 NTU and the 25 NTU regional value, for 5 miles upstream of the diversion would be useful to regulate discharges in addition to helping meet annual load targets of the sediment TMDL.

Winter water from the San Lorenzo is rapidly becoming more important to municipal use in terms of groundwater recharge projects. Having the pathogen and turbidity standards applied for this reach on a year-round basis will further protect MUN beneficial uses. It is our position



Thank you

Our Water, Our Future



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Rosemary Menard

From: millan@datainstincts.com
Sent: Thursday, February 09, 2023 7:12 AM
To: Undisclosed Recipients
Subject: In times of scarcity, California's best new source of water? Reuse. - Stanford University 2/8/23

In times of scarcity, California's best new source of water? Reuse.

Visit full article for images and related charts: <https://andthewest.stanford.edu/2023/in-times-of-scarcity-californias-best-new-source-of-water-reuse/>

While expensive solutions like new reservoirs and seawater desalination grab attention, California communities are quietly building up their capacity to clean stormwater and wastewater for reuse for irrigation, industry and, yes, drinking water too. - By & the West, Stanford University, 2/8/23

By Caroline M. Reinhart

As California has struggled with drought, Governor Gavin Newsom's fundamental solution: find more water by diversifying the state's public water supply. Because of the proximity of the Pacific Ocean, one of the most frequently mentioned sources is seawater desalination. A few communities are trying it, despite environmental concerns.

But another potential source gets less public attention, even though water providers are showing increasing interest thanks to its early successes: reuse.

"...when you want more supply, you have to think about alternatives. The best, most reliable alternative is treated wastewater."

Peter Gleick, The Pacific Institute

"In many regions we're running up against limits on natural water availability of the traditional sources of supply," said Peter Gleick, the co-founder of the Pacific Institute, an environmental research organization. "And when that's the case, and when you want more supply, you have to think about alternatives. The best, most reliable alternative is treated wastewater." Californians use approximately 6.6 million acre-feet of water per year in urban areas. To meet this demand, the state's water utilities identified a range of options including recycled water, desalination, and conservation.

Using less water is the quickest, cheapest and easiest alternative. "Conservation is still one of the biggest things we can do," said Mehul Patel, the executive director of operations for Orange County Water District's Groundwater Replenishment System. "Use less, be smarter, think about why we're using the water we're using and the volumes we are using it. That would go a long way." But reused water may be the next best option.

The new goal: doubling the volume of reclaimed water

Reclaimed water is largely used in two ways: first, for industrial machines, irrigation, and agriculture and second, for eventual human consumption after treatment and a period of retention time in an aquifer. These types of reuse, non-potable and indirect potable reuse, already supply approximately 728,000 acre-feet of reused municipal wastewater in California per year. This constitutes 11 percent of total public water system use, and uses less than a quarter of the state's wastewater leaving room for considerable growth.

Graphic: California treatment plants delivered 726,864 acre-feet of reused water in 2021

& the West

Current reuse efforts use less than a quarter of the state's wastewater leaving room for considerable growth. Gov. Newsom's goal, 1.8 million acre-feet by 2040, would double the amount of recycled water used in 2021.

According to the Pacific Institute, California has the potential to increase their water supply by an additional 1.8 to 2.1 million acre-feet per year if they expand water reuse. Newsom’s reuse goal, 1.8 million acre-feet by 2040, would double the amount of recycled water used in 2021.

To meet this goal, two Bay Area agencies, Pure Water Soquel in Santa Cruz and the Santa Clara Valley Water District are working to supplement their groundwater aquifers with recycled water that has already been through their system. A state mandate to maintain the sustainability of California groundwater basins by 2040 motivated Pure Water Soquel’s project while Valley Water, which serves the San Jose area, is seeking both to prevent seawater from contaminating aquifers and to augment dwindling supplies. Their advanced water treatment projects will come online in 2024 and 2028, respectively.

Representatives of Pure Water Soquel and Valley Water said they were emboldened by the success of reuse efforts in Orange County, in southern California. Oakland and San Francisco also say they are considering reuse projects, but they haven’t gone as far as a cluster of smaller agencies around them. Pending groundwater augmentation projects would add about 356,500 acre-feet per year when completed.

Monterey One Water’s project, Pure Water Monterey, is a regional pioneer of a more ambitious form of water recycling: indirect potable reuse. The process directs treated wastewater through groundwater aquifers, which are a key source of drinking water. Moreover, the process helps buffer freshwater aquifers from the contamination impact of seawater intrusion.

To combat seawater intrusion, Pure Water Monterey injects purified recycled water back into the groundwater aquifer to correct the water’s chemical composition. It can then be used to augment the drinking water system’s supply. The central coast town of Cambria is one of the first communities in California to recycle sewage water into an eventual drinking-water source through indirect potable reuse. Treated water is added to groundwater supply for later use.
Florence Low/California Department of Water Resources

Mike McCullough, the director of external affairs for Monterey One Water, reflected on how their advanced water treatment facility began with the help of the Orange County Water District, “using water once and discharging it is just not good stewardship.” Calling the Orange County Water District a “leader,” he added, “now we’re just trying to follow and do the same thing that they did just on a lot smaller scale.”
The secret of Orange County’s reuse success

Orange County Water District’s recycling system is the world’s largest water purification system, with the capability to produce up to about 307 acre-feet — or 100 million gallons — of wastewater per day. But their success required overcoming significant obstacles, involving both engineering and psychology.

Orange County Water District via Instagram

Orange County Water District’s success required overcoming significant obstacles, involving both engineering and psychology.

San Diego’s decades-long struggle to establish a system of reuse stood in sharp contrast to Orange County’s achievement. In the early 2000s, San Diego residents balked at the thought of drinking wastewater. At the time, San Diego attempted to install a recycling system but opponents’ objections — the “yuck factor” — won out. Miller Brewery led the opposition, expressing fears that the idea of wastewater in their products would scare away customers. Using the evocative slur “toilet-to-tap,” their campaign halted the facility’s plans.

Then ongoing droughts, along with greater understanding of and the treatment process, helped change attitudes. After about a decade of planning and engineering, San Diego’s first operational water reuse facility, Pure Water Oceanside, was completed last March.

Gleick of the Pacific Institute, reflecting on San Diego's long journey, said that, as with Orange County, their educational campaign made the difference. "What it means is that [you] don't launch a water reuse program without a public education and communications program to tell the people what you are doing. Build support for it."

"We wanted to, in our outreach, show that we have this new technology. It's very safe," said Orange County's Patel. "It's used in other industries already like food processing, so it's not like we are trying to do something that has never been done, it just hasn't been done on a municipal scale."

Monterey One Water's McCullough said several agencies including his own found Orange County's approach a template for how to gain public support. "They've handled a lot of obstacles and everybody's coming behind them. They broke the ground as far as public outreach and education."

Emulating Orange County, Pure Water Monterey built a small demonstration facility for visitors to watch the equipment in real time and taste the treated water from sinks if they desired. Now, Pure Water San Diego also provides facility tours.

Reclaimed water shown at various stages of treatment. Department of Ecology, State of Washington via Wikimedia Commons

According to a 2016 survey conducted by Xylem Inc. a water technology company, 89 percent of California residents are more willing to consume recycled water after understanding the treatment process. The support for reclaimed water is only increasing with the attention to California's intensifying-drought. However, a Bill Lane Center for the American West study published in the same year concluded that while education does lower concerns about reclaimed water, participants were still reluctant to use it for drinking, bathing, and cooking.

Treatment that goes above and beyond standard methods

Any water agency planning to use recycled water for drinking must put wastewater through an intense series of treatments, typically with a three-step process after the basic treatment, filtering out most contaminants, is finished.

The water then goes to an advanced water treatment facility, which separates water from any remaining impurities by using an energy-intensive process called reverse osmosis. During this phase, a high-pressure pump pushes water through microscopic holes, trapping everything from dissolved solids like lead, to salt compounds, to tiny contaminants like PFAS, while letting water molecules through.

The water is then nearly as pure as the distilled water used to sterilize hospital equipment. The final disinfection step: treating the water with an advanced oxidation reaction, a process in which ultraviolet light works with hydrogen peroxide to prepare the water for distribution through the water system.

Indirect potable reuse uses reservoirs or aquifers to create an environmental buffer.

For years, recycled water, treated less intensively, has been used for irrigation and heating and cooling. Now, to reach drinking water's higher standards, groundwater augmentation projects use one more step: sending it into an aquifer to mingle with existing groundwater. Indirect potable reuse uses reservoirs or aquifers to create an environmental buffer. For example, this recycled water can replenish groundwater basins to mitigate the impacts of over pumping.

Direct potable recycling offers "water on demand"

California legislators want to promote direct potable reuse. Instead of adding water back into the groundwater supply, as Orange County does and the several Bay Area agencies plan to do, direct potable reuse provides water ready to go straight to the customer's tap. The State Water Board plans to adopt regulations on required treatment steps by the end of 2023.

Among those researching direct potable reuse are the East Bay Municipal Utility District, Valley Water, San Francisco Public Utility Company and Monterey One Water, but they cannot move forward and construct facilities until the state adopts final regulations.

Operators at the Pure Water Monterey water purification facility. Monterey One Water via Twitter

Even with indirect potable reuse infrastructure in place, adopting direct potable reuse will require the utilities to adjust the purification process, according to Jonathan Lear, the water resources division manager at Monterey Peninsula Water Management District.

To follow the new rules, Lear said, would mean reengineering the water processing they already use. Nonetheless, when regulations for direct potable reuse are established, these utilities will be keen to incorporate the new water source. As Lear says, “there are large benefits of being able to manufacture water and directly serve it without having to park it somewhere for a little while.”

Other options

State utilities have another, easier option for increasing water supply. Stormwater has long been used as a major source to supplement water supplies as runoff from heavy rain pools in man-made surface water ponds. Urban stormwater capture has the potential to add 580,000 to 3 million acre feet per year depending on rainfall levels.

This source would be beneficial to utilities because it is produced with less energy and expense, though it must clear out such contaminants as pesticides and oil.

Urban stormwater capture has the potential to add 580,000 to 3 million acre feet per year depending on rainfall levels.

Desalination, the treatment of ocean or brackish water for human consumption, gets a lot of attention; the state’s Coastal Commission has recently approved desalination plants in Monterey and Dana Point. But desalinated water requires three to ten times more energy than recycled water. Most of that energy is generated by fossil fuels. Not only does desalination require more costly inputs, but it produces a high-salt concentrate known as brine, which must be pumped into the ocean, threatening marine organisms.

In fact, reclaimed water uses a similar treatment process as desalination — for instance both, rely on reverse osmosis. But the concentrate left over from the recycling process has little of seawater’s salt, so the leftover concentrate is less harmful. Purifying reclaimed water is also cheaper: seawater desalination’s median cost is \$1.72 per cubic meter for large plants and \$2.29 per cubic meter for smaller ones. Non-potable recycled water costs 45 percent less for small projects. Indirect potable reuse costs 18 percent less for small projects and 38 percent less for large projects.

& the West; Data: The Pacific Institute

Stormwater capture is the cheapest alternative water option but its water quality issues may justify choosing reused water, despite the extra cost. Because of the “yuck factor,” recycled water is treated more intensely than conventional drinking water sources.

Because of the “yuck factor,” recycled water is treated more intensely than conventional drinking water sources.

A Stanford study published in November of last year found that recycled water for potable reuse is much cleaner than conventional tap water sources. Because the source is wastewater, regulators require a more intensive treatment process to clear the water of even the smallest of contaminants that can be found in standard drinking water treatment facilities.

McCullough of Monterey One Water agrees that this recycled water’s purity exceeds that of everyday tap water. “No drinking water system goes through the treatment process that we go through so our water is definitely way cleaner.”

He added that recycled water “has less particulate matter or viruses or compounds or anything in it than water that is traditionally serving customers now.”

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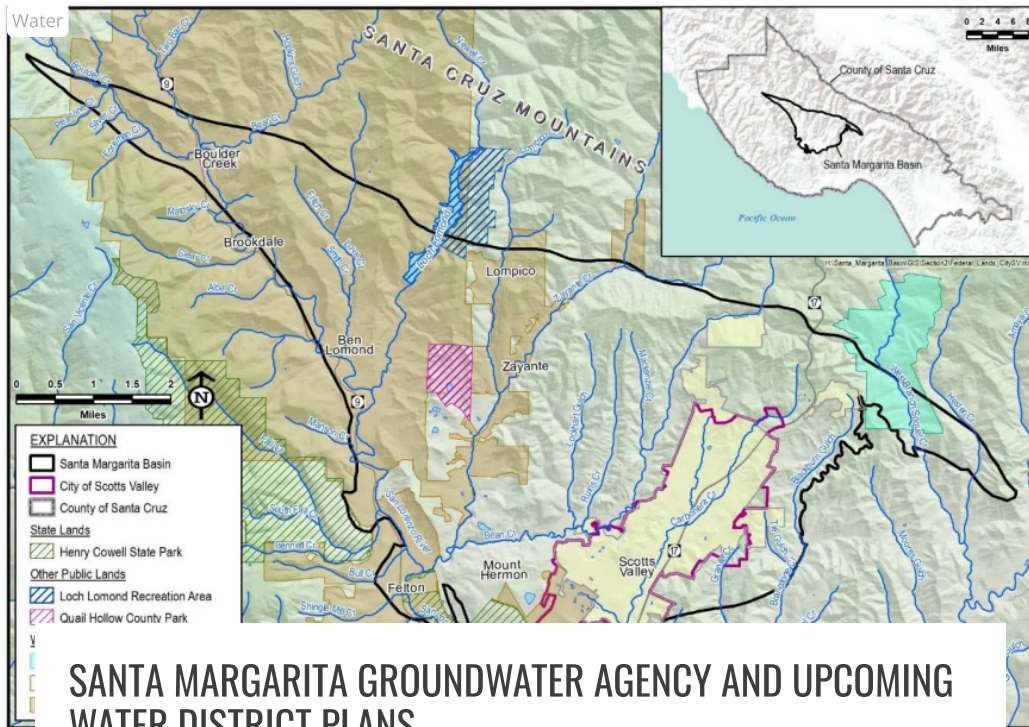


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SANTA MARGARITA GROUNDWATER AGENCY AND UPCOMING WATER DISTRICT PLANS

FEBRUARY 16, 2023 SLVPOST.COM

By Bob Fultz

It's important that we all stay current with the activities of the Santa Margarita Groundwater Agency (SMGA), since their actions could have a significant impact on local control and cost of water in San Lorenzo Valley Water District (SLVWD).

A bit of background. The Santa Margarita Aquifer has been designated by the State of California as being a "medium priority" basin with respect to overdrafting, scoring only 2.5 points away from a "low priority" classification where a mitigation plan is not required. The medium designation obligates our community to develop a plan for aquifer recharge over the next 20 years.

To that end, after an intense effort over several years, the SMGA submitted its [Groundwater Sustainability Plan \(GSP\)](#) to the California Department of Water Resources, which posted it on January 14, 2022, and is still under State review.

There was a lot of positive information in the GSP submitted by the SMGA. It did an excellent job of analyzing our situation and provided a number of common-sense

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and reasonable plans for recharging the aquifer, specifically in two main areas. First is redistribution of excess surface water inside of the SLVWD, as well as sharing excess surface water with Scotts Valley Water District (SVWD) during the winter months in order to rest the SVWD wells and thereby use even less groundwater.

Second is conservation, where both SLVWD and SVWD customers excel in reducing water use on a per person basis. In fact, the SLVWD is recognized as having some of the lowest water usage in the entire state. Increased conservation helps recharge the aquifer naturally. In addition, the fact that the San Lorenzo Valley residents are all on septic systems means that a good share of the water discharged from our homes also finds its way—eventually—back into the aquifer.

These very positive factors informed my critique of the GSP, which was included in the report, that focused on financial feasibility and objected to including an outlier proposal for Aquifer Storage and Recovery (ASR). ASR is the use of high-pressure injection wells to force treated water into our aquifer. This technique is usually used elsewhere as a last resort to combat severe overdraft conditions or saltwater intrusion, neither of which apply to our area. In my opinion, given the size, financial resources, residential character and demographics of our community, these injection wells represent an **unjustified high-cost, high-risk, nonviable solution** for groundwater management. My recommendation was to delete this item so that no agency would be tempted to pursue this path and worse, attempt to include the residents of the SLVWD in such a scheme.

SMGA responded with reassurance: *“It is assumed that the relatively simpler, cheaper and/or more cost-efficient projects will be implemented first, and based on performance of those projects with respect to groundwater sustainability, the more costly and complicated projects might need to be considered and executed.”* This assurance seemed to be good news for our community, where the various agencies involved in the effort to recharge our aquifer would focus on practical, economic, sustainable protections.

Unfortunately, that all changed when the City of Santa Cruz’s Water Department stepped in and unilaterally blocked SLVWD’s plans for perfecting its water rights to support wider distribution of excess surface water, which is the key to letting wells rest and allowing the aquifer to recover. This setback now involves delays that may take many years to resolve. I believe any objections the City had to the SLVWD’s plans could have easily been resolved via negotiation between the parties. However, it is now apparent that the City of Santa Cruz Water Department and, to a lesser extent, the SVWD, are very interested in ASR and injection wells, perhaps due to their communities’ growth plans and their resulting need for water. By contrast, the San Lorenzo Valley is a no-growth community with limited financial resources and important priorities to attend to—like rebuilding infrastructure not attended to for decades and recovering from the CZU fire. SLVWD residents cannot afford to spend money on such risky projects, especially when there are much lower-cost alternatives to protect and recharge our aquifer.

The priorities for SVWD and the City of Santa Cruz Water Department are clearer when we examine the current grant funding opportunity being pursued by the SMGA. As presented to the SLVWD Board for approval on 12/1/2022, almost 75% of the money requested to support sustainability projects are for projects related to ASR and injection wells, though the language in the grant request summary wouldn’t give you any hint of that. Regrettably, this does not follow the SGMA reassurance that ASRs are “back burner” ideas, not to be considered until lower

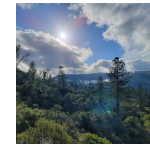


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cost lower risk projects have been exhausted and proven over years to not meet the goal.



Fall Creek: The SLV Water District owns over 250 acres of land in the Fall Creek watershed, a tributary to the San Lorenzo River. Fall Creek is a surface water source and steelhead habitat. (Photo by Mary Andersen)

My policy position is clear and remains unchanged: SLVWD should focus exclusively on making more efficient use of its significant surface water resources and the common-sense plans included in the GSP. Then, after operating at greater efficiency for 7 years, evaluate whether or not the aquifer is being replenished at a rate fast enough to achieve sustainability in the required 20 years. If not, then re-evaluate and make adjustments. But let's not spend endless money on consultants and studies for something that doesn't make sense for our area.

With your support, as long as the SLVWD doesn't have anything to do ASR and injection wells, projects that are inappropriate for our area and needs, we can watch the SVWD and the City of Santa Cruz Water Department spend their money—and the money of the California taxpayers—on these risky projects while the SLVWD attends to its priorities, which are (a) to complete the recovery from the CZU fire, (b) perfect our water rights to allow our District to do an even better job of distributing excess surface water inside our District, and (c) focusing on operating efficiencies so as to reduce the rate of growth in our District's skyrocketing operating costs—and rates. Strengthening our District's water efficiencies, infrastructure, and finances enables us to better withstand—and reject—any demands from neighboring agencies that our community should help pay for something simply not justifiable environmentally or economically.



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Bob Fultz is a member of the San Lorenzo Valley Water District Board of Directors but is speaking only for himself in these columns. He is a resident of Boulder Creek and CEO at Range Networks.

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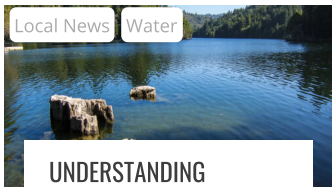
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