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

WATER COMMISSION

Regular Meeting
December 5, 2022

7:00 P.M. GENERAL BUSINESS AND MATTERS OF PUBLIC INTEREST, ZOOM WEBINAR

COVID-19 ANNOUNCEMENT: This meeting will be held via teleconference ONLY.

In order to minimize exposure to COVID-19 and to comply with the social distancing suggestion, the Council Chambers will not be open to the public. The meeting may be viewed remotely, using the following sources:

- Online:https://ecm.cityofsantacruz.com/OnBaseAgendaOnline/Meetings/Search?dropid=4&mtids=124
- Zoom Live (no time delay): https://us06web.zoom.us/j/81011582777
- Facebook: https://www.facebook.com/SantaCruzWaterDepartment/?epa=SEARCH_BOX

PUBLIC COMMENT:
If you wish to comment on items 1-7 during the meeting, please see the information below:

- Call any of the numbers below. If one number is busy, try the next one. Keep trying until connected.
  +1 669 444 9171
  +1 346 248 7799
  +1 720 707 2699
  +1 253 215 8782
  +1 312 626 6799
- Enter the meeting ID number: 810 1158 2777
- When prompted for a Participant ID, press #.
- Press *9 on your phone to "raise your hand" when the Chair calls for public comment.
  - It will be your turn to speak when the Chair unmutes you. You will hear an announcement that you have been unmuted. The timer will then be set to three minutes.
  - You may hang up once you have commented on your item of interest.
  - If you wish to speak on another item, two things may occur:
    1) If the number of callers waiting exceeds capacity, you will be disconnected and you will need to call back closer to when the item you wish to comment on will be heard, or
    2) You will be placed back in the queue and you should press *9 to "raise your hand" when you wish to comment on a new item.

NOTE: If you wish to view or listen to the meeting and don't wish to comment on an item, you can do so at any time via the Facebook link or over the phone or online via Zoom.

*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 – 4.9) 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 November 7, 2022 (Pages 2.1 – 2.7)

   Approve the November 7, 2022 Water Commission Minutes.

3. FY 2022 4th Quarter and FY 2023 1st Quarter Unaudited Financial Reports (Pages 3.1 – 3.15)

   Accept the FY 2022 4th Quarter and FY 2023 1st Quarter Unaudited Financial Reports.

4. Water Supply Augmentation Strategy (WSAS) Quarterly Report (Pages 4.1 – 4.9)

   Receive an update regarding the status of the Water Supply Augmentation Strategy and supporting studies and provide feedback.

Items Removed from the Consent Agenda

General Business (Pages 5.1 – 7.31) 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.

5. Updated Affordability Assessment Incorporating Projected Water & Sewer Service Rate Increases Through 2026 (Pages 5.1 – 5.18)

   Receive a presentation on the forward-looking assessment of Affordability of Water and Wastewater Services with the projected water rate increases through 2026.

6. New Customer Assistance Framework and Conservation 2.0 (Pages 6.1 – 6.31)

   Receive an informational presentation about the work that has been done to assess and revise the Santa Cruz Water Conservation Program and provide feedback to staff.

7. Informational Update on Graham Hill Water Treatment Plant Facility Improvement Project (Pages 7.1 – 7.31)

   Receive a briefing on the Graham Hill Water Treatment Plant Facility Improvements Project.

Subcommittee/Advisory Body Oral Reports

8. Mid-County Groundwater Agency

9. Santa Margarita Groundwater Agency

Director's Oral Report

Information Items

Adjournment

WATER COMMISSION
INFORMATION REPORT

DATE: 12/01/2022

AGENDA OF: 12/05/2022

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:

November 15, 2022

Beltz 12 Phase I Ammonia Removal Improvements Project – Approval of CEQA Exemption, Plans and Specifications and Authorization to Advertise for Bids and Award Contract (WT)

Motion **carried** to approve the Plans and Specifications for the Beltz 12 Phase I Ammonia Removal Improvements Project (c720203), authorize staff to advertise for bids and the Water Director to execute change orders within the approved project budget, and find the Project exempt under the California Environmental Quality Act. The City Manager is hereby authorized and directed to execute the contract as authorized by Resolution No. NS-27,563.

Soquel Avenue Water Main Replacement Project – Approval of CEQA Exemption, Plans and Specifications, and Authorization to Advertise and Award Contract (WT)

Motion **carried** to approve plans and specifications for the Soquel Avenue Water Main Replacement Project, authorize staff to advertise for bids, and authorize the Water Director to execute change orders within the approved project budget and find the Project exempt under the California Environmental Quality Act. The City Manager is hereby authorized and directed to execute the contract as authorized by Resolution No. NS-27,563.

Water Supply Augmentation Strategy, Aquifer Storage and Recovery Demonstration Study in Beltz Wells 8 &12, Pueblo Water Resources Professional Service Contract (WT)

Motion **carried** authorizing the City Manager to execute an agreement in the amount of $141,023 with Pueblo Water Resources of Ventura, CA for Aquifer Storage and Recovery

Demonstration Study in Beltz Wells 8 & 12 in a form to be approved by the City Attorney and authorizing the Water Director to execute amendments within the approved project budget.

November 29, 2022

Securing Our Water Future Resolution and Policy Guidance for Water Supply Augmentation to Improve Water Supply Reliability for Santa Cruz Water Service Customers (WT)

Adopted a resolution establishing a policy on Securing Our Water Future that provides guidance and direction for the development and implementation of water supply augmentation projects needed to resolve Santa Cruz's long-standing water supply reliability issue; and

Directed staff to add the policy direction included in the Securing Our Water Future resolution to the City Council's Policy Manual as policy 34.7, Securing Our Water Future Policy Guidance for Water Supply Augmentation to Address Santa Cruz's Water Supply Reliability Issue.

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

ATTACHMENTS: None.

Water Department

Water Commission
7:00 p.m. – November 7, 2022
Zoom Teleconference

Summary of a Water Commission Meeting

Call to Order: 7:00 PM

Roll Call

Present: D. Alfaro (via Zoom), J. Burks (Vice Chair) (via Zoom), T. Burns (Via Zoom), D. Engfer (via Zoom), A. Páramo (via Zoom), G. Roffe (via Zoom) S. Ryan (Chair) (via Zoom)

Absent: None.

Staff: R. Menard, Water Director (via Zoom); C. Coburn, Deputy Director/Operations Manager (via Zoom); H. Luckenbach, Deputy Director/Engineering Manager (via Zoom); Sarah Perez, Principal Planner (via Zoom); K. Fitzgerald, Management Analyst (via Zoom), E. Watkins, Interim Administrative Assistant III (via Zoom)

Others: Two members of the public (via Zoom)

Presentation: None.

Statements of Disqualification: None.

Oral Communications: One member of the public spoke.

Announcements: Commissioner Engfer announced participation in a trust-building workshop on October 26th that was sponsored by the River Network and Water Alliance.

Consent Agenda

1. City Council Items Affecting the Water Department

2. Water Commission Minutes From October 3, 2022

No public comments were received.

Commissioner Engfer moved the Consent Agenda. Commissioner Burns seconded.

VOICE VOTE: MOTION CARRIED
AYES: All
NOES: None

DISQUALIFIED: None

General Business

3. Final Draft Securing Our Water Future Resolution with Policy Guidance for Water Supply Augmentation and Technical Materials That Will be Included in the City Council Agenda Item for Their November 29, 2022, Meeting

R. Menard introduced Dr. Casey Brown (University of Massachusetts, Amherst) for the presentation and discussion of the Vulnerability Assessment and Adaptation Planning for the Santa Cruz Water Department.

Why wasn't a **third** scenario that considered both precipitation and variability in temperature?

- There's been a lot of discussion around this in terms of how extreme of a scenario should be considered. Thinking about how one variable changes is more **straightforward** than thinking about how two variables change together. For example, if we look at a plot of precipitation changes from the scatter plot of GCM projections, we can see where -10% precipitation falls in that full cluster, and it's on the left. So, it's not the most extreme, but it's a conservative value. If we look at an increase in the coefficient of variability, it's similar and plausible. It's consistent with some of our scientific expectations. It's not the most extreme, but it gives you a lot of coverage of the possible changes. It's difficult to think about a minus ten percent precipitation AND a plus ten percent variability.
- Another important factor in thinking about a planning scenario for the next several years is that the selected options must be plausible. It's important to conduct thorough work, but also select something that is credible. This is achieved by not picking the worst of the worst scenario as the main planning scenario. Choosing a scenario that reduced projected precipitation in addition to increased variability, would result in something that's more dire and less credible.

How can the emerging work on increased variability be characterized in terms of understanding the potential impacts of variability, particularly in California? Is there work that can be referenced to show how variability can be tracked over a five-year period?

- In Dr. Shawn Chartrand's presentation in October, there were examples of increased variability in historical weather patterns. Additionally, the hydrology data sets that Dr. Chartrand created give us examples of what patterns of potential future weather variability might look like, particularly related to longer dry periods and increased periods of very wet conditions. At a local level, we can certainly monitor conditions to see if projected increased variability is occurring and use that information in the selection of updating the planning scenarios as called for in the SOWF policy.

Thinking probabilistically, how could the maximum drought be categorized?

- It's not as clear cut to put a probability figure but suffice it to say that it's a rare event that is likely beyond the one-hundred-year event but possibly it would be categorized within the hundreds of years range.

Is there going to be a presentation by Dr. Brown for the 11/29 City Council meeting? Or will there only be a memo review during the meeting?

- Dr. Casey Brown will not be presenting at the City Council meeting. However, during the 8/16/22 City Council Study Session, Council was informed by R. Menard about some of the work currently being done and she plans on perhaps beginning some of that discussion back to them at the 11/29 meeting. Additionally, Dr. Bob Raucher has been asked to be prepared to do a small presentation on the economic impact analysis at the 11/29 meeting as a part of this discussion.

One public comment was received.

R. Menard introduced Claudia Llerandi (Kennedy Jenks) for the presentation and discussion of Securing Our Water Future (SOWF) Water Supply Concepts.

If all groundwater is being over-drafted, and there's a need to replenish the aquifers, can we increase the Pure Water Soquel facility's capacity and use that water to increase total storage?

- For the Injection of Purified Water project (IPR), it is assumed that the Pure Water Soquel capacity would be expanded to the full capacity and injected into the Santa Margarita Groundwater Basin (SMGB), however; that doesn't rule out looking at an IPR project of injecting it all in the Mid County Basin.
  Additionally, the overdrafts in both the Mid County Basin and the Santa Margarita Groundwater Basin was significantly worse twenty years ago than they are now. One reason for this is the increases in water use efficiency resulting from both behavioral, technologic, and regulatory changes, which has resulted in some recovery of the groundwater levels. Additionally, it is important to note that there are limits to how much water these aquifers can store. For example, during the development of the Mid County Groundwater Sustainability Plan, we saw some modeling results where, if you ran ASR (in the configuration being considered at the time) and the Pure Water Soquel project at its 1,500 afy capacity, you raised groundwater above the ground surface. This caused water to basically run out of the ground, which is obviously not a very cost-effective thing to do.

Is it correct that in terms of what is driving the differences we've seen, the differences in the capacity and the supply gap numbers compared to what we have seen previously, is primarily reflected by operational assumptions, specifically reducing operation during certain months?

- Yes and no. The operational assumptions can play a big role in the DPR and the desal. For DPR and desal, we see that ~100% of the deficit can be met if we're maximizing production of a 3 mgd plant.

  For ASR, however, we see that 1.6 billion gallons of stored water along with significant reservoir storage is depleted during the first 2 years of a 5-year drought sequence and, due to physical limitations associated with groundwater injection rates, it takes close to 6 years to replenish that 1.6 billion gallon groundwater reservoir.

  The IPR project is limited by the assumption of expanding Pure Water Soquel from the 1500 afy being used by Soquel's project by an additional 1500 afy that would be available for the City's drought supply. Thus, for neither ASR or IPR are the constraints operational. Rather they are physical constraints of the project concepts as configured for this analysis.

Do desal projects need to be running year-round regardless of the production demand?

- Yes, membrane systems needed for any recycled water or desal facility do need to be run consistently. However, by developing the facility with parallel treatment trains you can rotate operations among the trains to lower production during low demand seasons and ramp it up during higher demand periods.

Have there been any policy updates that affect the DPR concept?

- The regulations for DPR have not been released at this time. The expectation is that there will be a draft out by December of this year, but the final specifications are expected to be out in December 2023. Therefore, the current assumptions made for treatment are based on what the draft regulations are likely to be. One main factor to consider is that those regulations have not fully determined if nutrient removal will be a requirement. The assumption at this point is that it's not being included as part of the treatment.

On the draft Water Supply Augmentation Project Concepts summary memo (section 3-3.1 of the agenda packet), describes the considerations used for identifying the project concepts evaluated for the SOWF process. For example, bullet Number 4 states that project concepts "(do not) Combine with other alternatives. Rather they consider only one source of water and one end use; larger projects or portfolios of projects will be considered during the development of the WSAIP." Is it correct that even though the projects evaluated for the SOWF weren't combined into portfolios of projects, they could be combined within each other as part of the supply portfolio, or at least some form of combination depending on the projects and the solutions determined, and the solutions or projects aren't necessarily mutually exclusive?

- Yes, that is correct. For this first step, for the policy, we looked at them individually, and not their effects combined. Given that work on ASR in the Mid-County is already underway, it is reasonable to assume that that project, in some form, will be part of any baseline and the question will be what else to add assuming additional supply is needed.

Regarding desal and the practicality of implementation, Monterey Bay is not exactly suitable for sub-surface intake, (particularly at the outflow of the San Lorenzo River) though it is preferred by the State. How realistic would it be to build a desal plant, presumably with the open ocean intake?

- There defiantly is a lot of uncertainty for a desal project. The denial of the Poseidon project in Huntington Beach is a recent example of an open ocean intake vs. the sub-surface intake the recent facility allowed. The main limitation might be the size of the volume that is supposed to be taken. The assumptions used in the 2018 report updating the desal option (from Dudek) were around a 2-3 MGD capacity, and that wouldn't necessarily make it more feasible so it would be worth taking another look at. the design of those concepts, and revisiting those as they were done in 2018 and seeing how realistic or feasible it would be currently.
- There is a concept that engineers are starting to look at more frequently- projects that *combine* desal and DPR. These two sources combined require very similar treatment processes. Salt is diluted in the ocean water by mixing it with the secondary treated effluent from a wastewater treatment plant and impacts from the nutrient load in the wastewater source are improved. Another benefit is reducing the amount of water that would be needed at the sub-surface intake level. This could be a way to permit it in an area that might otherwise be difficult to permit.
- There is no question, though that building a desal plant would be an uphill climb locally, regionally, and throughout the state. However, a lot of work has been done with respect

to looking at the feasibility of subsurface, the feasibility of the open ocean intakes, the impacts of an open ocean intake, and the reliable availability of other water sources.

There were some assumptions built into the agreement with Soquel Creek Water District on the Pure Water Soquel Project that protected the City's ability to implement a future recycled water project and how much water could be allocated for that purpose. Are these assumptions about there being enough wastewater to meet the City's need still valid?

- The numbers have been and continue to be looked at. There are some issues that we're looking at regarding the impacts of conservation in reducing the amount of inflow to the wastewater system.

- But, there are some options we can explore. For example, if you make different operating assumptions about how a DPR plant is operated, you might, in fact, find that even with the lower volume of water, if that's a persistent finding, you could make it work. These are the kinds of things that would get looked at in the next phase of the WSAIP.

One public comment was received.

R. Menard introduced Dr. Robert Raucher (Raucher LLC) along with Carolyn Wagner and Collen Donovan for the presentation and discussion of The Economic Impact of Water Supply Curtailments.

How does the IMPLAN model work, and what are some examples of variable inputs?

- The IMPLAN model is a well-established analytical tool using data that is available for each zip code area. Data about economic activity in each zip code is organized using the North American Industry Classification System, NAICS, which makes it very useful for an analysis such as the one conducted here. For example, the data includes information on tourism-related sectors such as restaurants and hotels and, based on the level of curtailment and water use, assumptions were made about how much their economic activity (output) would be reduced.

- The IMPLAN model also uses a series of multipliers that show how output changes with different conditions, how that works through the local economy and how much leaks out into the external economy.

What about the economic impacts on the people outside the City? Was that incorporated into these results, and how does it connect to kind of the broader landscape of at least the county-wide finances? How geographically large were those numbers represented?

- The IMPLAN model is set up by zip code. So, we had to make some decisions about which zip codes would be included in the study. Some mapping was done and there were one or two zip codes that were included that extended beyond the service area. These areas are very lightly populated. For the most part we were able to use four zip codes that looked like it was mostly capturing both business and residential activity. Overall, though, the analysis showed that the difference between the economic impact to the City and to the County amounted to about a 10% increase in the total economic impact.

One public comment was received.

Commissioners provided feedback and comments on the draft resolution.

One request was made for an addition to the whereas section noting that we have only local supplies.

Several comments were made about the opportunities for using the Resolution content in other ways to support communication and education. For example, perhaps a story map, info-graphic, or other form could be implemented.

Not sure if we need to note anything after the 3 presentations – RM and DE were talking here 02:46:33

One public comment was received.

D. Engfer had a motion and moved that the Commission recommend to the City Council Adoption of the Securing Our Water Future resolution and Water Supply Augmentation guidance as amended based on tonight's discussions for inclusion in the Council's Policy Manual. J. Burks seconded.

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

Subcommittee/Advisory Body Oral Reports

4. Santa Cruz Mid-County Groundwater Agency (MGA)
The MGA has not met since September 15th but there is ongoing work to implement the groundwater modeling work. A consultant has been selected to perform additional work on the optimization of the Pure Water Soquel project and city projects in the basin. The next meeting will be held on December 15th.

One public comment was received.

5. Santa Margarita Groundwater Agency (SMGWA)

The SMGWA met on October 27th and received a presentation from Heidi Luckenbach on ASR work in the Mid-County basin and how these projects may apply to the Santa Margarita basin. The Board also discussed and approved an approach to filing applications for state grants.

Director's Oral Report: December's meeting agenda will include an item on Reimagining Conservation as well as an update from David Mitchell on the affordability analysis he completed last spring for the water rate increases. The January Water Commission meeting will be canceled, and the February meeting may include a presentation on the Graham Hill Water Treatment Plant Facility Improvement Plan. Also, as of October 31st, the Loch Lomond Reservoir is at 75% capacity.

Information Items: None.

Adjournment: The meeting was adjourned at 10:15 PM.

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WATER COMMISSION
INFORMATION REPORT

DATE: 11/30/2022

AGENDA OF: 12/05/2022

TO: Water Commission

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

SUBJECT: FY 2022 4th Quarter and FY 2023 1st Quarter Unaudited Financial Reports

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RECOMMENDATION: That the Water Commission accept the FY 2022 4th Quarter and FY 2023 1st Quarter Unaudited Financial Reports.

The FY 2022 4th Quarter and FY 23 1st Quarter unaudited financial reports are combined as one action for the Water Commission agenda on December 5. The combination of these two reports is necessitated by delays in the fiscal year-end audit for June 30. While still unaudited, we believe the two reports are materially correct, pending the completion of the audit.

WATER COMMISSION
INFORMATION REPORT

DATE: 11/30/2022

AGENDA OF: 12/5/2022

TO: Water Commission

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

SUBJECT: FY 2022 4th Quarter Unaudited Financial Report

RECOMMENDATION: That the Water Commission accept the FY 2022 4th 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 updated LRFP includes financial targets for debt service coverage ratio (1.5x), a combined 180 days cash on hand, $3 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, 2021 through June 30, 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 fourth quarter of FY 2022 and is a snapshot of the transactions posted during the time period of July 1, 2021 through June 30, 2022. Page 1 of the attached Financial Report is focused on the Operating budget and Page 2 reflects the Capital budget. Noteworthy items are discussed on the following pages.

Operating Revenues

FY 2022 water sales continue to reflect the impact of the COVID-19 pandemic and drought and are 9% lower than budget. Compared to the prior year, residential consumption is lower while commercial and UCSC consumption is higher, due to the re-opening of commercial business and UCSC in FY 2022. North Coast irrigation consumption is down 18% compared to FY 2021.

Financing Sources

In FY 2022, SCWD received $1,228,675 from grants. A $612,538 grant from the State Water Resources Control Board to reimburse SCWD for non-paying customers due to the impacts of COVID-19. A $549,662 Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant was received from FEMA for the Brackney Landslide Pipeline Risk Reduction Project to address the 2017 winter storm damage. The other small grants from FEMA and California's Office of Emergency Services were received totaling $66,476.

In the period FY 2021 to November 28, 2022, Water Department staff submitted 35 Drinking Water State Revolving Fund disbursement claims to the State Water Resources Control Board (SWRCB) for the Newell Creek Inlet/Outlet Pipeline replacement and Concrete Tanks replacement projects totaling $91 million. Through November 28, 2022, $78.9 million was received and $12.1 million is owed to SCWD.

A $50 million line of credit was obtained on June 15, 2021 and supplements cash flow while SCWD awaits reimbursement from SWRCB. $21 million was drawn from the line of credit through November 28, 2022.

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 $181 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 loan structuring, which is expected to be approved by the EPA in the first quarter of 2023.

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

Operating Expenses

Similar to the drop in revenues, operating expenses are 10% below the Adopted Budget. Salary costs are down 16% due primarily to 12 vacant positions during the year. There are currently 14 vacancies. Allocating labor costs to capital projects has also served to reduce labor expenses, this budget strategy is expected to account for $714,000 incremental improvement above the $950,000 budget for the entire year.

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

- Other Professional Services finished $622,000 under budget. This reduction is due to minimized use of consultants in Water administration, production, operation and meter shop activities.

- Maintenance Water Systems completed the year with $618,000 unspent. These savings are due to Water compliance with state and federal regulations with large ongoing contracts. $489,000 was unspent in the year but is likely to be spent in the current fiscal year on a project, such as the Habitat Conservation Plan to address the Endangered Species Act. Also, the water production group had deferred road and SCADA maintenance, $212,000 was unspent.

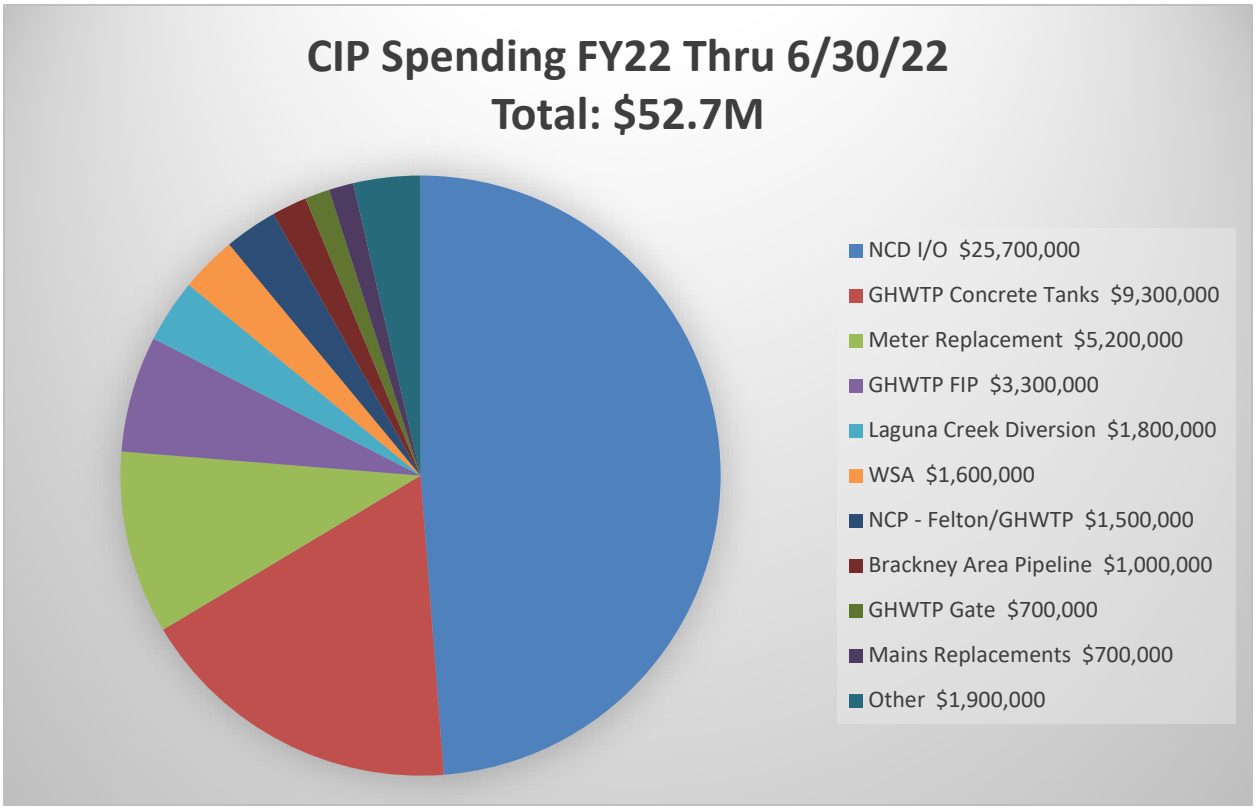
- Legal, training, printing/binding and postage are under budget by $385,000. The reduction of outside services is attributed to the COVID-19-related reduction in revenues, which reduces funds available for third-party services.

Electricity is in-line with the Adopted Budget. The amount paid for electricity in FY 22 was $1,367,000, which was 51% higher than the amount paid two years ago. Electricity is paid from the Services, Supplies and Other line items.

CIP Highlights

$52.7 million was spent during FY 2022 on CIP projects. The largest project continues to be the Newell Creek Dam Inlet/Outlet (NCD I/O) Replacement project which accounts for nearly half of the CIP expenses and will be completed in 2023. The next top three projects include the Graham Hill Water Treatment Plant (GHWTP) Concrete Tanks project, the Meter Replacement project, and the GHWTP Facilities Improvement Project (FIP). Several significant projects were completed in FY 2022 including the Laguna Creek Diversion Retrofit project, environmental mitigation projects for the NCD I/O project, the GHWTP Gate Entrance Upgrades, Beltz Filter #1 Rehabilitation, and ongoing main replacements.

Figure 1:



Some other project accomplishments in FY 2022 include:

- Newell Creek Pipeline (NCP) Replacement – Felton / GHWTP and Brackney Landslide Area Pipeline Risk Reduction projects both finished 90% design review;
- Water Supply Augmentation (WSA): began development of Securing Our Water Future (SOWF) policy for Council consideration; initiated recovery (extraction) phase for Beltz 12 and 8 demonstration study; and
- University Tank 4 Replacement initiated conceptual (10%) design.

As was mentioned in the FY 2022 3rd Quarter Financial Report, it was anticipated that actual expenses would remain below the FY 2022 budget and earlier year-end cash flow estimates of $69.5 million that include Management Reserve. The Management Reserve was not used in the 4th quarter of FY 2022 and schedule changes on the top four projects shown in Figure 1 above delayed some costs into FY 2023. Unspent funds remaining in the project budgets are planned into estimates for FY 2023 spending and will reduce the FY 2024 budget request.

FISCAL IMPACT: None.

PROPOSED MOTION: Motion to accept the FY 2022 4th Quarter Financial Report.

ATTACHMENTS:
1. Santa Cruz Water Department Financial Report

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SANTA CRUZ WATER DEPARTMENT FINANCIAL REPORT

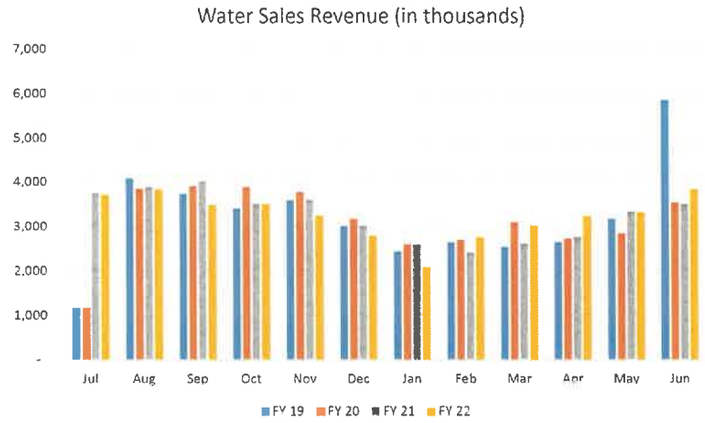
Fiscal Year 2021-22 through June 30, 2022

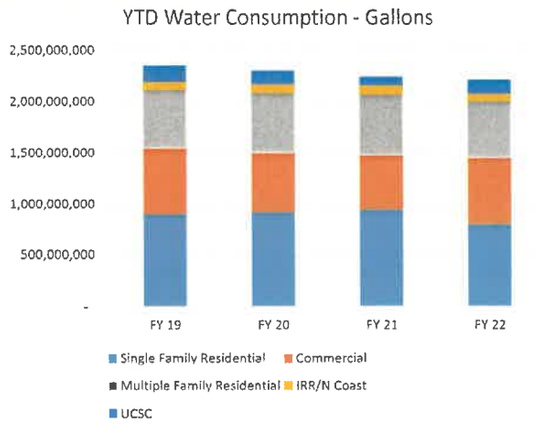
(Unaudited)

Financial Summary

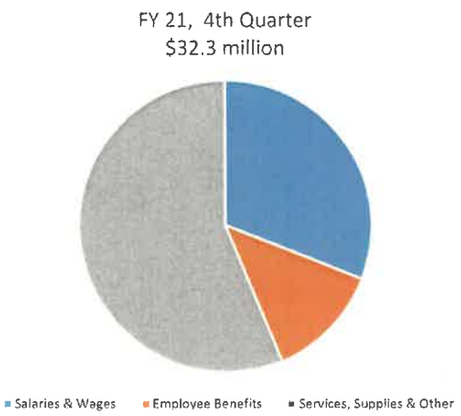
	FY 2022 Adjusted Budget	YTD Budget	Actual	Actual vs. YTD Budget Variance $ +/(-)	Actual vs. YTD Budget Variance % +/(-)
Operating Revenues					
Water Sales	42,270,994	42,270,994	38,667,098	(3,603,896)	(9%)
Other Charges for Services	1,323,299	1,323,299	1,386,249	62,950	5%
Other Revenues	362,235	362,235	2,388,400	2,026,165	559%
Grants	975,260	975,260	1,228,675	253,415	26%
Investment Earnings	46,352	46,352	92,074	45,722	99%
Total Operating Revenues	44,978,140	44,978,140	42,803,754	(1,215,644)	(3%)
Operating Expenses					
Salaries & Wages	10,763,913	10,763,913	8,999,454	(1,764,459)	(16%)
Employee Benefits	5,715,330	5,715,330	5,319,897	(395,433)	(7%)
Services, Supplies & Other	15,529,407	15,529,407	13,398,463	(2,130,944)	(14%)
Capital Outlay	110,427	110,427	375,401	264,974	240%
Debt Service - Principal & Interest	3,829,040	3,829,040	4,157,813	328,773	9%
Total Operating Expenses	35,948,117	35,948,117	32,251,027	(3,697,090)	(10%)
Net Operating Revenue (Loss)	9,030,023	9,030,023	10,552,727	1,522,703	17%
Debt Service Coverage (Target >= 1.50x)	3.36x	3.36x	3.54x		

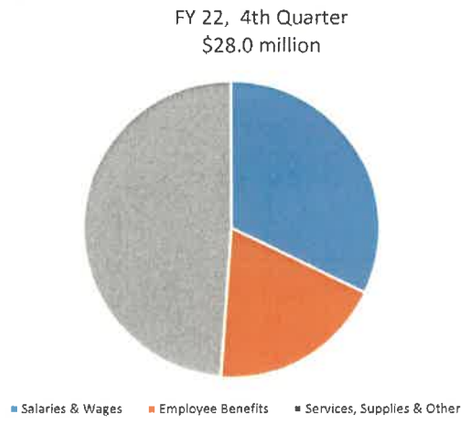
Revenues





Expenses





Cash

Fund Balances	YTD Balance	Year End Target Balance
711 - Enterprise Operations	12,778,738	7,919,772
713 - Rate Stabilization	10,397,269	10,000,000
715 - System Development Charges	6,025,197	N/A
716 - 90 Day Operating Reserve	8,218,746	7,919,772
717 - Emergency Reserve	3,014,540	3,000,000
718 - Mount Hermon June Beetle Endowment	145,602	144,000
719 - Equipment Replacement	650,518	700,000
Days' Cash (Includes only Funds 711 & 716)	239	180
Days' Cash Target	180	180

CIP Summary: Fiscal Year 2022 Year End Project Titles	Total Project Budget at Completion [1] *(escalated dollars)*	Prior Year Actuals	FY22 Actuals thru 6/30/22	Remaining to Complete	Status as of 09/30/22
WATER SUPPLY RESILIENCY & CLIMATE ADAPTATION PROJECTS					
Water Supply Augmentation Strategy					
Beltz Wellfield Aquifer Storage and Recovery					
ASR Planning	3,950,000	2,986,391	263,688	699,921	Planning
ASR Mid County Existing Infrastructure	2,360,000	43,219	340,668	1,976,113	Planning
ASR Mid County New Wells	22,410,000	-	-	22,410,000	Planning
Santa Margarita Aquifer Storage and Recovery and In Lieu Water Transfers and Exchanges					
ASR Santa Margarita Groundwater	21,750,000	-	-	21,750,000	Planning
ASR New Pipelines	42,320,000	-	-	42,320,000	Planning
In Lieu Transfers and Exchanges	-	-	-	-	Planning
Studies, Recycled Water, Climate Change, Aquifer Storage and Recovery					
Water Supply Augmentation	1,340,000	698,965	914,257	(273,222)	Planning
Recycled Water Feasibility Study	1,010,000	767,821	80,063	162,116	Planning
Subtotal Water Supply Augmentation Strategy	95,140,000	4,496,396	1,598,676	89,044,928	
Subtotal Water Supply Resiliency and Climate Adaptation Projects	95,140,000	4,496,396	1,598,676	89,044,928	
INFRASTRUCTURE RESILIENCY AND CLIMATE ADAPTATION					
Raw Water Storage Projects					
NCD I/O Replacement Project [2]	109,570,000	48,501,511	25,722,647	35,345,842	Construction
Aerators at Loch Lomond	640,000	440,462	20,329	179,209	Construction
Subtotal Raw Water Storage Projects	110,210,000	48,941,973	25,742,976	35,525,051	
Raw Water Diversion and Groundwater System Projects					
Laguna Creek Diversion Retrofit	3,810,000	1,158,521	1,776,874	874,605	Completed
North Coast System Majors Diversion Retrofit	5,330,000	163,187	-	5,166,813	To close
Tait Diversion Retrofit	6,630,000	297,062	88,577	6,244,361	Planning
Coast Pump Station Rehab/Replacement	10,370,000	-	-	10,370,000	Not Initiated
Beltz 10 and 11 Rehab & Development	360,000	187,814	-	172,186	To close
Felton Diversion Pump Station Improvements	4,270,000	201,255	150,618	3,918,127	Planning
Beltz 12 Ammonia Removal	1,800,000	-	177,281	1,622,719	Construction
Beltz WTP Filter Rehabilitation	450,000	69,525	395,845	(15,370)	Completed
Subtotal Raw Water Diversion and Groundwater System Projects	33,020,000	2,077,364	2,589,195	28,353,441	
Raw Water Transmission					
Coast Pump Station 20-inch RW Pipeline Replacement	7,140,000	6,879,089	45,033	215,878	Completed
Newell Creek Pipeline Rehab/Replacement - Planning	1,680,000	1,162,817	405,851	111,331	To close
Newell Creek Pipeline Felton/GHWTP	30,650,000	1,065,789	1,490,101	28,094,110	Design
Newell Creek Pipeline Felton/Loch Lomond	40,730,000	-	-	40,730,000	Planning
NEW Newell Creek Pipeline Grant Management	-	-	10,371	TBD	Planning
Brackney Landslide Area Pipeline Risk Reduction [3]	5,640,000	577,691	1,026,685	4,035,624	Design
North Coast Pipeline Repair/Replacement - Planning	640,000	599,524	145,245	(104,769)	Planning
North Coast Pipeline Repair/Replacement - Ph 4	20,140,000	-	-	20,140,000	Not Initiated
North Coast Pipeline Repair/Replacement - Ph 5	20,870,000	-	-	20,870,000	To close
Subtotal Raw Water Transmission	127,490,000	10,284,911	3,123,286	114,092,174	
Surface Water Treatment					
GHWTP Tube Settler Replacement	1,630,000	1,459,022	-	170,978	To close
GHWTP Flocculator Rehab/Replacement	1,980,000	1,783,039	43,898	153,064	Post Construction
GHWTP Concrete Tanks Replacement	46,210,000	7,412,373	9,251,026	29,546,601	Construction
GHWTP Facilities Improvement Project	146,170,000	6,513,293	3,339,090	136,317,617	Design
River Bank Filtration Study	7,390,000	963,735	34,865	6,391,399	Planning
Subtotal Surface Water Treatment	203,380,000	18,131,462	12,668,879	172,579,659	
Distribution System Storage, Water Main and Pressure Regulation, and Metering Projects					
University Tank No. 4 Rehab/Replacement	6,320,000	199,525	171,753	5,948,722	Design
University Tank No. 5 Rehab/Replacement	4,310,000	4,228,104	25,614	56,282	Completed
Meter Replacement Project	13,710,000	1,656,857	5,245,113	6,808,030	Construction
Engineering and Distribution Main Replacement Projects [4]	35,050,000	5,878,920	736,965	28,434,116	Ongoing
Distribution System Water Quality Improvements	90,000	24,259	9,466	56,275	Planning
Facility & Infrastructure Improvements	7,890,000	-	8,753	7,881,247	Ongoing
Subtotal Distribution Storage, Wmain Pressure Reg, and Metering	67,370,000	11,987,665	6,197,664	49,184,671	
Subtotal Infrastructure Resiliency and Climate Adaptation	541,470,000	91,423,374	50,322,000	399,734,997	
OTHER RISK MANAGEMENT AND RISK REDUCTION PROJECTS					
Site Safety and Security					
Security Camera & Building Access Upgrades	550,000	281,433	34,058	234,509	Construction
GHWTP Gate Entrance Upgrades	745,000	184,351	693,860	(133,211)	Completed
GHWTP SCADA Radio System Replacement	150,000	-	-	150,000	Planning
CMMS Software Replacement - Water Share	390,000	-	64,479	325,521	Design
Subtotal Site Safety and Security	1,835,000	465,784	792,398	576,818	
Staff Augmentation					
Water Program Administration [5]	23,850,000	-	1	23,849,999	Ongoing
Subtotal Staff Augmentation	23,850,000	-	1	23,849,999	
Contingency					
Management Reserve [6]	45,630,000	-	-	45,630,000	Ongoing
Subtotal Contingency	45,630,000	-	-	45,630,000	
Storage for Emergency Facility and System Repair Tools and Equipment					
Bay Street Reservoir Storage Building	150,000	-	-	150,000	To close
Union/Locust Admin Building Back Up Power Generator	50,000	-	1,970	48,030	Design
Subtotal Storage for Emergency and System Repair	200,000	-	1,970	198,030	
Subtotal Other Risk Management and Risk Reduction Projects	71,515,000	465,784	794,369	70,254,847	
GRAND TOTAL	708,125,000	96,385,554	52,715,045	559,034,772	

[1] Total Project Budget at Completion is from the FY22 budget adoption and rounded to the nearest 10,000.

[2] City Finance moved $197,756 in Prior Year Actuals to FY22 Actuals.

[3] FY22 Actuals do not include $543,001.50 in FEMA HMGP grant funding received.

[4] Prior year actuals for Main Replacements start in FY19.

[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.

WATER COMMISSION
INFORMATION REPORT

DATE: 11/30/2022

AGENDA OF: 12/05/2022

TO: Water Commission

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

SUBJECT: FY 2023 1st Quarter Unaudited Financial Report

RECOMMENDATION: That the Water Commission accept the FY 2023 1st 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 updated 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 September 30, 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 first quarter of FY 2023 and is a snapshot of the transactions posted during the time period of July 1, 2022 through September 30, 2022. Page 1 of the attached Financial

Report is focused on the Operating budget and Page 2 reflects 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 10% below budgeted amounts but 7% higher than the same quarter last year. This increase corresponds to the 6.9% increase in water rates at the start of the quarter. Residential consumption is up 1% while commercial and UCSC consumption has increased by more than 20%. Irrigation revenue is down 26% but represents less than 5% of total consumption.

In FY 2023, the Department received $66,476 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 November 28, 2022, Water Department staff submitted 35 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 $91 million. Through November 28, 2022, $78.9 million was received and $12.1 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 through 9/30/21.

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 early 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

Similar to the drop in revenues, operating expenses are trending 14% below the Adopted Budget. Personnel costs are down 11% due primarily to the 14 vacant positions during the first quarter. 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 $235,000. Funding in this account is primarily spent on water quality monitoring and regulatory compliance, such as the

Endangered Species Act. The total budget of $1,646,000 is expected to be spent during the fiscal year.

- Legal, training, printing/binding and postage are under budget by $93,000. The ongoing reduction of outside services is attributed to the drought-related reduction in revenues, which reduces funds available for third-party services.

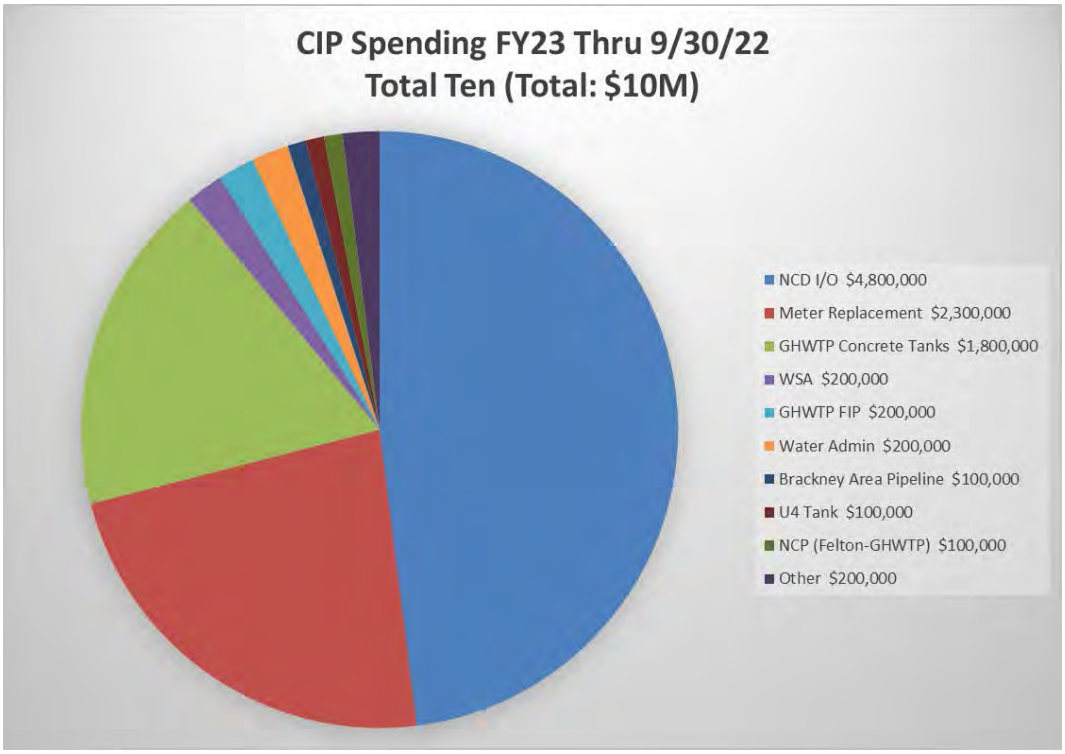
- Other professional services are trending $253,000 below budget. This category includes the Badger meter reading software which is the largest encumbrance for the year at $158,000 and is paid monthly. Other expenses pertain to landscape management, communications and graphics, emergency programmer analyst, water program advisor and laboratory service vendors. The largest expense paid in this category last quarter totaling $143,000 was for JV Lucas Paving to complete Distribution projects.

- Electricity cost for the quarter was $390,000, which is in-line with the Adopted Budget.

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

CIP Highlights

Capital Investment expenses more than doubled from the same report period in FY 2022, from $4.5 million in first quarter of FY 2022 to slightly over $10 million spent in FY 2023's first quarter. The largest FY 2023 spend occurred in 3 projects: $4.8 million for Newell Creek Dam Inlet/Outlet (NCD I/O) Replacement, $2.3 million for Meter Replacement, and $1.8 million for GHWTP Concrete Tanks. Planning and design work continue on a large handful of projects with greatest spend occurring on Water Supply Augmentation, GHWTP Facility Improvements Project, Newell Creek Pipeline – Felton/GHWTP (including Brackney Area), and the University 4 Tank Replacement.



The FY 2023 Amended Budget is $96,645,000 and current estimated spend plus actuals for FY2023 is $67,425,000. The variance between amended budget and projected spend in the current fiscal year can be attributed to several factor including- reduced use of program and project level contingencies, slightly lower spending rates for the NCD I/O project and Concrete Tanks projects in current fiscal year, and shifted construction start dates for Brackney and Newell Creek Pipeline Projects.

The Total Project Budget At Completion (BAC) amount has been updated with estimates created in February 2022 and approved during the FY 2023 budget adoption. Years 2023-27 were presented to Council with the FY 2023 budget adoption and years 2028-32 is an informational estimate to be refined and formally presented to Council in future budget cycles. The following is a breakdown per fiscal year of the FY 2023 BAC:

Prior Year Actuals	FY23 Adopted Budget	FY23 Adjustments / Carry-fwd	FY23 Amended Budget *(as of 9/30/22)*	FY24-27 Council Approved	FY28-32 Remaining To Complete	Total Project Budget At Completion
143,691,296	35,499,221	61,146,484	96,645,705	259,169,643	269,811,200	777,756,247

The Total Project BAC increased $52.5 million from FY 2022 to FY 2023. This increase is not due to increases in current projects under construction but rather the increase is caused by two major factors: 1) a change in the escalation rate applied to future years (from 3.3% to 3.7%), and 2) refinement of project estimates as projects develop through planning and design. The bulk of the changes occur beyond the current 5-year period presented to Council. For perspective, in FY

2022 the total five-year (FY 2022-26) CIP budget presented was $290.9 million and in FY 2023, the total five-year (FY23-27) CIP budget was $294.7 million which was a 1.3% increase.

Five projects were closed and removed from the quarterly report: Beltz 10 & 11 Rehab, Water Quality Lab Upgrades, Newell Creek Access Road Bridge, Coast Pump Station 20-inch Raw Water Pipeline, and University 5 Tank Rehab/Replace. Major Diversion planning was combined with the North Coast Pipeline project and will no longer appear as a separate project and phase 5 of the North Coast Pipeline project has been combined with phase 4 and will also no longer appear as a separate project. Likewise, the GHWTP Tube Settlers and Flocculator projects have also been combined. Four new projects have been added: 1) GHWTP SCADA IO Hardware & Wiring Upgrade, 2) GHWTP Chlorination Station Improvements, 3) Intertie 1: Santa Cruz - Scotts Valley which is grant funded, and 4) Branciforte Streambank Restoration.

The Department was awarded grant funds for four projects:

- The Brackney Landslide Area Pipeline Risk Reduction project was awarded an additional $608,206 FEMA in Hazard Mitigation Grant Program funding to complete phase 1 design. This work has been completed and the reimbursement request is in process.
- The Sustainable Groundwater Management (SGM) Grant Program awarded the Santa Cruz Mid-County Groundwater Agency (MGA) a multi-component grant for projects led by MGA member agencies. SCWD received funding for two projects:
    - $1.65 million for Aquifer Storage and Recovery (ASR) in the Beltz Well Field, and
    - $950,000 for technical development of groundwater sustainability projects and management actions which is a shared project with Soquel Creek Water District.
- Through a collaborative effort with Scotts Valley Water District, the California Department of Water Resources (DWR) 2021 Urban and Multi-Benefit Drought Relief Program awarded $6.62 million for an intertie between the two systems.

The Department continues to wait for an announcement from Cal OES regarding a grant application submitted in March 2022 to FEMA's Hazard Mitigation Grant Program (HMGP) for the NCP. If selected, this grant will provide at least 75% of the nearly $70 million planned for the replacement of the entire NCP (GHWTP – Felton and Felton – Loch Lomond).

As a responsible agency to the Santa Margarita Groundwater Agency, staff is developing an application for Round 2 of the Sustainable Groundwater Management (SGM) Grant Program. Applications are due in December and the current requested amount is ~$2.6M. Contents of the application include development of projects from the Groundwater Sustainability Plan (GSP): evaluation, prioritization, and refinement of GSP Projects; hydraulic and groundwater modeling; surface water monitoring; deep monitoring well construction; and, private well assistance including the installation of potable water filling stations.

FISCAL IMPACT: None.

PROPOSED MOTION: Motion to accept the FY 2023 1st Quarter Financial Report.

ATTACHMENTS:
1. Santa Cruz Water Department Financial Report

SANTA CRUZ WATER DEPARTMENT FINANCIAL REPORT

Fiscal Year 2022-23 through September 30, 2022

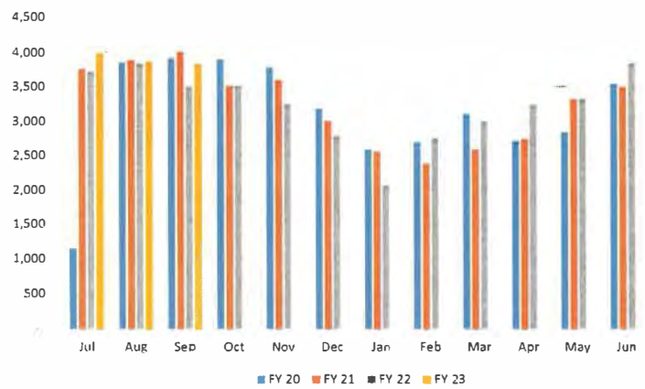
(Unaudited)

Financial Summary

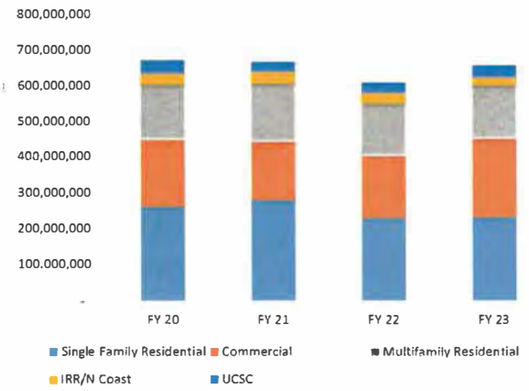
	FY 2023 Adjusted Budget	YTD Budget	Actual	Actual vs. YTD Budget Variance $ +/(-)	Actual vs. YTD Budget Variance % +/(-)
Operating Revenues					
Water Sales	39,973,705	9,993,426	9,036,769	(956,658)	(10%)
Other Charges for Services	1,288,214	322,053	306,177	(15,876)	(5%)
Other Revenues	391,733	97,933	179,862	81,929	84%
Grants	-	-	66,476	66,476	-
Investment Earnings	3,000	750	71,875	71,125	-
Total Operating Revenues	41,656,652	10,414,163	9,661,159	(753,004)	(7%)
Operating Expenses					
Salaries & Wages	12,586,052	3,146,513	2,823,595	(322,918)	(10%)
Employee Benefits	6,471,622	1,617,906	1,407,787	(210,118)	(13%)
Services, Supplies & Other	16,776,050	4,194,012	2,818,118	(1,375,895)	(33%)
Capital Outlay	526,523	131,631	8,730	(122,901)	(93%)
Debt Service - Principal & Interest	5,090,698	1,272,675	1,834,488	561,814	44%
Total Operating Expenses	41,450,945	10,362,736	8,892,718	(1,470,018)	(14%)
Net Operating Revenue (Loss)	205,706	51,427	768,441	717,014	1394%
Debt Service Coverage (Target >= 1.50x)	1.04x	1.04x	1.42x		

Revenues

Water Sales Revenue (in thousands)

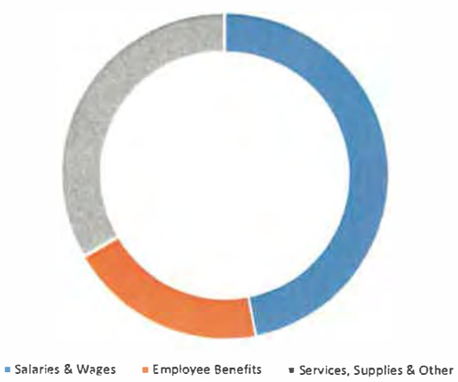


1st Qtr Water Consumption (in gallons)

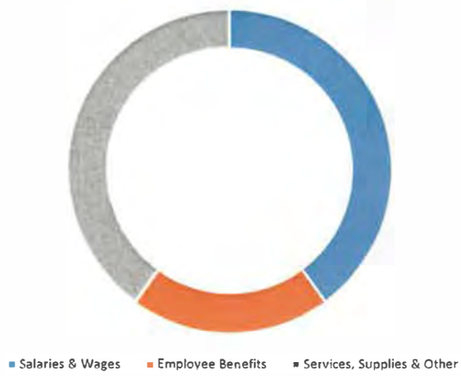


Expenses

FY 22, 1st Quarter $5.0 million



FY 23, 1st Quarter $7.1 million



Cash

Fund Balances	YTD Balance	Year End Target Balance
711 - Enterprise Operations	14,078,572	8,965,540
713 - Rate Stabilization	11,059,287	10,000,000
715 - System Development Charges	6,172,885	N/A
716 - 90 Day Operating Reserve	8,227,471	8,965,540
717 - Emergency Reserve	3,017,685	3,000,000
718 - Mount Hermon June Beetle Endowment	145,786	144,000
719 - Equipment Replacement	588,708	700,000
Days' Cash (Includes only Funds 711 & 716)	224	180
Days' Cash Target	180	180

CIP Summary: Fiscal Year 2023 1st Quarter Project Titles	Prior Year Actuals	Total Project Budget At Completion [1] *(escalated dollars)*	FY23 Actuals thru 9/30/22	FY23-32 Remaining To Complete	Status as of 09/30/22
WATER SUPPLY RESILIENCY & CLIMATE ADAPTATION PROJECTS					
Water Supply Augmentation Strategy					
Beltz Wellfield Aquifer Storage and Recovery					
ASR Planning	3,250,079	5,651,696	10,446	2,391,171	Planning
ASR Mid County Existing Infrastructure	383,887	8,971,750	69,909	8,517,954	Planning
ASR Mid County New Wells	-	26,696,860	-	26,696,860	Planning
Santa Margarita Aquifer Storage and Recovery and In Lieu Water Transfers and Exchanges					
ASR Santa Margarita Groundwater	-	456,381	-	456,381	Planning
ASR New Pipelines	-	-	-	-	Planning
In Lieu Transfers and Exchanges	-	-	-	-	Planning
Studies, Recycled Water, Climate Change, Aquifer Storage and Recovery					
Water Supply Augmentation	1,613,222	89,876,215	181,410	88,081,583	Planning
Recycled Water Feasibility Study	847,884	1,792,224	2,615	941,726	Planning
Subtotal Water Supply Augmentation Strategy	6,095,072	133,445,127	264,380	127,085,675	
Subtotal Water Supply Resiliency and Climate Adaptation Projects	6,095,072	133,445,127	264,380	127,085,675	
INFRASTRUCTURE RESILIENCY AND CLIMATE ADAPTATION					
Raw Water Storage Projects					
NCD I/O Replacement Project	74,224,158	105,378,613	4,772,466	26,381,989	Construction
Aerators at Loch Lomond	460,791	741,911	-	281,120	Construction
Subtotal Raw Water Storage Projects	74,684,949	106,120,524	4,772,466	26,663,109	
Raw Water Diversion and Groundwater System Projects					
Laguna Creek Diversion Retrofit	2,935,396	3,130,276	10,109	184,771	Completed
Tait Diversion Retrofit	385,639	7,642,148	6,253	7,250,256	Planning
Coast Pump Station Rehab/Replacement	-	9,777,912	-	9,777,912	Not Initiated
Felton Diversion Pump Station Improvements	351,872	4,408,650	1,544	4,055,233	Planning
Beltz 12 Ammonia Removal	177,281	1,915,818	15,046	1,723,491	Construction
Beltz WTP Filter Rehabilitation	465,370	987,062	6,090	515,602	Completed
Subtotal Raw Water Diversion and Groundwater System Projects	4,315,558	27,861,866	39,042	23,507,266	
Raw Water Transmission					
Newell Creek Pipeline Rehab/Replacement - Planning	1,568,669	1,627,564	2,886	56,009	Completed
Newell Creek Pipeline Felton/GHWTP	2,555,890	33,194,375	101,346	30,537,139	Design
Newell Creek Pipeline Felton/Loch Lomond	-	38,458,126	-	38,458,126	Planning
Newell Creek Pipeline Grant Management	10,371	30,000	-	TBD	Planning
Brackney Landslide Area Pipeline Risk Reduction [2]	1,604,376	11,540,345	108,760	9,827,209	Design
North Coast Pipeline Repair/Replacement - Planning (added Major Diversion)	907,956	943,724	67	35,701	Planning
North Coast Pipeline Repair/Replacement - Ph 4	-	90,802,291	-	90,802,291	Not Initiated
Subtotal Raw Water Transmission	6,647,262	176,596,425	213,059	169,716,475	
Surface Water Treatment					
GHWTP Flocculator & Tube Settler Replacement	3,285,958	3,373,941	154	87,829	Post Construction
GHWTP Concrete Tanks Replacement	16,663,399	46,673,142	1,809,613	28,200,130	Construction
GHWTP Facilities Improvement Project	9,852,383	151,592,006	180,920	141,558,703	Design
River Bank Filtration Study	998,601	7,028,637	-	6,030,036	Planning
GHWTP SCADA Radio System Replacement	-	240,000	-	240,000	Planning
NEW GHWTP SCADA IO Hardware & Wiring Upgrade	-	230,000	-	230,000	Planning
NEW GHWTP Chlorination Station Improvements	-	250,000	-		Planning
Subtotal Surface Water Treatment	30,800,341	209,387,726	1,990,686	176,346,698	
Distribution System Storage, Water Main and Pressure Regulation, and Metering Projects					
University Tank No. 4 Rehab/Replacement	371,278	6,246,806	108,056	5,767,473	Design
Meter Replacement Project	6,901,970	14,910,502	2,349,312	5,659,220	Construction
Engineering and Distribution Main Replacement Projects [3]	12,572,235	33,438,160	52,276	20,813,649	Ongoing
Distribution System Water Quality Improvements	33,725	107,427	5,372	68,329	Planning
Facility & Infrastructure Improvements	8,753	5,020,972	778	5,011,441	Ongoing
NEW Intertie 1: Santa Cruz - Scotts Valley [4]	-	8,720,261	7,588	8,712,673	Planning
Subtotal Distribution Storage, Wmain Pressure Reg, and Metering	19,887,961	68,444,128	2,523,382	46,032,784	
Subtotal Infrastructure Resiliency and Climate Adaptation	136,336,072	588,410,668	9,538,636	442,266,331	
OTHER RISK MANAGEMENT AND RISK REDUCTION PROJECTS					
Site Safety and Security					
Security Camera & Building Access Upgrades	315,490	550,996	-	235,506	Construction
GHWTP Gate Entrance Upgrades	878,212	903,067	4,944	19,911	Completed
CMMS Software Replacement - Water Share	64,479	390,000	49,066	276,455	Design
Subtotal Site Safety and Security	1,258,181	1,844,063	54,010	531,872	
Staff Augmentation					
Water Program Administration [5]	1	16,969,426	178,540	16,790,885	Ongoing
Subtotal Staff Augmentation	1	16,969,426	178,540	16,790,885	
Contingency					
Management Reserve [6]	-	36,196,820	-	36,196,820	Ongoing
Subtotal Contingency	-	36,196,820	-	36,196,820	
Storage for Emergency Facility and System Repair Tools and Equipment					
Union/Locust Admin Building Back Up Power Generator	1,970	110,000	4,620	103,410	Design
Subtotal Storage for Emergency and System Repair	1,970	110,000	4,620	103,410	
Other Projects					
NEW Branciforte Streambank Restoration [4]	-	780,143	1,021	779,122	Planning
Subtotal Other Projects	-	780,143	1,021	779,122	
Subtotal Other Risk Management and Risk Reduction Projects	1,260,152	55,900,452	238,191	54,402,109	
GRAND TOTAL	143,691,296	777,756,247	10,041,207	623,754,116	

[1] Total Project Budget at Completion is estimates from FY23 budget adoption 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 and Branciforte Streambed budget estimates established after FY23 budget adoption and are as of 9/30/22.

[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.

WATER COMMISSION
INFORMATION REPORT

DATE: 12/01/2022

AGENDA OF: 12/05/2022

TO: Water Commission

FROM: Heidi Luckenbach, Deputy Director/Engineering Manager

SUBJECT: Water Supply Augmentation Strategy (WSAS) Quarterly Report

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RECOMMENDATION: That the Water Commission receive an update regarding the status of the Water Supply Augmentation Strategy and supporting studies and provide feedback.

BACKGROUND and DISCUSSION: Following the completion of the Water Supply Advisory Committee (WSAC) process, the City Council accepted the Final Report on Agreements and Recommendations that included an Implementation Plan and Adaptive Management Strategy. The WSAC work was adopted as part of the 2015 Urban Water Management Plan and has been referred to as the Water Supply Augmentation Strategy (WSAS).

As per the WSAC Final Agreements and Recommendations, the Water Commission receives quarterly updates on the status of the various elements of the recommended plan. This is the 26th quarterly update.

New Items/Highlights:

- Preparing to construct treatment system at Beltz 12 Water Treatment Plant (WTP) for ammonia found in native groundwater.
- Negotiating a contract with CDM Smith for preliminary design of Beltz WTP (Live Oak) upgrades.
- Negotiating contract with Pueblo Water Resources for Year 2 of the ASR demonstration studies at Beltz Wells 8 and 12.
- Kicking off several components of the Optimization Study as part of the Round 1 Sustainable Groundwater Management Act grant award for the Mid-County Groundwater Agency (MGA) including contracts for groundwater and hydraulic modeling as well as the general consultant, Brown & Caldwell, for overall study implementation.
- Completed Securing Our Water Future (SOWF) with City Council approval on November 29, 2022.

In addition to the four elements of the WSAS, also included below are updates to the Securing our Water Future policy development and the Water Supply Augmentation Implementation Plan or WSAIP.

SECURING OUR WATER FUTURE, SOWF

The Securing Our Water Future resolution and policy guidance was adopted by City Council at their November 29, 2022 meeting. While the resolution and policy provides broad guidance and direction for the ongoing development and implementation of water supply augmentation projects, development of the policy included a significant amount of very detailed work on climate stress testing of the water system, alternative water supply alternatives, and the potential economic impacts of not improving the reliability of the water system. This work will aid staff in the ongoing development and implementation of water supply augmentation projects.

WATER SUPPLY AUGMENTATION IMPLEMENTATION PLAN, WSAIP

The WSAIP is being developed with the assistance of Kennedy Jenks and will incorporate the following work in to a long term project implementation plan.

- SOWF Policy: establishing the broad guidance and direction for ongoing development and implementation and includes new Water System Model, hydrology for many climate outcomes, and preliminary analysis of alternatives
- MGA Optimization Study
- Santa Margarita Groundwater Agency (SMGWA) Optimization Study (described below)
- City ASR pilot and demonstration testing in the Mid-County Groundwater Basin (MCGB)
- Groundwater modeling in the Santa Margarita Groundwater Basin (SMGWB)

ELEMENT 0: DEMAND MANAGEMENT

Overview: Element 0 of the City's Water Supply Augmentation Strategy consists of demand management activities the primary goal of which was to generate an additional 200 to 250 million gallons per year in demand reduction by year 2035 from expanded water conservation.

Santa Cruz customers and the community have achieved levels of water conservation beyond the levels anticipated in the Water Conservation Master Plan and the State's target for indoor residential water use of 55gpcd, and have met the WSAS objective. As will be reported in a separate item on the Commission's agenda, staff has been developing a framework for future opportunities for customer assistance which, while potentially achieving additional water savings, will shift focus to customer affordability.

Because the WSAC goal with respect to Element 0 Demand Management has been met, no further updates will be provided in this quarterly report.

ELEMENT 1: WATER TRANSFERS AND/OR WATER EXCHANGES

Overview: This work is considering the feasibility of sending excess City surface water to neighboring agencies for the purpose of passively recharging the groundwater basin(s). In-Lieu is now described as follows.

- Water Transfers: Selling treated surface water to neighboring agencies for the purpose of augmenting their own water supplies and possibly (passively) recharging the groundwater basin if less groundwater was used by the neighboring agencies.
- Water Exchanges: Negotiating an agreement whereby treated surface water provided to neighboring agencies would, by allowing the groundwater basins to recharge, provide additional groundwater back to the City during water supply shortages.

Summary: No transfers have taken place. City and Soquel Creek Water District staff continue to meet on a regular basis to discuss transfers and exchanges as long-term opportunities. However, both agencies are in the process of implementing projects to eliminate the impacts of ammonia within the native groundwater; an issue that needs to be addressed in order to successfully exchange water.

The design of the grant-funded intertie project with Scotts Valley Water District (SVWD) is underway and scheduled to be completed in September 2023 with construction completed early 2025.

Contract Update(s)
This section will be updated when new contracts and purchase orders are issued. However, while funds will be expended for the SVWD intertie project, the grant provides 100% reimbursement for design and construction up to the award cap of $6,585,108.

ELEMENT 2: AQUIFER STORAGE AND RECOVERY

Overview: Aquifer Storage and Recovery (ASR) is being evaluated as a form of actively recharging the groundwater basin(s). Work in this area includes the Mid-County Groundwater Basin (MCGB) and the Santa Margarita Groundwater Basin (SMGWB). ASR is a project that has been included in the Groundwater Sustainability Plans (GSPs) for both the MCGB and the SMGWB.

Summary: As defined by the WSAC, this work has three phases: Phase I consists of higher-level feasibility work; i.e., site-specific injection capacity and geochemical analyses, groundwater modeling and development of a pilot test program; Phase II includes the pilot testing; and Phase III is project implementation. The following schedule adjustments have been made using the WSAC adaptive management process.

1. In 2015, WSAC supported the evaluation of ASR as a general concept without detailing which groundwater basin.
2. In 2019, City Council approved a modified implementation schedule that split the analysis between the MCGB and SMGWB as well as split the analysis of ASR wells in the MCGB between using existing infrastructure from that of new infrastructure.
3. Work in the SMGWB has been slowed to inform the development of the GSP for the GSA of the SMGWB. With this GSP being submitted to DWR, work has proceeded on the development of projects and management actions described in that GSP, including ASR.

MCGB ASR

- In the MCGB, the previously injected water was recovered from the Beltz 8 and Beltz 12 wells as part of the Year 1 demonstration study. 35.9 million gallons (MG) was recovered at Beltz 8 at an average rate of 439 gallons per minute (gpm). At Beltz 12, a total volume of 42 MG was recovered at an average rate of 448 gpm before the system was shutdown to address the presence of ammonia. This accounts for roughly 85% of the previously injected volume, leaving behind a volume of approximately 7.7 MG. Staff are currently planning for Year 2 of the ASR demonstration study, which is expected to start in January 2023, depending on the availability of excess San Lorenzo River flows.
- Throughout the demonstration study, a variety of water level and water quality data were collected at Beltz 8 and 12 as well as several existing, proximate monitoring wells. Quarterly reports are submitted to the Regional Water Quality Control Board (RWQCB), which include the monitoring data and evaluation of water level and water quality responses to ASR demonstration operations at both Beltz 8 and 12. The next quarterly report is due to the RWQCB on January 1
- A Summary of Operations Report for the first year of the ASR demonstration study is anticipated early 2023. This report includes findings, conclusions and recommendations on well and aquifer hydraulics, water quality, and operations that will be considered during Year 2.
- Staff received the draft Phase 1 ASR Feasibility Investigation Final Report by Pueblo Water Resources (Pueblo). The draft report presents a high-level summary of the work performed to confirm the initial ASR feasibility findings developed from the Reconnaissance-Level study for WSAC. The draft report is under review and expected to be finalized by the end of the year.
- Staff are also executing agreements with Pueblo for an ASR Feasibility Assessment for the Beltz 10 and 11 wells and an ASR Pilot Test Work Plan for Beltz 9. The technical feasibility analysis performed for Beltz 10 and 11 will aid in assessing the suitability of the well(s) for future ASR pilot testing. A similar assessment has already been performed for Beltz 9; based on the favorable results of the prior assessment and success demonstrated at Beltz 8 and 12, staff are recommending that Beltz 9 be advanced as the next well for pilot testing.

SMGWB ASR

- The GSA staff working group is developing an application to the Department of Water Resources for grant funding to be used to support implementation of the Santa Margarita Groundwater Sustainability Plan. While Round 1 funding the MGA applied for was non-competitive, the Round 2 funding is a competitive process and the SMGWA is focusing on grant administration, evaluation, prioritization, and refinement of GSP Projects, implementation, including annual reporting, surface water monitoring, deep monitoring well construction, and private well assistance including the installation of potable water filling stations. Applications are due in December 2022 and the draft application is currently seeking $2.6 million.

Next Steps:

- Finalize scope and contract with CDM to evaluate the existing Beltz WTP in Live Oak – Fall 2022.

- Site-specific feasibility assessment at existing Beltz Wells 10 and 11 – Winter 2022 (noting that an outcome of this consideration may be a decision to pursue pilot testing or a new well in a different location).
- Beltz 9 ASR Pilot Test Work Plan –Winter 2022.
- Begin year 2 of ASR Demonstration Studies in Beltz Wells 8 and 12 – Winter 2022/2023. Because of current hydraulic conditions, the earliest injections would proceed is January 1 but that would require significant rainfall in the next several weeks.

Contract Update(s):

Consultant: Pueblo Water Resources – Phase I

- Contract Signed: February 2016
- Project Partners: None at this time.
- Engaged Stakeholders: Soquel Creek Water District, County of Santa Cruz, Scotts Valley Water District, San Lorenzo Valley Water District
- Original Contract Amount: $446,370
- Contract Amendment No. 1: $377,615
- Contract Amendment No. 2: $35,000
- Contract Amendment No. 3: $193,390 (for modeling indirect potable reuse projects, but funded by Recycled water)
- Amount Spent: $866,828.76
- Amount Remaining: $176,596

Consultant: Pueblo Water Resources – ASR Phase II – Beltz 12 ASR Pilot Test

- Contract Signed: October 2018
- Project Partners: None at this time.
- Engaged Stakeholders: Soquel Creek Water District, County of Santa Cruz
- Original Contract Amount: $458,085
- Amount Spent: $433,796 (unchanged)
- Amount Remaining: $24,289
- **Status: Complete.**

Consultant: Pueblo Water Resources (Pueblo) – ASR Phase II – Beltz 8 ASR Pilot Test

- Contract Signed: January 2020
- Project Partners: None at this time.
- Engaged Stakeholders: Soquel Creek Water District, County of Santa Cruz
- Original Contract Amount: $1,051,945
- Contract Amendment No. 1 (Increase in monitoring well depth): $47,172
- Contract Amendment No. 2: $133,104
- Amount Spent: $1,182,728
- Amount Remaining: $30,180
- Status: Cycle 3a pilot testing at Beltz 8 was completed June 2021.

Consultant: Pueblo Water Resources – ASR Phase II – Beltz 12 ASR Demonstration Study

- Contract Signed: November 2021
- Early notice to proceed - $55,304
- Engaged Stakeholders: Soquel Creek Water District

- Original Contract Amount: $ 262,744
- Amount Spent: $176,060
- Amount Remaining: $86,684
- Status: First year injection, storage, and recovery are complete. Summary of Operations Report anticipated early 2023. Second year of demonstration study anticipated to begin January 2023 under new contract.

Consultant: Pueblo Water Resources – ASR Phase II – Beltz 8 ASR Demonstration Study

- Contract Signed: November 2021
- Original Contract Amount: $202,580
- Amount Spent: $92,077
- Amount Remaining: $110,503
  Status: First year injection, storage, and recovery are complete. Summary of Operations Report anticipated early 2023. Second year of demonstration study anticipated to begin January 2023 under a new contract.

ELEMENT 3: ADVANCED TREATED RECYCLED WATER AND DESALINATION

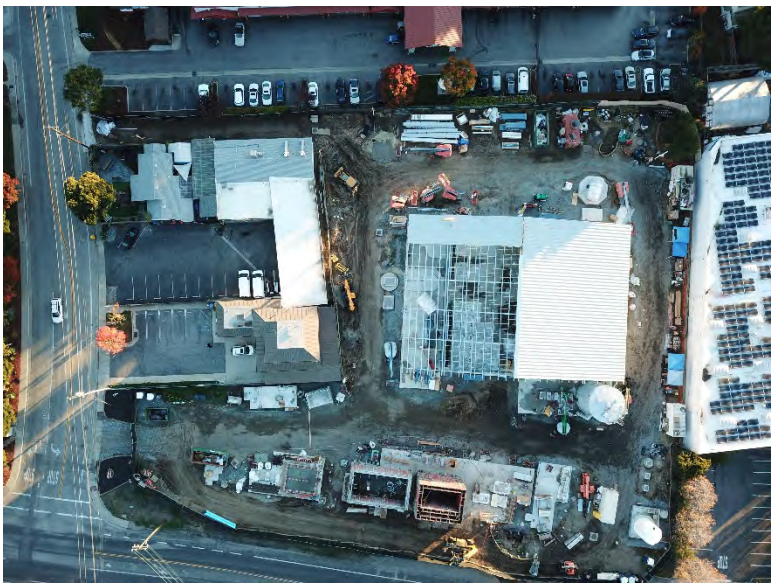
Overview: Advanced Treated Recycled Water and Desalination were included within the same Element with the intention that, following feasibility-level work, only one would proceed for further evaluation and preliminary design. The use of recycled water is included in the GSPs for both the MCGB and the SMGWB.

Summary: As the Securing Our Water Future policy development process concludes, staff and Kennedy Jenks are refining projects and portfolios that will be advanced in the WSAIP. This will be founded on the work completed to date within the SOWF, ASR in the MCGB, and both GSA efforts. The WSAIP will also be informed by the Optimization Studies being performed in the MCB and SMGWB as part of the SGMA Round 1 and Round 2 grants, respectively.

Construction of the Pure Water Soquel (PWS) project is progressing with installation of the City's new tertiary treatment system and conveyance pipeline at the WWTF, and the advanced purification treatment facility at the Chanticleer site shown below.

6" RW pipeline at WWTF

Aerial view of Pure Water Soquel Chanticleer Advanced Purification site followed by two elevation photos.



Next Steps:

- Staff and Kennedy Jenks to revisit alternatives and portfolios for WSAIP.
- Work with Soquel Creek Water District to define groundwater modeling scenarios.

Contract Update(s):

Consultant: Kennedy Jenks, Recycled Water Feasibility Study – Phase 2

- Contract Signed: December 20, 2019
- Project Partners: City Public Works

- Engaged Stakeholders: Scotts Valley Water District, Soquel Creek Water District, County of Santa Cruz
- Original Contract Amount: $260,000
- Contract Amendment No. 1: $496,205
- Contract Amendment No. 2: Administrative only
- Contract Amendment No. 3: $350,000
- Contract Amendment No. 4: $358,282
- Amount Spent: $627,323
- Amount Remaining: $837,165
- Schedule: Contract is seeing an ongoing delay due to issues related to groundwater modeling, and overall alignment of all components of the supply augmentation analysis.

OTHER

Source Water Monitoring
No new report.

Santa Cruz Water Rights Project
The Santa Cruz Water Rights Project Final Environmental Impact Report was certified by City Council on December 14, 2021, concluding the City's CEQA process. The State Water Resources Control Board (SWRCB) process to amend the City's post-1914 water rights has not been completed, although recent communications indicates a draft Order could be out the first of the new calendar year. Action by City Council to amend the City's pre-1914 water rights will follow the completion of the SWRCB process.

As mentioned previously, SWRCB noticed the City's water rights change petitions in February 2021 and received two protest letters and one letter of support. Letters of protest were received from the San Lorenzo Valley Water District (SLWVD) and the San Andreas Land Conservancy (SALC) (letter from David Kossack). A letter of support was received from California Department of Fish and Wildlife. The City and SLVWD executed two agreements to resolve the protest effective in January 2022. On September 13, the State Board staff sent SALC a letter that requests they provide further information to support the protest. This is a necessary step under the Water Code before the State Board can consider cancelling SALC's protest for failure to provide sufficient information. The letter gave SALC until November 14 to provide the requested information, and SALC provided written response to SWRCB on November 14. The City staff is coordinating with SWRCB staff on next steps with the SWRCB noting working towards development of a draft Order by the first of the new year.

Outreach and Communication
WSAC-related outreach during this quarter has included the following.
- Monthly Our Water, Our Future email newsletters to WSAC email list.
- Presentation to Desal Alternatives, 8/3
- Rosemary Menard interview on KSCO 8/15 and 11/7.
- Rosemary Menard on KZSC Bullwhacker program, 11/18.
- City Council special study session, 8/16.
- Twice-weekly social media posts.

FISCAL IMPACT: None.

PROPOSED MOTION: This item is for information and discussion only. No motion is required.

ATTACHMENT(S): None.

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WATER COMMISSION
INFORMATION REPORT

DATE: 11/30/2022

AGENDA OF: 12/05/2022

TO: Water Commission

FROM: Rosemary Menard, Water Director

SUBJECT: Updated Affordability Assessment Incorporating Projected Water & Sewer Service Rate Increases Through 2026

RECOMMENDATION: That the Water Commission receive a presentation on the forward-looking assessment of Affordability of Water and Wastewater Services with the projected water rate increases through 2026.

BACKGROUND: In early 2020 the Water Department commissioned an analysis of the affordability of water and wastewater services in Santa Cruz. This analysis was presented by and discussed with David Mitchell of M.Cubed Consulting at the Water Commission's December 7, 2020 meeting.[1] Following the Council's November 2021 action to approve the proposed annual water rate increase for the five fiscal years spanning July 1, 2022 to June 30, 2027, Water Department staff asked Mr. Mitchell to update his analysis to provide a "forward-looking" affordability assessment. Mr. Mitchell will present this forward-looking analysis at the Commission's December 5, 2022 meeting.

DISCUSSION: Among other challenging lessons and take-aways, the COVID-19 global pandemic reminded us all of the benefits to public health from having a safe, and reliable supply of drinking water for hand washing and sanitation. To maximize this benefit, everyone needs access to this critical resource and maintaining equitable access regardless of a customer's ability to pay has to be a greater priority than it has historically been.

Affordability and equitable access to a safe, affordable water service are gaining traction as a national issue, whether people are served by individual wells, small community water systems or larger public water systems delivering water to thousands or millions of people every day. By asking the questions, "Where do we stand as a community with respect to the current affordability of water service, and how are the actions we are planning affect affordability going-forward?," we improve our ability to understand the issues and identify strategies to ensure continued access to water service for those least able to pay. Examples of such strategies that work with state and federal water service agencies and advocacy groups to support legislation and funding for social safety net programs such as the Low Income Household Energy

[1] See: https://ecm.cityofsantacruz.com/OnBaseAgendaOnline/Meetings/ViewMeeting?id=1574&doctype=1

Assistance Program (LIHEAP) which has been providing support for heating and cooling costs to low-income households for many years.

The data disaggregation of the Santa Cruz analysis is an important and largely unique aspect of this analysis. Having results presented at the Census Block Group level helps focus attention on the places where residents are experiencing the most challenges with rising utility rates and also keeps Santa Cruz's generally higher than average median monthly income levels from obscuring affordability challenges where they are occurring. And, finally, the forward-looking element of this work helps us see how affordability issues evolve over time.

FISCAL IMPACT: None at this time.

PROPOSED MOTION: This is an informational item. No motion is required.

ATTACHMENTS:
1. Updated Affordability Assessment Incorporating Projected Water & Sewer Service Rate Increases Through 2026

POLICY ANALYSIS FOR THE PUBLIC AND PRIVATE SECTORS
M.CUBED

5358 MILES AVENUE
OAKLAND, CA 94618
(510) 593-6913
MITCHELL@MCUBED-ECON.COM

DATE: **February 21, 2022**

TO: **Rosemary Menard, Santa Cruz Water Department**

FR: **David Mitchell, M.Cubed**

RE: **Updated Affordability Assessment Incorporating Projected Water & Sewer Service Rate Increases Through 2026**

M.Cubed prepared a water and sewer service affordability assessment for the major water and sewer service providers serving Santa Cruz County.[1] This assessment was based on water and sewer service rates and charges in effect as of July 1, 2021. This memorandum updates the City of Santa Cruz affordability assessment results to incorporate projected water and sewer service rate increases through 2026.

Water/Sewer Service Affordability Metrics

This update uses the same set of affordability metrics that were used in our 2021 report. These are:

- **Water Bill Affordability Ratio (AR_{WB})**: This measures water service cost for essential indoor use (EIU) as a percentage of household income adjusted for housing costs.[2]
- **Combined Water and Sewer Bill Affordability Ratio (AR_{WSB})**: This measures the combined cost of water and sewer service for EIU as a percentage of household income adjusted for housing costs.
- **Financial Burden Score (FB)**: This metric scores from low to high the financial burden of the combined cost of water and sewer service for EIU considering both a household's AR_{WSB} and the poverty prevalence of the census block-group in which the household is located.

Essential Indoor Use

Water and sewer costs used to assess affordability are based on Essential Indoor Use (EIU), which is generally defined as the amount of water needed for basic drinking, cooking, health, and sanitation. At the household level, EIU depends on the number of people living in a home. In a home with two people, an EIU of 35 GPCD is equivalent to 2.85 CCF per month while in a home with four people, it is equivalent to 5.69 CCF. The affordability assessment uses each block group's average household size to determine EIU for households in the block group according to the schedule shown in Table 1. To create this schedule, EIU was set to 35 GPCD. This was multiplied by a block group's average household size,

[1] M.Cubed (2021). Water & Sewer Service Affordability Assessment, prepared for the Santa Cruz Integrated Regional Water Management Region, October 2021.

[2] Housing costs include all housing-related expenses, including mortgage and rental payments, insurance, maintenance, and utilities. Calculated water and sewer service utility costs are added back to avoid double-counting.

converted to CCF per month, and rounded up to the nearest whole CCF.[3] Table 1 shows the household size transition points between the resulting EIU quantities expressed in CCF/ month.

Table 1. EIU by Average Household Size

Average Household Size of Block Group	EIU (CCF/Month)
<2.1	3
2.1-2.8	4
2.8-3.5	5
3.5-4.2	6
4.2-4.9	7
>4.9	8

Table 2 gives a breakdown of household size and EIU for the Santa Cruz WD.[4] More than 80% of dwelling units are located in block groups with calculated EIU of 4 CCF/month or less.

Table 2. Santa Cruz WD EIU Breakdown

	Count of Dwelling Units	Percent of Dwelling Units	Mean PPH
EIU (CCF/Month)			
3	8,557	24.2%	1.8
4	20,143	57.1%	2.5
5	6,122	17.3%	3.1
6	484	1.4%	3.5
Total	35,306	100.0%	2.4

Count of DU within block groups with indicated EIU
PPH = Persons per household

It is important to bear in mind that affordability is being assessed for EIU. Households using water beyond EIU to irrigate gardens and maintain landscapes would obviously need to devote an even larger proportion of their net household income to water and sewer services than indicated by this assessment.

Poverty Prevalence and DAC Status

The poverty prevalence indicator (PPI) is the percentage of population in a block group with income that is less than twice the federal poverty level (FPL). Table 3 gives a breakdown of PPI for Santa Cruz WD. Twelve percent of dwelling units are in census block groups where more than 50% of the population have income that is less than twice FPL.

[3] Most utilities do not bill in fractional CCF. To ensure households receive an EIU of at least 35 GPCD, fractional CCF are round up to the nearest whole CCF.

[4] This and subsequent tables show the count of dwelling units in block groups where the variable of interest falls within the indicated range. For example, the table shows that 8,557 dwelling units are in block groups with a calculated EIU of 3 CCF/month. Mean household size for dwelling units in these block groups is 1.8 persons.

Table 3. Santa Cruz WD PPI Breakdown

	Count of Dwelling Units	Percent of Dwelling Units	Mean PPI
Poverty Prevalence Category			
<10%	3,266	9.3%	5.3
10-30%	16,230	46.0%	19.9
30-50%	11,585	32.8%	36.9
>50%	4,225	12.0%	60.9
Total	35,306	100.0%	29.0

Count of DU within block groups with PPI in PPI Category

DAC status indicates whether the state has designated the block group as a disadvantaged community (i.e., has MHI less than 80% of state MHI). Table 4 gives a breakdown of DAC status in Santa Cruz WD. Twenty one percent of dwelling units are in census block groups that the state has designated as DAC. On average, MHI in these DAC block groups is less than half that in the non-DAC block groups in the service area.

Table 4. Santa Cruz WD DAC Status Breakdown

	Count of Dwelling Units	Percent of Dwelling Units	Mean MHI (Thou.$)
DAC Status			
Data Not Available	2,810	8.0%	62.0
Not DAC	25,270	71.6%	98.9
DAC	7,226	20.5%	47.7
Total	35,306	100.0%	85.5

Count of DU within block groups designated DAC

For this assessment, the distribution of households by PPI and DAC status are assumed to be stable through the forecast period.

Net Household Income

Breakdowns of median household income (MHI) and median housing cost (MHC), expressed as a percentage of MHI, are provided in Table 5 and Table 6 based on the most current American Community Survey data. For the overall service area, MHC averages 32 percent of MHI. However, it exceeds 40 percent of MHI in block groups containing nearly one-fifth of service area households. For these households, housing costs already constitute a significant financial burden.

Table 5. Santa Cruz WD MHI Breakdown

MHI Category (Thou.$)	Count of Dwelling Units	Percent of Dwelling Units	Mean MHI (Thou.$)
< 50	6,409	18.2%	37.7
50-75	7,225	20.5%	63.1
75-100	9,937	28.1%	86.4
100-150	10,787	30.6%	119.2
> 150	948	2.7%	187.7
Total	35,306	100.0%	85.5

Count of DU within block groups with MHI in MHI Category

Table 6. Santa Cruz WD MHC Breakdown

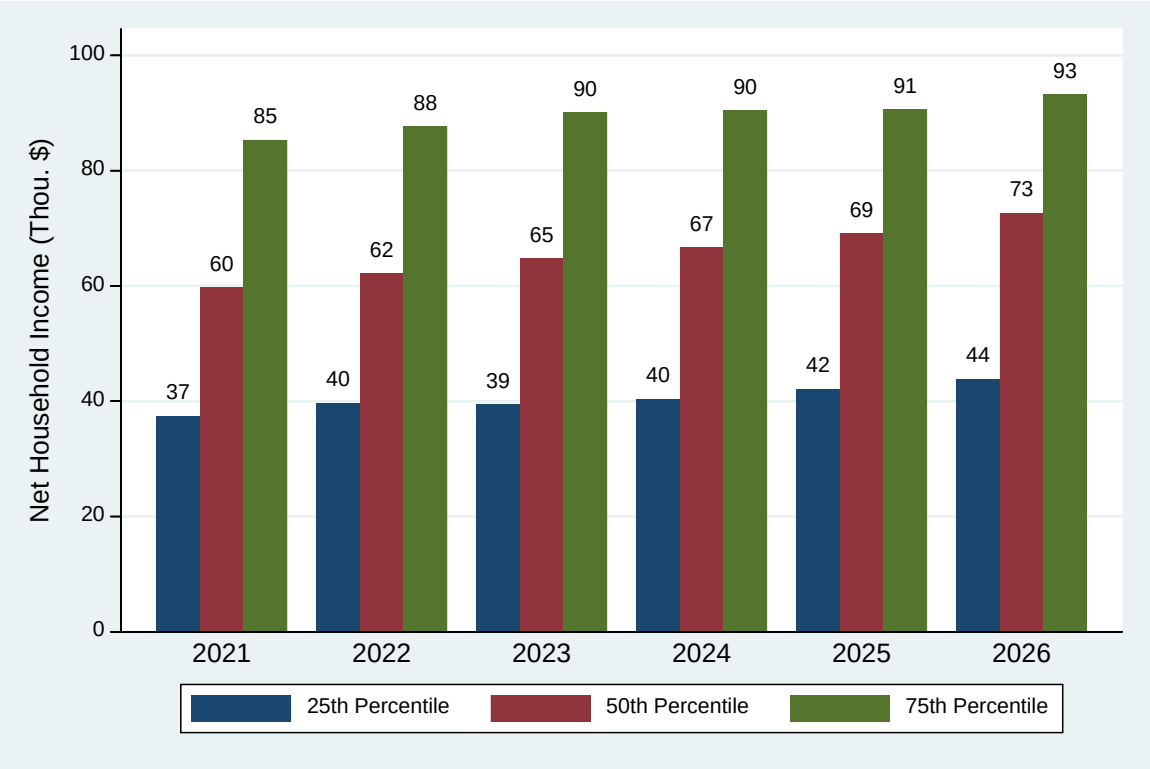
MHC Category (% of MHI)	Count of Dwelling Units	Percent of Dwelling Units	Mean MHC (% of MHI)
< 20	3,769	10.7%	17.0
20-40	25,249	71.5%	28.1
40-60	4,422	12.5%	47.6
60-80	693	2.0%	65.2
> 80	1,173	3.3%	94.3
Total	35,306	100.0%	32.3

Count of DU within block groups with MHC in MHC Category

Projected Net Household Income

In order to extend the affordability assessment to 2026, it was necessary to project net household income. This was done by calculating the compound annual growth rate (CAGR) of net household income by block group reported in the American Community Survey for the period 2010-2019, and then using these CAGRs to project forward each block group's current net household income to 2026. Figure 1 shows this projection for the 25th, 50th, and 75th percentiles of the service area's net household income distribution.

Figure 1. Projected Net Household Income



Water and Sewer Service Cost Projection

Water service costs were escalated through 2026 based on the Water Department's Proposition 218 Notice of Proposed Rates.[5] Sewer service costs were assumed to escalate at a nominal rate of 7 percent per annum through the forecast period, per City of Santa Cruz Public Works Department and County of Santa Cruz Public Works Department guidance.[6] Sewer costs for households on septic systems are assumed to be the same as were estimated in our original report.

Table 7 shows the projected average annual water and sewer service costs for EIU by DAC status based on these rate projections. Table 8 shows the cumulative percentage increase in water and sewer service cost for EIU over the forecast period. Across all households, the combined water and sewer service costs for EIU are projected to increase 41 percent in nominal terms between now and 2026.

[5] https://www.cityofsantacruz.com/home/showpublisheddocument/86358/637684192352030000
[6] Email correspondence with Rosemary Menard, Water Director, City of Santa Cruz, dated February 14, 2022.

Table 7. Projected Average Annual Water & Sewer Cost Per Household by DAC Status

DAC Status = Undesignated

	2021	2022	2023	2024	2025	2026
Water	573	568	654	753	802	855
Sewer	635	679	727	778	832	890
Combined	1,208	1,248	1,381	1,530	1,634	1,745

DAC Status = Not DAC

	2021	2022	2023	2024	2025	2026
Water	662	642	739	851	907	967
Sewer	785	832	882	936	993	1,055
Combined	1,447	1,474	1,621	1,787	1,901	2,022

DAC Status = DAC

	2021	2022	2023	2024	2025	2026
Water	566	560	644	741	789	841
Sewer	645	690	737	789	843	902
Combined	1,210	1,249	1,381	1,529	1,633	1,743

DAC Status = Total

	2021	2022	2023	2024	2025	2026
Water	635	619	713	821	875	932
Sewer	745	791	840	893	950	1,010
Combined	1,380	1,410	1,553	1,714	1,824	1,943

Table 8. Projected Cumulative Increase in Annual Water & Sewer Cost Per Household by DAC Status

DAC Status = Undesignated

	2021	2022	2023	2024	2025	2026
Water		0	14	30	38	47
Sewer		7	14	22	30	39
Combined		4	14	26	34	43

DAC Status = Not DAC

	2021	2022	2023	2024	2025	2026
Water		-3	11	26	34	43
Sewer		6	13	21	29	37
Combined		2	12	24	32	40

DAC Status = DAC

	2021	2022	2023	2024	2025	2026
Water		-1	12	28	36	45
Sewer		7	14	22	30	39
Combined		3	14	25	33	42

DAC Status = Total

	2021	2022	2023	2024	2025	2026
Water		-2	11	27	35	44
Sewer		7	14	21	29	37
Combined		3	13	24	32	41

Projected Affordability Ratios

The projected means for AR_{WB} and AR_{WSB} by DAC status are shown in Table 9. Across all households, the mean for water service increases from 1.6 to 1.9 percent over the forecast period, while the mean for combined water and sewer services increases from 3.3 to 4.0 percent.

For households in DAC block groups, however, not only are the affordability ratios much higher, but the projected increases over the forecast period also are larger than for other households. Thus, the relative position of DAC households in terms of water and sewer service affordability is projected to deteriorate. By 2026, it is projected that water service for EIU will cost 4 percent of net income while water and sewer service combined will cost 8 percent of net income, on average, for households in DAC block groups.

Again, it is important to emphasize these ratios are computed for EIU. Households using water beyond EIU to irrigate gardens and maintain landscapes would obviously need to devote an even larger proportion of their net household income to water and sewer services than indicated by this assessment.

Table 9. Mean Affordability Ratios for Water and Combined Water & Sewer Service by DAC Status

Water Service for EIU Affordability Ratio (AR_{WB})						
DAC Status	2021	2022	2023	2024	2025	2026
Undesignated	2.7	2.7	2.9	3.0	3.1	3.2
Not DAC	1.0	0.9	1.0	1.1	1.2	1.2
DAC	3.2	3.1	3.4	3.7	3.8	4.0
Total	1.6	1.5	1.7	1.8	1.9	1.9

Water & Sewer Service for EIU Affordability Ratio (AR_{WSB})						
DAC Status	2021	2022	2023	2024	2025	2026
Undesignated	5.6	5.6	5.9	6.1	6.3	6.5
Not DAC	2.1	2.1	2.2	2.4	2.5	2.5
DAC	6.5	6.6	7.0	7.4	7.7	8.0
Total	3.3	3.3	3.5	3.7	3.8	4.0

Table 10 and Table 11 show the distribution of households by affordability ratio category. Across all households, the percentage with water service cost for EIU exceeding 3.5 percent of net household income increases from 6 to 10 percent over the forecast period. For households in DAC block groups, however, it goes from 23 to 37 percent.

Across all households, the percentage with combined water and sewer service costs for EIU exceeding 3.5 percent of net household income increases from 26 to 33 percent over the forecast period. For households in DAC block groups, it goes from 78 percent to 81 percent. Note, however, this change is primarily due to households shifting out of the 3.5-4.5% category and into the >4.5% category. Thus, the percentage of DAC households for which water and sewer costs for EIU exceed 4.5 percent of net household income increases from 60 to 79 percent over the forecast period.

Table 10. Percentage of Households in Water Service Affordability Ratio (AR_{WB}) Category by DAC Status

DAC Status = Undesignated

	2021	2022	2023	2024	2025	2026
<1.5%	65	65	50	49	34	30
1.5-2.5%	7	9	22	16	31	35
2.5-3.5%	12	10	12	20	9	9
3.5-4.5%	0	0	0	0	10	10
>4.5%	15	15	15	15	15	15
Total	100	100	100	100	100	100

DAC Status = Not DAC

	2021	2022	2023	2024	2025	2026
<1.5%	90	92	87	82	81	81
1.5-2.5%	10	8	13	17	19	19
2.5-3.5%	0	0	0	0	1	1
3.5-4.5%	0	0	0	0	0	0
>4.5%	0	0	0	0	0	0
Total	100	100	100	100	100	100

DAC Status = DAC

	2021	2022	2023	2024	2025	2026
<1.5%	22	29	22	10	10	10
1.5-2.5%	38	36	28	28	24	24
2.5-3.5%	18	13	21	32	37	29
3.5-4.5%	3	3	9	7	7	11
>4.5%	20	20	20	23	23	26
Total	100	100	100	100	100	100

DAC Status = Total

	2021	2022	2023	2024	2025	2026
<1.5%	74	77	71	65	62	62
1.5-2.5%	15	14	17	19	21	21
2.5-3.5%	5	3	5	8	9	7
3.5-4.5%	1	1	2	1	2	3
>4.5%	5	5	5	6	6	7
Total	100	100	100	100	100	100

Table 11. Percentage of Households in Water & Sewer Affordability Ratio (AR_{WSB}) Category by DAC Status

DAC Status = Undesignated

	2021	2022	2023	2024	2025	2026
<1.5%	8	8	8	8	8	8
1.5-2.5%	31	23	7	7	4	3
2.5-3.5%	26	34	50	35	38	37
3.5-4.5%	0	0	0	15	15	18
>4.5%	35	35	35	35	35	35
Total	100	100	100	100	100	100

DAC Status = Not DAC

	2021	2022	2023	2024	2025	2026
<1.5%	25	25	20	14	12	11
1.5-2.5%	50	48	49	53	54	49
2.5-3.5%	16	17	19	21	20	24
3.5-4.5%	4	7	8	8	8	11
>4.5%	5	3	5	5	5	6
Total	100	100	100	100	100	100

DAC Status = DAC

	2021	2022	2023	2024	2025	2026
<1.5%	1	1	1	1	1	
1.5-2.5%	18	18	5	5	5	3
2.5-3.5%	3	3	16	16	13	15
3.5-4.5%	18	18	11	2	3	3
>4.5%	60	60	68	77	79	79
Total	100	100	100	100	100	100

DAC Status = Total

	2021	2022	2023	2024	2025	2026
<1.5%	19	19	15	11	9	8
1.5-2.5%	42	40	37	39	40	36
2.5-3.5%	14	16	20	21	20	23
3.5-4.5%	7	8	8	7	8	10
>4.5%	19	17	20	22	23	23
Total	100	100	100	100	100	100

Projected Financial Burden Scores

The projected distribution of financial burden scores by DAC status is summarized in Table 12. Across all households, the percentage for which the financial burden of water and sewer cost for EIU is scored Moderate-High or High goes from 24 percent to 30 percent over the forecast period. For DAC households, this same percentage goes from 74 percent to 78 percent.

Most of the change in the distribution of financial burden scores is associated with non-DAC households. For example, the percentage of non-DAC households scored Moderate-High or High doubles over the forecast period, going from 8 to 16 percent, while the percentage scored Low roughly halves, going from 27 to 14 percent.

In the case of DAC households, most were already scored Moderate-High or High under the current water and sewer rates. The projected rate increases simply cement the FB scores for these households while driving down to zero the relatively small number of DAC households that were scored Low-Moderate under the current rates. For DAC households, an already bleak picture of water and sewer service affordability is projected to get still bleaker.

Table 12. Percentage of Households in Financial Burden Score Category by DAC Status

DAC Status = Undesignated

	2021	2022	2023	2024	2025	2026
Low	0	0	0	0	0	0
Low-Moderate	29	21	13	12	9	8
Moderate	36	44	52	53	56	57
Moderate-High	0	0	0	0	0	0
High	35	35	35	35	35	35
Total	100	100	100	100	100	100

DAC Status = Not DAC

	2021	2022	2023	2024	2025	2026
Low	27	25	23	18	16	14
Low-Moderate	36	35	34	39	42	39
Moderate	30	31	32	32	29	30
Moderate-High	6	8	10	9	11	14
High	2	0	1	2	2	2
Total	100	100	100	100	100	100

DAC Status = DAC

	2021	2022	2023	2024	2025	2026
Low	0	0	0	0	0	0
Low-Moderate	5	5	1	1	1	0
Moderate	21	21	25	23	21	21
Moderate-High	13	13	13	8	10	10
High	61	61	62	68	68	68
Total	100	100	100	100	100	100

DAC Status = Total

	2021	2022	2023	2024	2025	2026
Low	19	18	17	13	11	10
Low-Moderate	29	28	25	29	31	29
Moderate	29	30	32	32	29	30
Moderate-High	7	9	10	8	10	12
High	17	15	16	18	18	18
Total	100	100	100	100	100	100

Affordability Assessment Summary Maps

Figures 3 through 5 show the current and projected geographic distribution of the affordability assessment. Figure 3 shows the affordability results for stand-alone water service for EIU. Figure 4 shows the affordability results for combined water and sewer service for EIU. Figure 5 shows the financial burden scores for EIU.

Figure 2. Water Service for EIU Affordability Ratios: Current and Projected

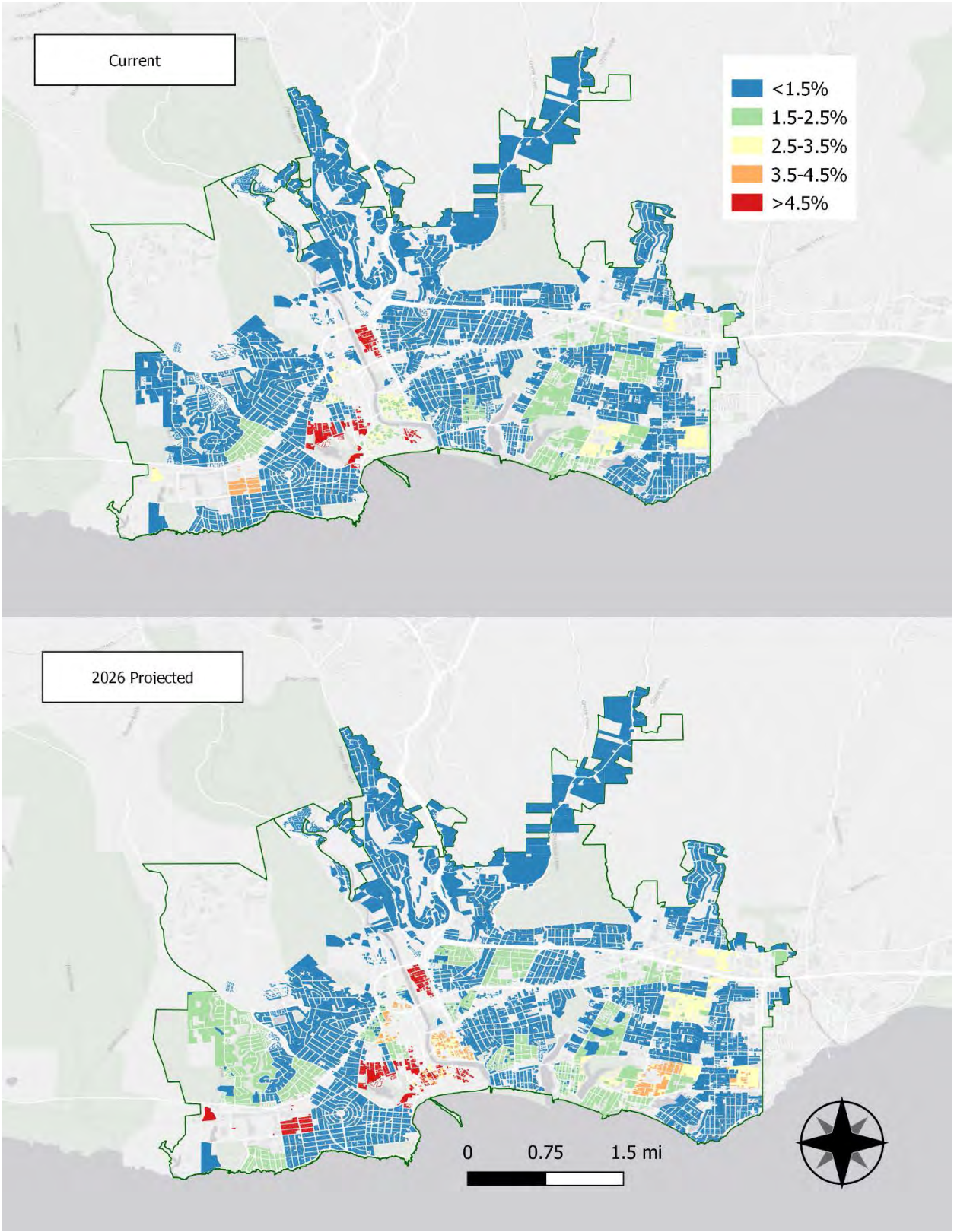


Figure 3. Combined Water and Sewer Service for EIU Affordability Ratios: Current and Projected

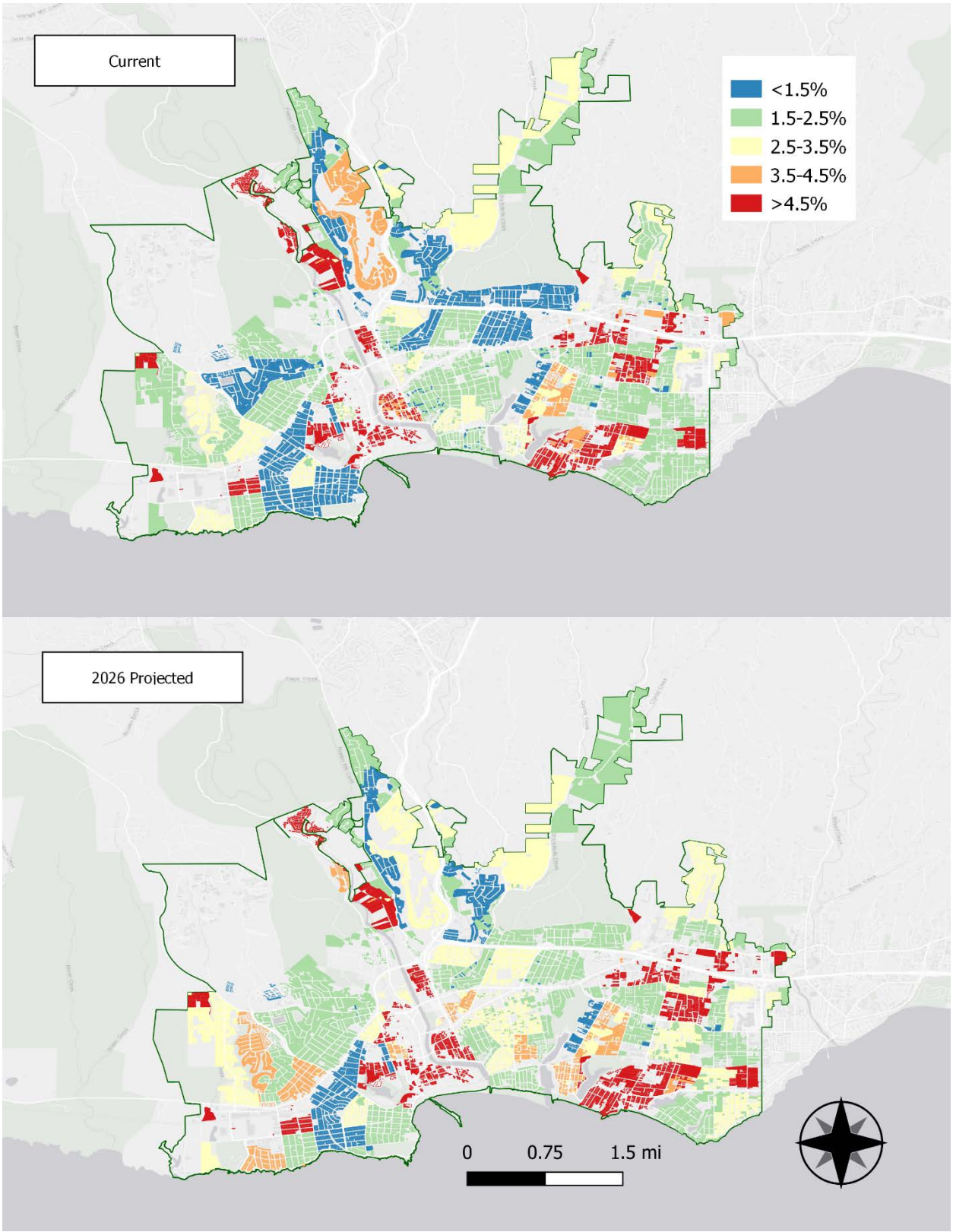
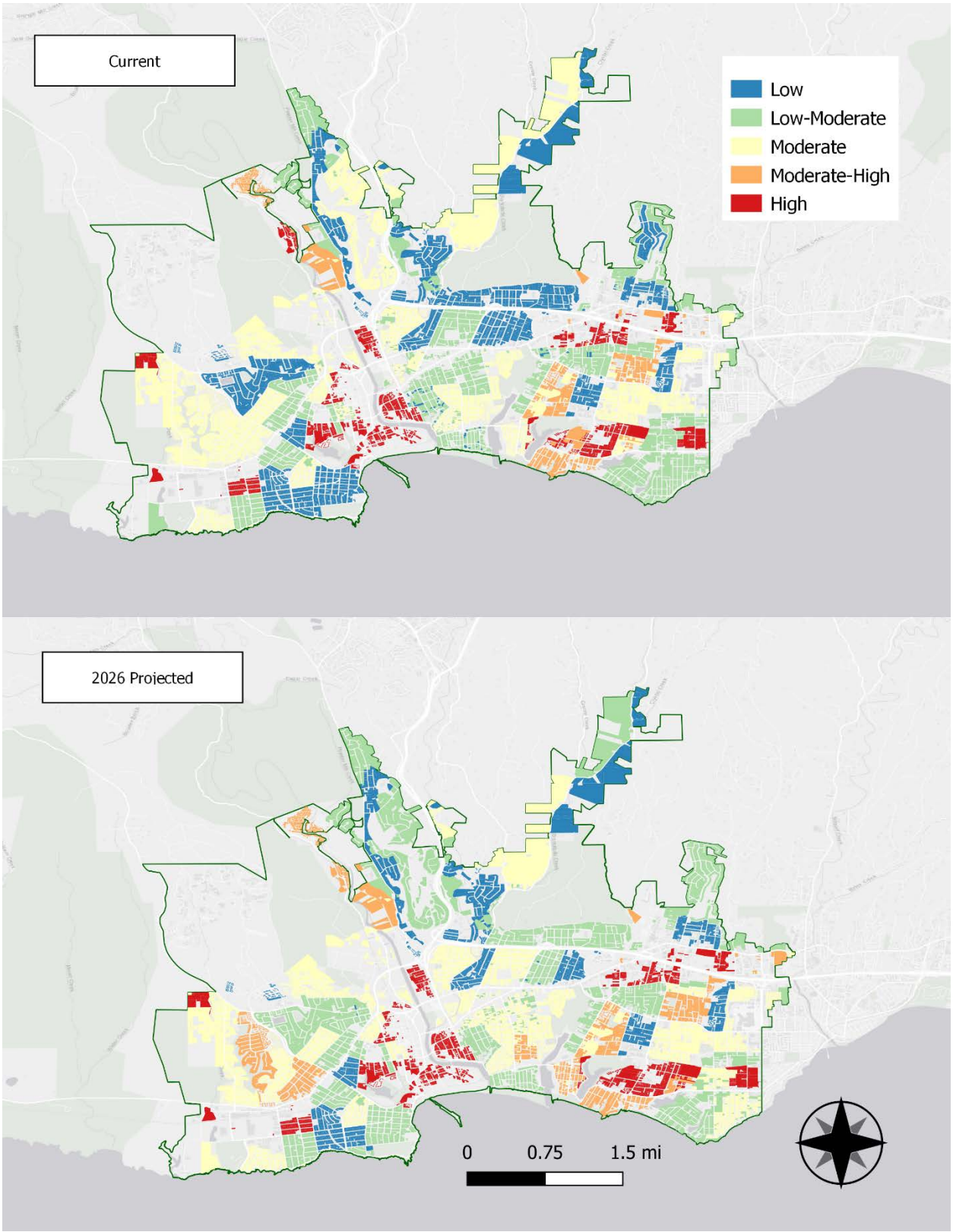


Figure 4. Combined Water and Sewer Service for EIU Financial Burden Scores: Current and Projected



WATER COMMISSION
INFORMATION REPORT

DATE: 11/30/2022

AGENDA OF: 12/05/2022

TO: Water Commission

FROM: Ben Pink, Environmental Projects Analyst
Kyle Petersen, Customer Services Manager

SUBJECT: New Customer Assistance Framework and Conservation 2.0

RECOMMENDATION: That the Water Commission receives an informational presentation about the work that has been done to assess and revise the Santa Cruz Water Conservation Program and provide feedback to staff.

BACKGROUND: Water demand in the City's service area has been decreasing for years and has not rebounded following the drought of 2014-2015. In 2015, demand bottomed out with residential per-capita consumption (RGPCD) at 43 gallons per person per day (GPCD), compared with 61 GPCD in 2013. Since 2015, RGPCD has stayed at low levels, between 45-47 GPCD.

The low per-capita consumption following the drought of 2014-2015 can be attributed to a variety of factors, the primary being the following:

1) Customer behavior modification and increased efficiency as a result of droughts and drought awareness. The trend of improved efficiency increased significantly as a result of the drought of 2014 and the high level of messaging around the drought at the state and regional levels.
2) New volumetric water rates and rate increases beginning in 2016. A new water rate package started in the fall of 2016 and was the first time that the rate structure was so heavily focused on a "the more you use, the more you pay" type of volumetric rate structure. The 2016 rate increase marked not only the start of volumetric rates but also the start of a five-year annual rate increase. The increasing rates themselves combined with a 4-tiered volumetric structure put downward pressure on consumption.
3) Impact of more stringent plumbing codes. Plumbing codes that impact water use efficiency for various plumbing fixtures were made more stringent in 2016. For example, the mandated showerhead flow rate went from 2.5 gallons per minute (GPM) to 1.8 GPM. The 2017 Water Conservation Master Plan found that the impact of these

plumbing codes would have a significant impact over 20 years, with an estimated savings of 329 mgy by 2035.

4) New interval water use data available. Although the formal meter replacement project did not begin until 2021, some customers began receiving new advanced water meters going back several years. These new meters have the ability to provide interval water use data, daily and hourly, which supports the ability to quickly detect leaks and unusual spikes of water use. In 2016 a pilot leak detection program was implemented for dedicated irrigation meter customer accounts using these new water meters. This pilot program was very successful in quickly detecting and alerting customers to leaks, and it served as a foundation for the new formal leak outreach program that is currently in development.

The "new normal" water demand in our service area has several important implications. As was described in the 2021 update of the Santa Cruz Water Shortage Contingency Plan, with new low water demand there are relatively few options left in terms of how to reduce demand further in a true shortage. Additionally, plans and actions for reducing long-term demand, as described in the 2017 Water Conservation Master Plan, are no longer needed given how demand has already been reduced so significantly. Putting aside the Water Conservation Master Plan and not building out all of its recommended programs means that the Conservation section of the department now has the opportunity to re-purpose itself towards other goals. This timing aligns itself well with the implementation of the meter replacement project. Newly installed advanced water meters, and the interval water use data they provide, represent a new opportunity for different ways to serve customers. In order to take advantage of interval data, new programs and new business processes will be developed; these programs will be part of the new customer assistance framework.

DISCUSSION: The opportunity to redefine the purpose and goals for the former Water Conservation section of the Department comes at a time when water affordability issues are on the rise. Not only in Santa Cruz but at water utilities all over California and the nation, the need to invest in rebuilding aging water infrastructure is causing water rates to rise. This comes at a time when we are seeing record-high inflation as a result of the Covid-19 pandemic and related global supply chain issues, as well as the effects of the war in Ukraine. All of this creates a situation where customers are being squeezed financially.

The services provided by the (Conservation) section will need to be transformed to tackle the issues of water affordability and general cost control for water customers rather than on long-term demand reduction. The work can be focused on meeting the needs of customers in terms of both general cost control (related to the amount on the utility bill for water charges) and providing various services to low-income customers.

The issue of water affordability was described by David Mitchell in his Draft Water/Sewer Service Affordability Analysis of October 2020.[1] In this memo, Mitchell noted the following:

> "Approximate 6% of households served by the Water Department are located in census block groups with affordability ratios for water service greater than 2.5% while

[1] See Attachment 1

> approximately 14% are in census block groups with affordability ratios for combined water and sewer service greater than 4.5%. For these households, water and sewer service costs may constitute a financial burden. Approximately 16% of households are located in census block groups where the financial burden of the combined costs of water and sewer service is scored high due to both high affordability ratios and high poverty prevalence. These customers are most likely to struggle with meeting basic living expenses, of which water and sewer service are a part."

Mitchell's analysis was an update of an earlier study from 2016 looking at water rate affordability for our service area. The 2020 update was completed because "the cost of residential water service had increased in nominal terms by roughly 50% to 100%, depending on the amount of water used by a household" in the years from 2016-2020. As was mentioned, 2016 marked the year when a new rate package went into effect and included a highly volumetric rate structure as well as annual rate increases for five years. Furthermore, given that there are new water rates that have been approved and have gone into effect as of July 1st, 2022, and increase every year until 2026, water affordability is expected to become an even more pressing issue.

Given the new package of rates starting in 2022, Mitchell has done another update of his affordability study entitled "*Updated Affordability Assessment Incorporating Projected Water & Sewer Service Rate Increases Through 2026*".[2] This update will also be presented to the Water Commission on December 5th.

CUSTOMER ASSISTANCE FRAMEWORK AND CURRENT STATE:

Work is underway to develop programs under what we are calling the new Customer Assistance Framework. The framework refers to an approach and a series of programs that are both under development and also partially being implemented as of now.

The primary program that is already being implemented is the direct assistance program known as LIHWAP (Low Income Household Water Assistance Program https://www.csd.ca.gov/lihwap). This new federal program provides financial assistance to low-income customers in order to help them manage residential water utility costs. The program was established by Congress in December 2020 and California was allocated $116 million in one-time funding to provide LIHWAP assistance via water utilities across the state. Originally intended to help customers during the pandemic who were experiencing emergency financial hardship related to past-due water bills and potential termination of service, the LIHWAP program may potentially be a more permanent assistance program for low-income customers should additional funding be provided to the states.

The Customer Service section of the Water Department has already begun the necessary internal steps to handle the administration of the LIHWAP program. Payments have already been coming

[2] See materials in December 5, 2022 Water Commission meeting agenda item #5.

in from the State, and some of our customers have already been enrolled in the program and have been receiving assistance. Additionally, Customer Service is working on developing low-income data flags on our accounts for eligible low-income customers.

The primary program that is under development, one that will be a cornerstone of the customer assistance framework, is a leak detection and outreach program. Leak detection is enabled by the interval data coming from the new advanced water meters being installed service-area wide. The new metering system easily allows for the identification of customer accounts that have an ongoing leak. Notification and outreach can then occur both on the utility side, as staff can proactively alert customers, as well as on the customer side via a customer web portal. The department has implemented WaterSmart Software as the customer portal of choice and has actively been promoting the portal and encouraging customers to register. Although the software does offer auto notification of leaks once certain criteria are met, there is still a very sizable body of work that remains in terms of utility-side notification, outreach, and assistance around leaks. For example, auto notification is only available once a customer has an email address in our system. If an email address is present and the leak meets the criteria for notification,[3] an automatic email notification is sent to the customer. However, not only is it the case that many customers don't have an email address on file but also there are many instances when customers don't see or open email notifications at all. In these cases, and many others, it is left up to the utility staff to notify the customer of the leak. Given how many leaks are present at any given time and given the amount of staff time it takes to notify a customer and provide assistance, it quickly becomes clear that a formal program and staffing are required to handle this work. Water Conservation staff have been working with the new metering system since its inception and have been thus far providing leak notification and outreach as time permits.

Currently, Customer Service is working to develop the business processes and rules that will govern the formal leak notification and outreach program. As part of the consulting contract for the meter replacement program, Jacobs Engineering is working with staff both on business process mapping as well as developing leak thresholds. This work is in process and further updates will be provided to the Water Commission as work products and recommendations are generated.

Also, as part of the leak detection and outreach program, staff have been compiling a list of area plumbing contractors as part of a possible new program to provide some type of certification for plumbers willing to work with the department on customer assistance. This program is still in early development, but the idea is that if a plumbing business agrees to participate, plumbers will receive some basic training from the department (how to properly read our water meters, how to properly shut off water service, etc.) and would agree to be available to help customers who have leaks. The plumbers that receive training would be on a department list of approved plumbers that could be then shared with customers who are looking for a contractor. The impetus for this

[3] At present, leak notifications are limited to single family residential customers with one of two types of leaks: a contiuous leak with a rate of at least 5 gallons an hour for 72 hours, or a burst pipe type leak with a rate of at least 75 gallons an hour for 8 hours.

program is based on very common feedback we have been receiving in our leak outreach thus far: customers are looking for recommendations on whom to call to help them find and fix the leaks we inform them about.

Finally, Customer Service is exploring ideas for better efficiency and communication in the landlord-tenant relationship to promote accountability regarding leaks and high-water use. The traditional problem that exists between landlords and tenants is that the water bill is in the tenants' account, but responsibility for fixing leaks and addressing problems is usually held by the landlord. Historically there has been tension and problems in having the tenants be responsible for high bills related to leaks when they have little leverage in having their landlord fix the problem. One idea that is being explored is having both parties be linked on the customer's account page in WaterSmart Software. Perhaps at a future date, all water accounts that are in the name of a tenant are flagged as such, and there may be a requirement that landlords sign up for the customer portal along with the tenant. Other ideas are being looked at as well.

FISCAL IMPACT: Existing resources are planned to be reallocated to meet changing needs so, no fiscal impact is anticipated at this time.

PROPOSED MOTION: This is an informational item only. No motion is required.

ATTACHMENTS:
1. October 26, 2020 Draft Water/Sewer Affordability Analysis

POLICY ANALYSIS FOR THE PUBLIC AND PRIVATE SECTORS
M.CUBED

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DRAFT Technical Memorandum

Date: October 26, 2020
Prepared For: Rosemary Menard (Santa Cruz Water Department)
Prepared By: David Mitchell, Elizabeth Stryjewski (M.Cubed)
Subject: DRAFT Water/Sewer Service Affordability Analysis

Contents

Background

M.Cubed completed a water service affordability analysis for the Water Department in 2016. That study addressed two questions in relation to proposed rate increases:

1. Is the ratio of annual water service cost to median household income (MHI) expected to exceed 2%?
2. What percentage of households are expected to pay more than 2% of their income for water service?

The 2% MHI threshold was based on proposed state legislation (AB 2334), which included it as a statewide standard for assessing water service affordability.[1] Similar thresholds also have been used by US EPA and the California Department of Public Health to assess water and sewer service affordability. More recently, other metrics have been proposed for assessing utility service affordability which are discussed in the next section.

The 2016 study concluded that annual water cost was expected to be less than 2% of MHI under all rate increase proposals, averaging slightly under 1% for inside-city customers and slightly over 1% for outside-city customers. However, the study also concluded that the percentage of customers paying more than 2% of their income for water service would likely increase from less than 10% under the rates existing at the time of the study to more than 20% under the proposed rates. Thus, water service costs potentially could constitute a financial burden for approximately one-fifth of residential customers under the proposed rate increases.

In 2016 the Water Department adopted a new rate design and a schedule of rate increases in order to pay for major water system rehabilitation and upgrade projects.[2] By 2020, the cost of residential water service had increased in nominal terms by roughly 50% to 100%, depending on the amount of water used by a household.[3]

Given the magnitude of the increases, the Water Department has requested that we update the water service affordability analysis we completed in 2016. The scope of work for this update specifies completion of the following tasks:

1. Compile data on household water use, income level, and other socio-economic status (SES) variables for all census block groups fully or partially within the Water Department's service

[1] Introduced in 2012, AB 2334 ultimately was not passed by the legislature.
[2] See https://www.cityofsantacruz.com/home/showdocument?id=53194.
[3] Current rates are based on those in effect between July 1, 2019 and June 30, 2020 (https://www.cityofsantacruz.com/home/showdocument?id=76586). A household using 4 CCF/Mo, the median monthly usage in 2019, would face an increase of 61%; a household using 7 CCF/Mo, the typical pre-2016 monthly usage, would face an increase of 78%; and a household using 10 CCF/Mo, a typical level of residential water use in other parts of California, would face an increase of 98%.

area. Using these data, calculate median monthly water use, MHI, and other SES indicators for each census block group.[4]

2. Calculate water service affordability metrics at the block group level. In addition to the metrics used in the 2016 study, affordability metrics used in more recent studies, such as the Alliance for Water Efficiency's study on Water Affordability in Detroit, Michigan (Alliance for Water Efficiency, 2020), should be developed.
3. Prepare a technical memorandum describing the data and methodology and summarizing the results of the affordability analysis.

This Technical Memorandum constitutes the completion of these tasks. The remainder of the memorandum is organized as follows. In the next section, we review alternative metrics that have been proposed for assessing utility service affordability. We then describe the construction of the affordability metrics used in this analysis. Lastly, we summarize our findings and recommendations. Attachment A provides the data and results of the analysis by census block group.

Review of Utility Service Affordability Metrics

Most water and sewer service affordability indicators stem from affordability criteria developed by EPA in the mid-1990s for assessing whether federal water and wastewater-related mandates might result in undue economic hardship within a community (Raucher, et al., 2019). Within the context of wastewater regulation, EPA put forward two impact measures:

- **Residential Indicator (RI)**. This indicator computes the average household cost of sewer service relative to service area MHI and bins the result into one of three categories:
    - Low financial impact: costs per household are less than 1% of MHI.
    - Mid-range financial impact: costs per household are between 1% and 2% of MHI.
    - High financial impact: costs per household are greater than 2% of MHI.

- **Financial Capability Index (FCI)**. This is a composite of six economic indicators of a municipality's financial capacity: municipal bond rating, net debt service, MHI, unemployment rate, property tax burden, and property tax rate. Lower composite scores imply weaker economic conditions and thus a greater likelihood federal mandates would cause substantial economic impact on the community or service area.

Whereas the RI is focused on household affordability, the FCI addresses the community's overall ability to pay for compliance costs. As noted by Raucher, et al. (2013), the two concepts are interrelated in the

[4] Block groups are statistical divisions of census tracts and generally defined to contain between 600 and 3,000 people. A block group covers a contiguous area and each census tract contains at least one block group. Within the standard census geographic hierarchy, block groups never cross state, county, or census tract boundaries. There are 84 block groups wholly or partially within the Water Department's service area.

sense that the community's ability to comply with water quality mandates depends on "the ability (and willingness) of its residential and other customers to provide sufficient revenue to assure sustainable utility operation and credit-worthiness."

During the same time period, EPA also considered the affordability of drinking water regulations within the context of small communities (those with populations under 10,000). Specifically, EPA stated it would deem a National Primary Drinking Water Regulation to be unaffordable to small communities if it resulted in an average bill in excess of 2.5% of national MHI. According to Raucher, et al. (2019), the 2.5% of national MHI benchmark was specific to small water systems. EPA did not develop similar benchmarks for the category of medium and large utilities.

Nonetheless, the following benchmarks are frequently advanced in the context of water and sewer service affordability:

- Sewer service is deemed affordable if the typical household bill is less than 2% of service area MHI.
- Water service is deemed affordable if the typical household bill is less than 2.5% of service area MHI.
- Combined water and sewer service is deemed affordable if the typical household bill is less than 4.5% of service area MHI.

These benchmarks have been subject to a number of critiques (Raucher, et al. 2013, Raucher, et al. 2019, Teodoro 2018) which generally distill into the following three points:

- **Average vs Essential Indoor Use (EIU)**. Using average demand to calculate utility costs will overstate the cost of essential service. Average demand imbeds a lot of discretionary water use and is skewed by a small proportion of customers using very large amounts of water. Affordability should instead be assessed in terms of the ability of customers to pay to meet their basic needs for drinking, cooking, health, and sanitation. In this respect, median or minimum monthly water use is likely to provide a better measure of essential water use. Median monthly water use in Santa Cruz is currently about 4 CCF while median February water use, which is almost entirely indoor water use, is about 3.5 CCF. The state has set an indoor water use standard of 55 GPCD, which for the average Santa Cruz household size equates to about 5.3 CCF. The CPUC requires the utilities it regulates to use 6 CCF in their affordability assessments. Both the state and the CPUC thresholds are too high for Santa Cruz. Santa Cruz median February water use, equal to approximately 36 gallons/capita/day (GPCD), provides a reasonable measure of EIU.
- **Median vs Low Income**. Measuring affordability on the basis of an entire community's MHI is likely to gloss over impacts on lower-income households. This was shown in our 2016 analysis where up to 20% of residents were expected to confront affordability issues even though none

of the proposed rate designs exceeded the service area wide MHI threshold. Other income thresholds have been proposed, most notably, the 20th percentile income level (Raucher et al. 2019; Teodoro, 2018). Teodoro (2018) argues that the 20th percentile income level is typically identified with the lower boundary of the middle class where households may have very limited financial resources, but also may not qualify for income assistance programs. Another approach is to disaggregate the analysis. Rather than calculate affordability for the entire service area, break it up into smaller pieces and separately calculate affordability for each piece. As well as allowing for geographic differences in household income, occupancy, and water use, this approach has the advantage of pinpointing which neighborhoods within a service area are most likely to struggle with affordability issues.

- **Income vs Disposable Income**. Water and sewer bills may be low as a percentage of income, but much higher as a percentage of disposable income after deducting other essential living costs, such as food, housing, and health care. The difference can be especially large in communities, such as Santa Cruz, with high housing costs.

In response to these critiques, several alternative affordability metrics have been proposed. Here we provide a general overview of the five approaches that have received the most attention. For a more detailed discussion of their advantages and limitations, see Raucher et al. (2019).

- **Household Burden Indicator (HBI)**. The HBI metric was proposed in Raucher et al. (2019). It is a variant of EPA's RI discussed previously. There are two key differences between the HBI and RI. First, HBI is calculated using the combined cost of water and sewer service whereas RI only considers sewer service. Second, HBI uses the 20th rather than the 50th percentile income level. Justifications for using the 20th percentile income level include: (1) households at or below the 20th percentile typically are the most economically challenged members of the community; (2) the 20th percentile is generally considered the demarcation between low income and middle-class households; (3) many assistance programs have eligibility cut-offs at or near the 20th percentile; and (4) income distribution data are readily available from the US Census facilitating computation of the metric.

- **Affordability Ratio at 20th Income Percentile (AR_{20})**. The AR_{20} metric was proposed in Teodoro (2018). It compares the cost of essential water and sewer service to the 20th percentile income level net of costs for housing, food, health care, energy, and taxes. As a general rule of thumb, a 10% threshold is suggested by Teodoro, meaning water and sewer service would be deemed affordable if it cost less than 10% of disposable income at the 20th percentile income level. The primary limitation of this metric is its reliance on disposable income. Computation of representative costs for housing, food, health care, etc., is anything but straightforward. While the American Community Survey compiles data on housing costs, it does not do so for the other

living expenses included in the AR_{20} metric.

- **Weighted Average Residential Index (WARI)**. The WARI metric was proposed as a way to account for geographic differences in household income, occupancy, and water use in assessing water and sewer service affordability. WARI leverages the fact that the US Census reports the number of households in each census tract by income category (e.g. number of households with income between 10-20K, 20-40K, 40-60K, etc.). The average or minimum bill is calculated for each census tract using customer-level billing data and this bill is then divided by the midpoint of each income category. These income-category-specific RIs are then formed into a weighted average RI for the census tract where the weights are equal to the number of households in each income category. A service area weighted average RI can then be formed from the census tract RIs where the weights are the number of households in each census tract. The main advantage of this approach is that it provides geographically disaggregated estimates of utility service affordability. This is useful for pinpointing what parts of the service area are most likely to struggle with paying for water and sewer service. However, it is not clear that the service area metric has any clear advantage over the basic RI. Additionally, it is not obvious that calculating separate RIs for each income category and then forming a weighted average for the tract is preferable to simply using the tract's MHI to compute the tract's RI. It is useful to note that using block groups rather than census tracts will result in roughly a three-fold increase in the level of geographic disaggregation. The tradeoff, however, is that ACS block group estimates are subject to more sampling error than are census tract estimates.

- **Hours at Minimum Wage (HM)**. The HM metric divides the cost of essential water and sewer service by the locally prevailing minimum wage to determine the number of hours a minimum wage worker would need to work in order to pay for water and sewer service. This is not a particularly useful metric for assessing utility service affordability because there is no clear relationship between the metric and a household's income.[5] For example, it cannot be used to determine the percentage of households that are above or below some benchmark HM because household income derives from many possible sources, only some of which may be related to the minimum wage.[6] We do not consider this metric further in this analysis.

[5] Nonetheless it has recently been proposed by the CPUC as one of three metrics for assessing utility service affordability. See CPUC D.20-07-032.

[6] For instance, household income reported in the Census American Community Survey is the sum of the amounts reported separately for wage or salary income; net self-employment income; interest, dividends, or net rental or royalty income or income from estates and trusts; Social Security or Railroad Retirement income; Supplemental Security Income (SSI); public assistance or welfare payments; retirement, survivor, or disability pensions; and all other income.

- **Poverty Prevalence Indicator (PPI)**. The PPI was proposed by Raucher, et al. (2019). PPI is not a water and sewer service affordability indicator. Rather it indicates the percentage of households that have income below 200% of the Federal Poverty Level (FPL). According to Raucher, et al. (2019), 200% of FPL is a commonly used cutoff point for a range of Federal and state income assistance programs. PPI is meant to be used in conjunction with an affordability metric such as the HBI metric. Areas where both the HBI and PPI are high are more likely to face affordability challenges than areas where only one or the other is high. In this sense, the two metrics can be used to provide a fuller picture of the extent to which utility service affordability is likely to be an issue. For example, the Alliance for Water Efficiency used HBI and PPI in conjunction with one another to assess water and sewer service affordability in Detroit, Michigan (Alliance for Water Efficiency, 2020).

Affordability Metric Construction

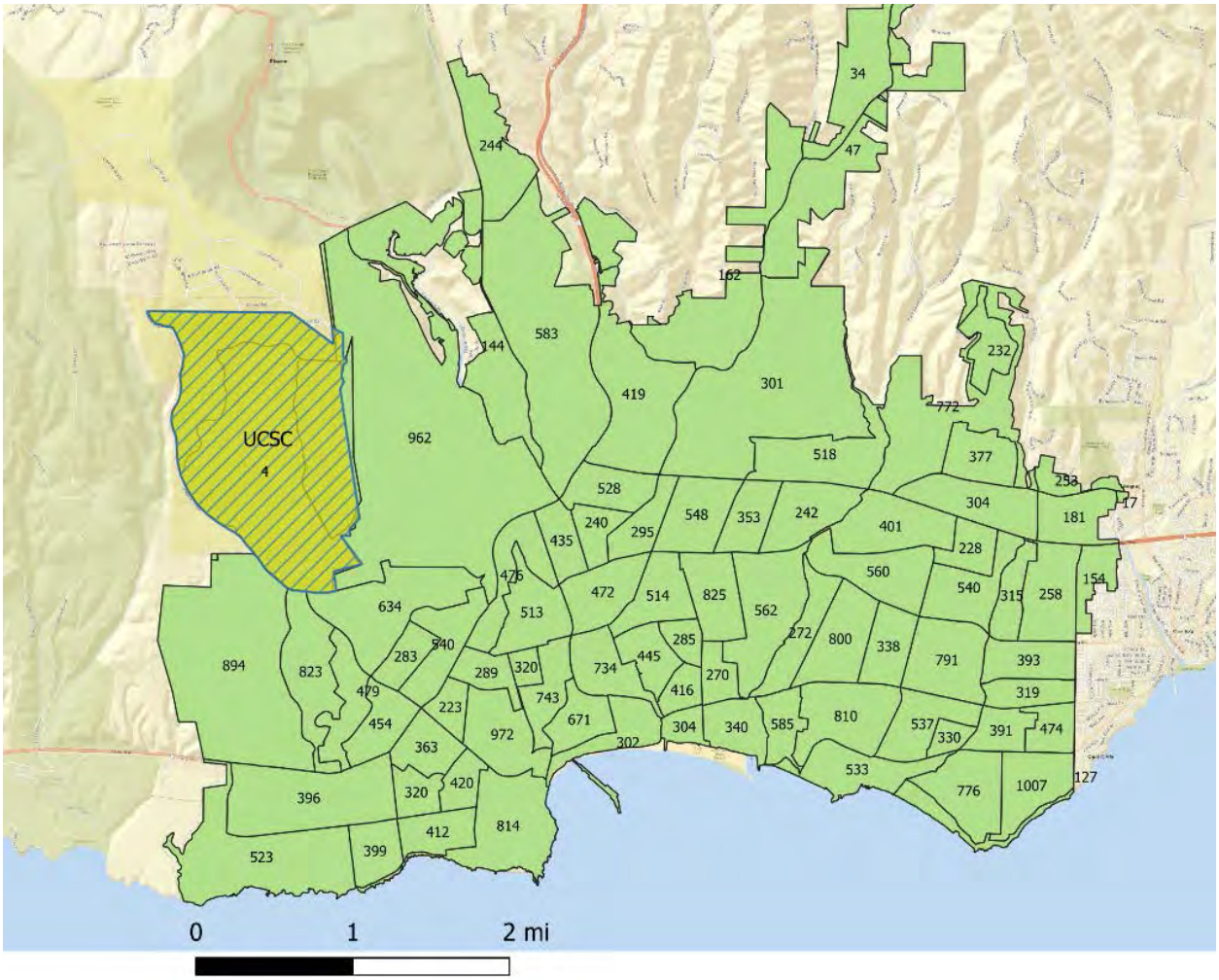
Our analysis does not rely directly on any single metric discussed in the previous section. Instead, we developed a composite metric that attempts to balance the advantages and disadvantages of the different approaches. The metric we use most closely aligns with the WARI metric in that it relies on geographically disaggregated household water use and income data. We feel this is superior to providing a single service area wide measure of affordability since it will usually be the case that water and sewer service will be deemed affordable for the majority of customers. The key question is for how many customer is this unlikely to be the case? A disaggregated analysis is better able to answer this question.

Here we outline the steps we used to construct our affordability metric:

- We compute an affordability ratio for each census block group in the service area. This divides the service area into 84 different block groups, as shown in Figure 1. We use 2019 customer billing data to determine the number of households that are served by the Water Department within each block group.[7] The household count is shown within the boundary of each block group in Figure 1.

[7] For each residential service meter, the Water Department records the number of housing units served. This information is used by the Water Department for billing purposes.

Figure 1. Santa Cruz Water Department Service Area Intersected with Census Block Groups



- We use February metered water use in 2019 as a proxy for EIU. We divide a meter's water use by the number of housing units it serves in order to determine water use per household. We then use this data to calculate median February water use per household for each block group. These medians vary by block group. For the service area as a whole, median February water use was about 3.5 CCF per household in 2019, which equates to approximately 36 GPCD.

- Next we calculate the water and sewer service cost per household based on each block group's median EIU. We use the water and sewer service rates that were in effect between July 2019 and June 2020 for this calculation. Separate bills are calculated using the inside and outside city rates and then a weighted average bill is formed using the number of households in the block that are located within versus outside of the city limits. To calculate the water service meter charge, we calculate the meter charge for each meter in the block group, divide by the number of households served by the meter, and then calculate the median of these values. A similar conversion is not required for fixed sewer service charges because these charges are already denominated in dollars per housing unit. The sewer charge for outside city customers, however,

is part of their property tax assessment. We convert these annual assessments into equivalent dollar per month sewer charges for purposes of this analysis.

- Using these data, we construct two affordability ratios – one only for water service and another for both water and sewer service. For the ratio's denominator, we use MHI adjusted for median housing costs (MHC).[8] In this regard, we are following guidance for assessing utility service affordability recently adopted by the CPUC.[9] Essentially, this approach splits the difference between assessing affordability on the basis of disposable income, as advocated by Teodoro (2018), versus using gross income, which ignores cost of living considerations. While economic theory favors using disposable income, the CPUC concluded that developing robust measures of disposable income is usually impractical. However, it also noted that in California housing costs constitute the single largest household expense, can vary significantly across and within regions, and are estimated by the US Census. Importantly, in addition to basic rent and mortgage costs, US Census estimates of MHC include other housing-related expenses, including real estate taxes, property insurance, electricity, gas, water and sewer costs, and home owner association dues and fees. Thus adjusting MHI for MHC goes a long ways towards estimating disposable income. Because MHC includes water and sewer costs, we add back the calculated water and water and sewer bill when constructing the denominator of the affordability ratios so as not to double count.

- An important difference between this analysis and the one we completed in 2016 is our incorporation of multi-family households into the construction of the affordability metrics. The 2016 analysis only considered single-family households, and while they comprise the majority of residential customers, the analysis nonetheless excluded an important demographic for assessing utility service affordability. Using disaggregated data allows us to calculate water use and billing statistics per housing unit rather than per meter. This treatment aligns better with the MHI and MHC estimates from the American Community Survey which are based on all sampled housing units in the block group regardless of structure type (e.g. single- vs. multi-unit structures) and tenure (e.g. owner vs. renter).

The final affordability ratios for water and combined water and sewer are:

$$AR_{W,i} = \frac{Bill_{W,i}}{MHI_i - MHC_i + Bill_{W,i}}$$

$$AR_{W\&S,i} = \frac{Bill_{W\&S,i}}{MHI_i - MHC_i + Bill_{W\&S,i}}$$

[8] MHI estimates are from ACS Table B19013 while median housing cost estimates are from ACS Table B25105.
[9] See CPUC D.20-07-032.

where i indexes the block group, $Bill_W$ is the bill for water service at median February water use and $Bill_{W\&S}$ is the combined bill for water and sewer service at median February water use. As with WARI, the block group affordability ratios can be formed into a weighted average service area wide affordability ratio where the number of housing units in each block group are used as the weights.

In addition to the affordability ratios, we also estimate PPI – the poverty prevalence indicator -- for each block group. This estimates the percentage of households in each block group with income less than 200% of FPL.

We use the PPI in conjunction with the $AR_{W\&S}$ to construct the Water & Sewer Service Financial Burden Matrix shown in Table 1. This is similar to the matrix developed by Raucher et al. (2019) using the PPI and HBI metrics. However, we use different thresholds for $AR_{W\&S}$ than Raucher et al. use for HBI since $AR_{W\&S}$ is based on MHI whereas HBI is based on 20th percentile income. That said, it is important to emphasize that the thresholds we use for $AR_{W\&S}$, while informed by affordability thresholds found in the literature, are nonetheless based on our professional judgement.

Table 1. Water & Sewer Service Financial Burden Matrix

$AR_{W\&S}$	Poverty Prevalence Indicator (PPI)			
	< 10%	10 – 30%	30 – 50%	> 50%
< 1.5%	Low	Low	Low-Moderate	Low-Moderate
1.5% - 2.5%	Low	Low-Moderate	Moderate	Moderate
2.5% - 3.5%	Low-Moderate	Moderate	Moderate	Moderate-High
3.5% - 4.5%	Moderate	Moderate	Moderate-High	High
> 4.5%	Moderate-High	Moderate-High	High	High

Notes:

$AR_{W\&S}$: Combined water and sewer cost at essential level of service as a percentage of MHI adjusted for housing costs

PPI: Percentage of households in block group with income less than 200% FPL.

Analysis Results

First we present summary statistics on water use, water and sewer bills, and household income and housing costs. We then provide tabulated and graphical results on water and combined water and sewer service affordability and financial burden.

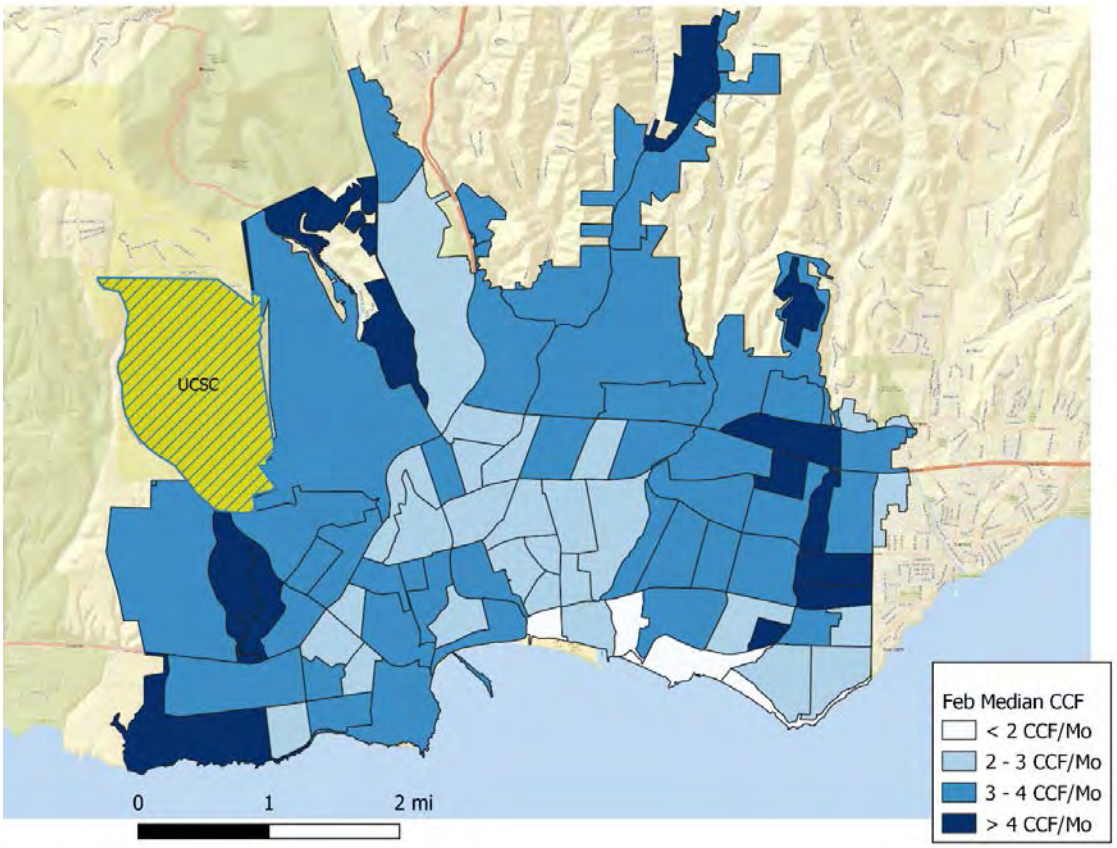
Essential Indoor Use (EIU)

Table 2 and Figure 2 show the distribution of median February 2019 water use per housing unit by census block group. As noted above, we are using median February water use as a proxy for essential indoor water use for basic drinking, cooking, health, and sanitation requirements. Approximately 85% of housing units served by the Water Department are located in census block groups with median water use between 2 and 4 CCF. The census block groups in Figure 2 showing water use of less than 2 CCF/Mo. contain a large number of second homes and vacation rentals, which may explain the very low February water use in these block groups.

Table 2. Number of Households by Essential Water Use Level

Median Feb Water Use	Freq.	Percent	Cum.
< 2 CCF/Mo	1,549	4.23	4.23
2-3 CCF/Mo	12,394	33.86	38.09
3-4 CCF/Mo	18,536	50.64	88.73
> 4 CCF/Mo	4,124	11.27	100.00
Total	36,603	100.00	

Figure 2. Essential Water Use by Census Block Group (CCF/Mo/Household)



Water and Sewer Bills for EIU

Table 3 and Figure 3 show the distribution of EIU water bills by census block group. Approximately 96% of households served by the Water Department are located in census block groups where the EIU water bill is $60/month or less and approximately 39% are located in block groups where the EIU water bill is $40/month or less.

Table 3. Number of Households by Water Bill Amount for Essential Water Use

EIU Water Bill	Freq.	Percent	Cum.
$20-$40	14,098	38.52	38.52
$40-$60	20,875	57.03	95.55
> $60	1,630	4.45	100.00
Total	36,603	100.00	

Figure 3. Water Bill for Essential Water Use by Census Block Group ($/household)

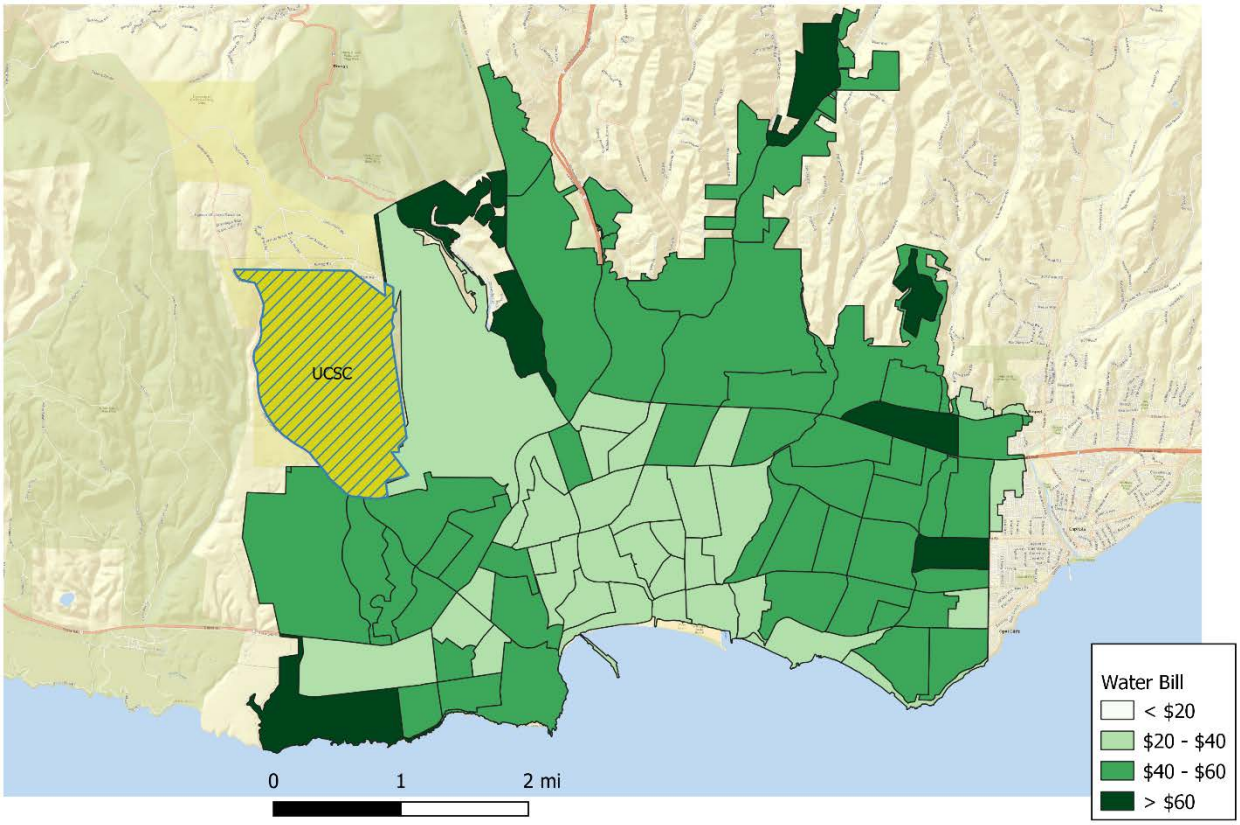
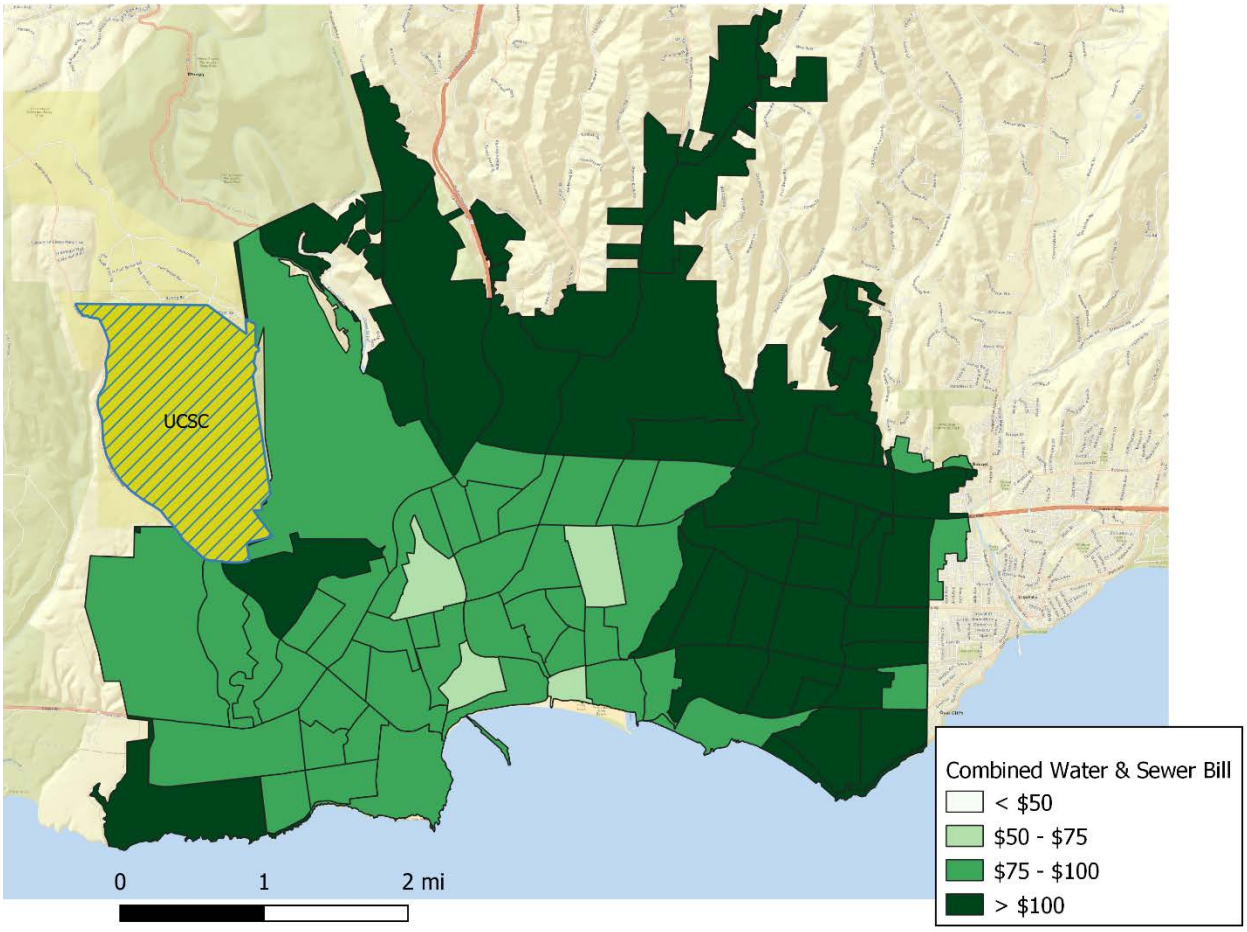


Table 4 and Figure 4 show the distribution of combined water and sewer bills for EIU by census block group. Approximately 60% of households served by the Water Department are located in census block groups where the combined water and sewer bill for EIU is $100/month or less.

Table 4. Number of Households by Combined Water & Sewer Bill Amount for Essential Water Use

EIU Water & Sewer Bill	Freq.	Percent	Cum.
$50-$75	2,313	6.32	6.32
$75-$100	19,562	53.44	59.76
> $100	14,728	40.24	100.00
Total	36,603	100.00	

Figure 4. Combined Water & Sewer Bill for Essential Water Use by Census Block Group ($/household)



Income and Housing Costs

Table 5 and Figure 5 show the distribution of households by MHI. Approximately 15% of households served by the Water Department are located in census block groups with MHI less than $50,000. Households in these census block groups are likely to have incomes that are at or below 200% of the Federal Poverty Level (FPL) and may be significantly more likely to struggle with meeting basic living expenses.

Table 5. Number of Households by MHI

MHI	Freq.	Percent	Cum.
< $50k	5,480	14.97	14.97
$50-$75k	12,438	33.98	48.95
$75-$100k	8,496	23.21	72.16
$100-$150k	8,858	24.20	96.36
> $150k	1,331	3.64	100.00
Total	36,603	100.00	

Figure 5. MHI by Census Block Group

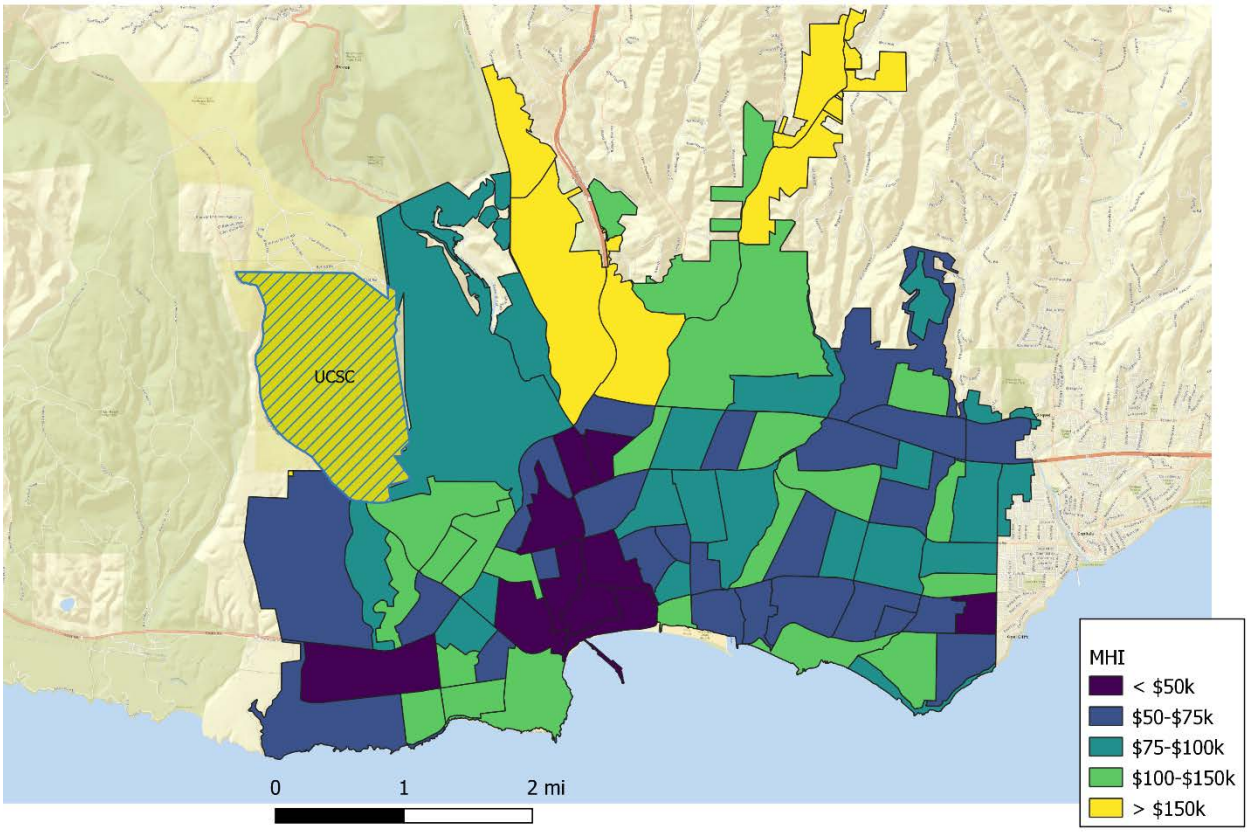
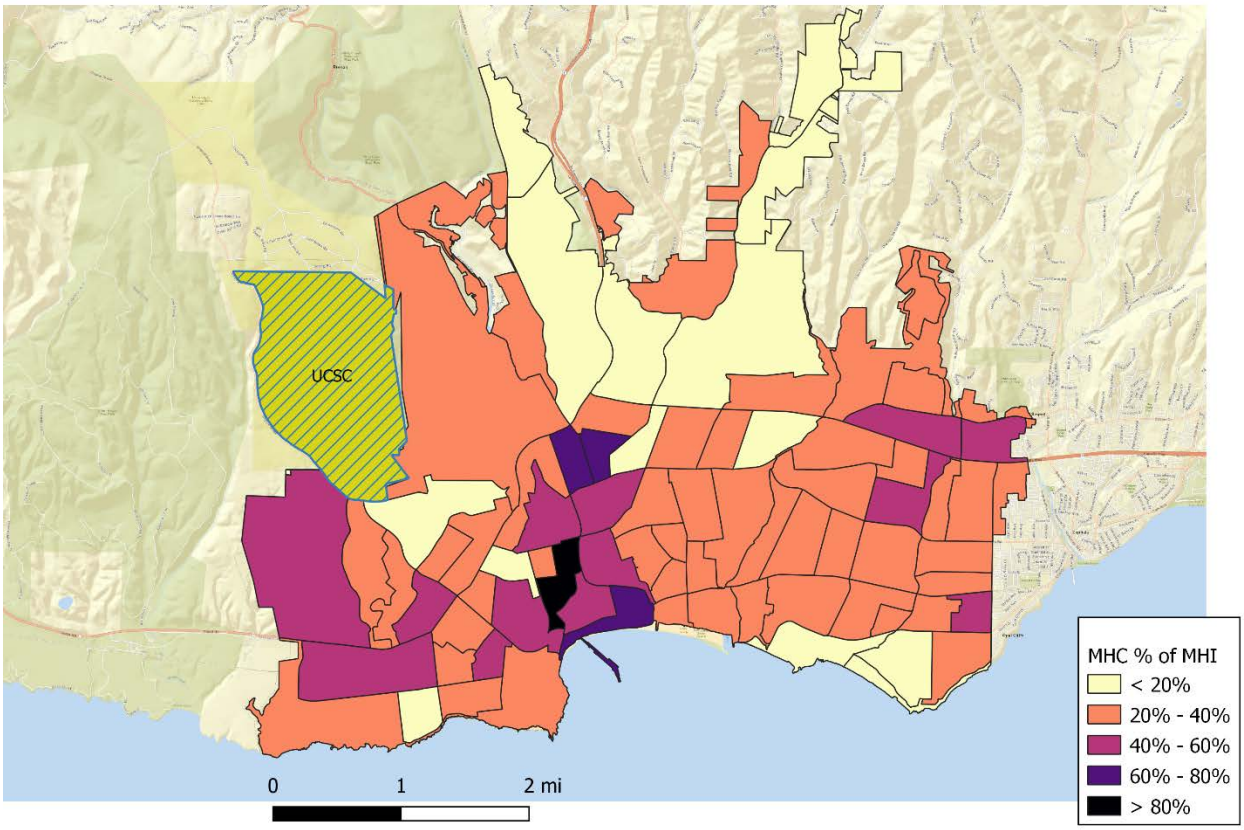


Table 6 and Figure 6 show the distribution of households by median housing cost (MHC) relative to median household income (MHI). Approximately 24% of households served by the Water Department are located in census block groups where MHC exceeds 40% of MHI. Households in these census block groups may be significantly more likely to struggle with meeting basic living expenses after paying for housing costs.

Table 6. Number of Households by MHC as a Percent of MHI

MHC as % MHI	Freq.	Percent	Cum.
< 20%	4,927	13.46	13.46
20%-40%	22,931	62.65	76.11
40%-60%	7,025	19.19	95.30
60%-80%	977	2.67	97.97
> 80%	743	2.03	100.00
Total	36,603	100.00	

Figure 6. MHC as a Percent of MHI by Census Block Group



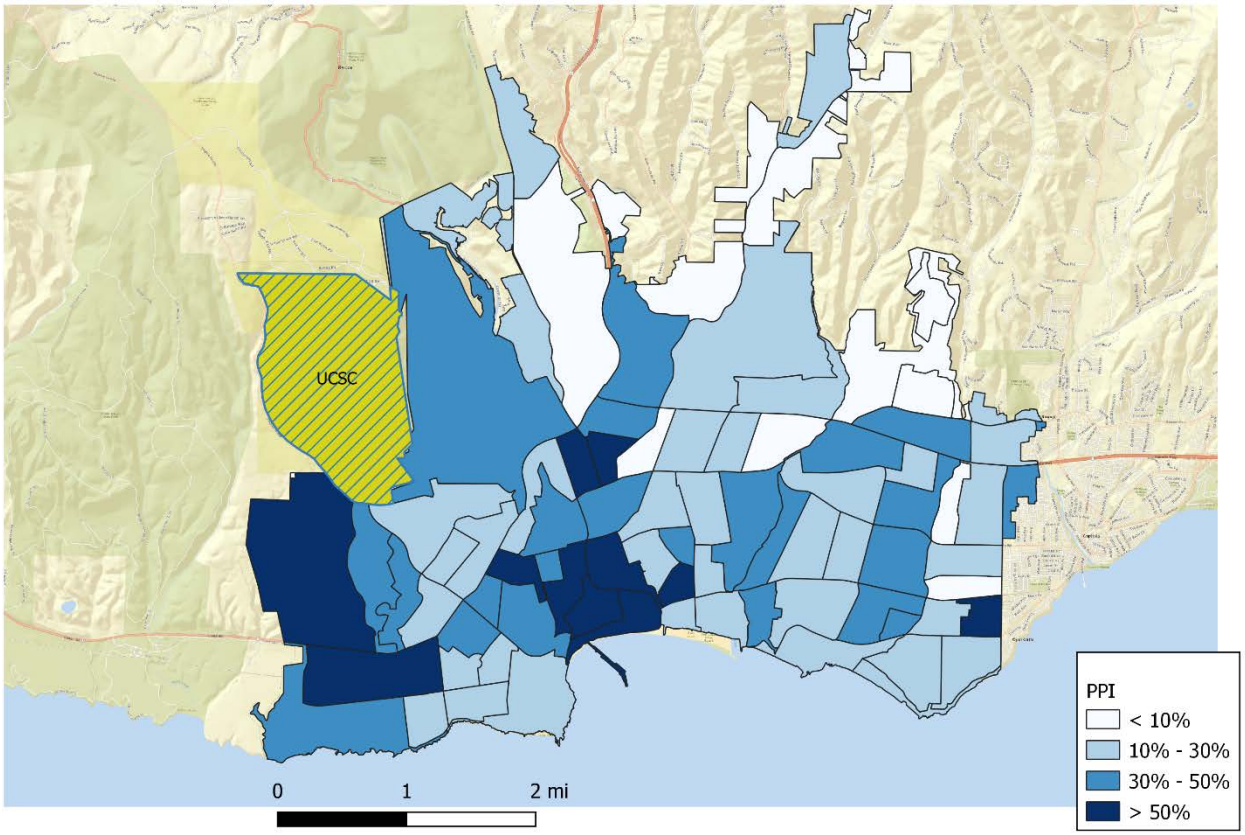
Poverty Prevalence

Table 7 and Figure 7 show the distribution of households by poverty prevalence indicator (PPI). This shows the percentage of households in each block group with incomes less than 200% of FPL. Approximately 15% of households served by the Water Department are located in census block groups where more than 50% of households have incomes less than 200% of FPL. Households in these census block groups may be significantly more likely to struggle with meeting basic living expenses after paying for housing costs.

Table 7. Number of Households by Poverty Prevalence

PPI Level	Freq.	Percent	Cum.
< 10%	3,348	9.15	9.15
10% - 30%	16,247	44.39	53.53
30% - 50%	11,414	31.18	84.72
> 50%	5,594	15.28	100.00
Total	36,603	100.00	

Figure 7. Poverty Prevalence Indicator by Census Block Group



Affordability Ratios

Table 8 and Figure 8 show the affordability ratios for water service. The average affordability ratio for the service area is 1.3%. Approximately 5% of households served by the Water Department are located in census block groups with a water service affordability ratio greater than 2.5%. Recall that 2.5% of MHI is a commonly used benchmark for assessing water service affordability. Approximately 13% of households are located in census block groups with a water service affordability ratio greater than 2.0%. Because we have adjusted MHI for housing cost, the 2% and 2.5% thresholds provide conservative benchmarks for assessing affordability.

Table 8. Number of Households by Water Service Affordability Ratio

Water Service AR	Freq.	Percent	Cum.
< 0.5%	2,612	7.14	7.14
0.5% - 1.0%	19,883	54.32	61.46
1.0% - 1.5%	6,186	16.90	78.36
1.5% - 2.0%	3,273	8.94	87.30
2.0% - 2.5%	2,625	7.17	94.47
> 2.5%	2,024	5.53	100.00
Total	36,603	100.00	

Figure 8. Water Service Affordability Ratio by Census Block Group

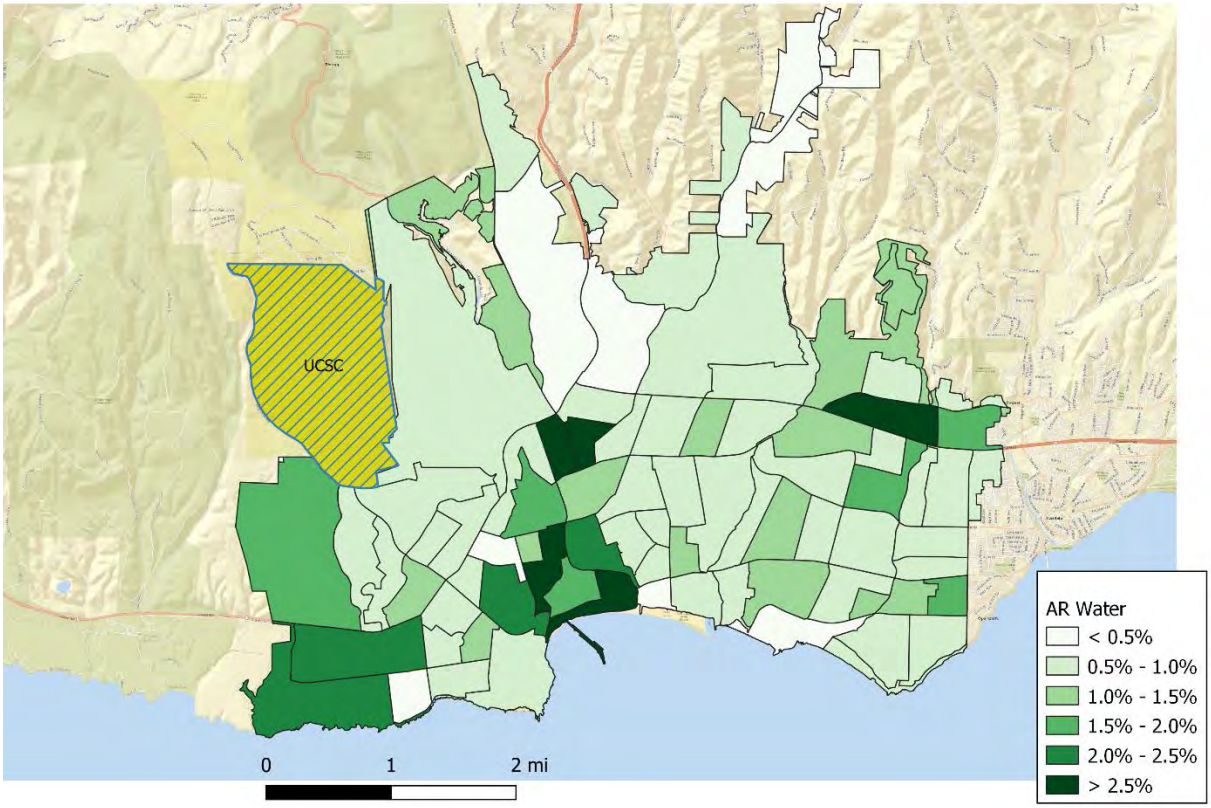
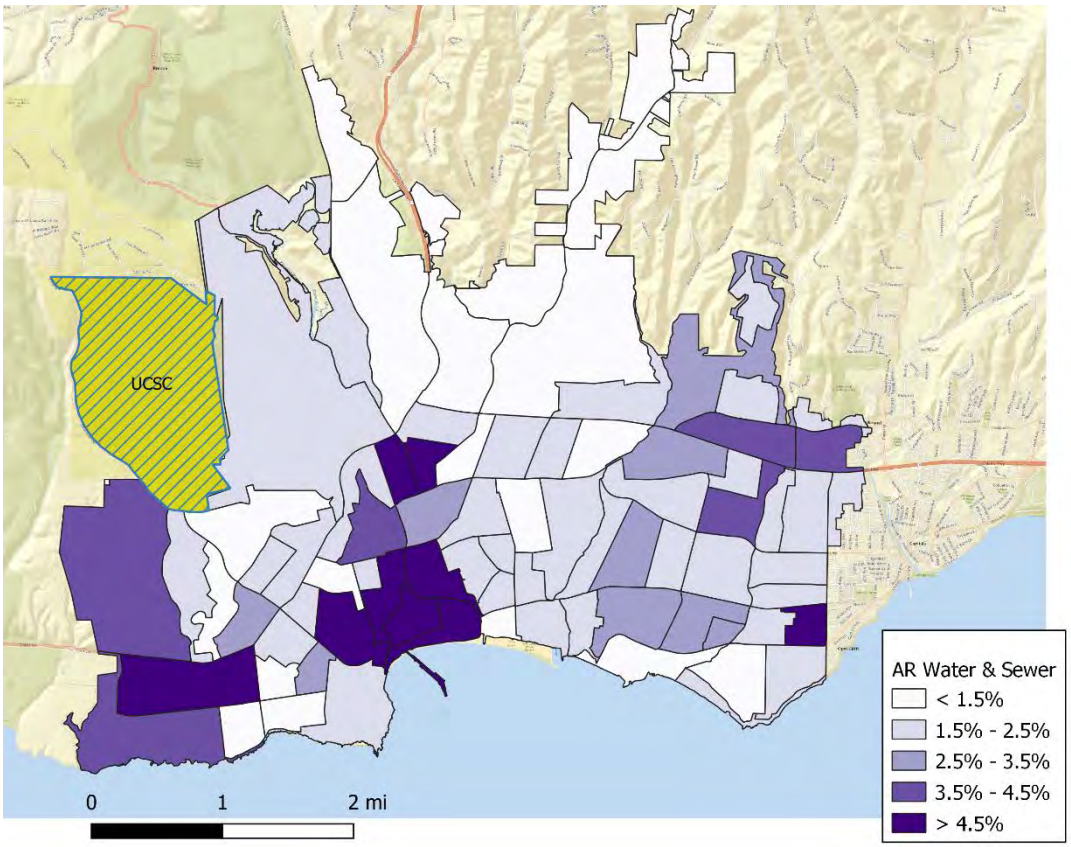


Table 9 and Figure 9 show the affordability ratios for combined water and sewer service. The average for the service area is 2.9%. Approximately 14% of households are located in census block groups with a combined water and sewer service affordability ratio greater than 4.5%. Recall that 4.5% of MHI is a commonly used benchmark for assessing combined water and sewer service affordability. Again we note that because we have adjusted MHI for housing cost, the 4.5% threshold provides conservative benchmark for assessing affordability. As a rule of thumb, Teodoro (2018) recommended a 10% threshold for his proposed affordability ratio. However, this is too high for the metric we are using for two reasons. First, Teodoro's ratio is based on 20th percentile income whereas ours uses median income. Second, Teodoro's ratio uses disposable income whereas ours adjusts income only for housing costs.

Table 9. Number of Households by Combined Water & Sewer Service Affordability Ratio

W & S AR	Freq.	Percent	Cum.
< 1.5%	7,302	19.95	19.95
1.5% - 2.5%	16,383	44.76	64.71
2.5% - 3.5%	4,996	13.65	78.36
3.5% - 4.5%	2,955	8.07	86.43
> 4.5%	4,967	13.57	100.00
Total	36,603	100.00	

Figure 9. Combined Water & Sewer Service Affordability Ratio by Census Block Group



Water & Sewer Service Financial Burden Matrix

Table 10 repeats the Water & Sewer Service Financial Burden Matrix from Table 1. Recall that it is based on a similar approach in Raucher et al. (2019) which uses an affordability metric in conjunction with poverty prevalence to assess the likely level of financial burden of water and sewer service. Table 11 shows the number households falling into each cell in the financial burden matrix. Table 12 tallies up these counts by burden level. This analysis indicates that approximately 79% of households served by the Water Department are located in census block groups where the expected financial burden of water and sewer service is scored moderate or better. Approximately 16% of households are located in census block groups where the expected financial burden is scored high due to the combination of high AR and high PPI. The census block groups in which these households are located are shown in Figure 10.

Table 10. Water & Sewer Service Financial Burden Matrix

$AR_{W\&S}$	Poverty Prevalence Indicator (PPI)			
	< 10%	10 – 30%	30 – 50%	> 50%
< 1.5%	Low	Low	Low-Moderate	Low-Moderate
1.5% - 2.5%	Low	Low-Moderate	Moderate	Moderate
2.5% - 3.5%	Low-Moderate	Moderate	Moderate	Moderate-High
3.5% - 4.5%	Moderate	Moderate	Moderate-High	High
> 4.5%	Moderate-High	Moderate-High	High	High

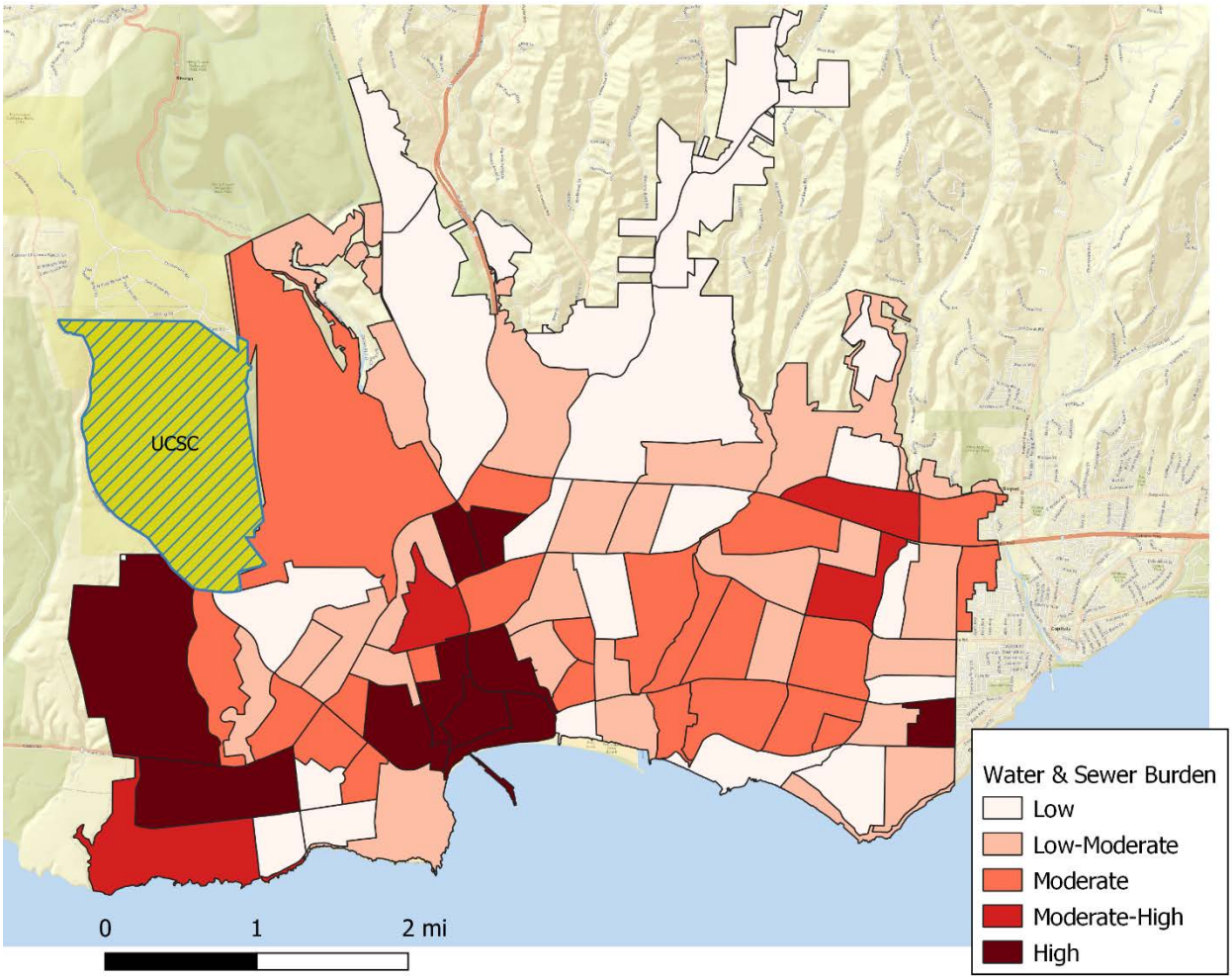
Table 11. Number of Households by Water & Sewer AR and PPI Level

W & S AR	PPI Level < 10%	10% - 30%	30% - 50%	> 50%	Total
< 1.5%	1,333	4,782	898	289	7,302
1.5% - 2.5%	1,243	8,800	5,924	416	16,383
2.5% - 3.5%	772	2,484	1,740		4,996
3.5% - 4.5%		181	1,880	894	2,955
> 4.5%			972	3,995	4,967
Total	3,348	16,247	11,414	5,594	36,603

Table 12. Number of Households by Water & Sewer Service Burden

W&S Financial Burden	Freq.	Percent	Cum.
Low	7,358	20.10	20.10
Low-Moderate	10,759	29.39	49.50
Moderate	10,745	29.36	78.85
Moderate-High	1,880	5.14	83.99
High	5,861	16.01	100.00
Total	36,603	100.00	

Figure 10. Water & Sewer Financial Burden by Census Block Group



Summary

The primary results of this analysis include the following:

- Essential water and sewer service in Santa Cruz remain affordable for most Water Department customers. The water service only affordability ratio for the entire service area is 1.3% of adjusted MHI, which is well below conventional thresholds for water service affordability. The water and sewer service affordability ratio for the entire service area is 2.9% of adjusted MHI, also well below conventional thresholds for combined water and sewer service costs.

- Approximate 6% of households served by the Water Department are located in census block groups with affordability ratios for water service greater than 2.5% while approximately 14% are in census block groups with affordability ratios for combined water and sewer service greater than 4.5%. For these households, water and sewer service costs may constitute a financial

burden.

- Approximately 16% of households are located in census block groups where the financial burden of the combined costs of water and sewer service is scored high due to both high affordability ratios and high poverty prevalence. These customers are most likely to struggle with meeting basic living expenses, of which water and sewer service are a part.

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Attachment A

Census block group data set

GEOID	Housing Units	% In-City Housing Units	Median Feb CCF	Median Water Bill	Median Water Bill Category	Median Water & Sewer Bill	Median Water & Sewer Bill Category	Median Monthly Income	Median Annual Income Category	Median Monthly Housing Cost	Median Housing Cost % of MHI	Median Housing Cost % of MHI Category	Poverty Prevalence %	Poverty Prevalence Category	AR Water	AR Water Category	AR Water & Sewer	AR Water & Sewer Category	Water & Sewer Financial Burder Score
60871001001	301	100%	4	50.52	$40-$60	100.35	100.352	> $100	$100-$150k	2,380	19.7%	< 20%	28%	10% - 30%	0.5%	0.5% - 1.0%	1.0%	< 1.5%	Low
60871001002	518	100%	4	50.49	$40-$60	100.28	100.284	> $100	$75-$100k	2,380	29.0%	20%-40%	15%	10% - 30%	0.9%	0.5% - 1.0%	1.7%	1.5% - 2.5%	Low-Moderate
60871002001	242	100%	4	49.99	$40-$60	99.27	99.2738	$75-$100	$100-$150k	1,816	19.7%	< 20%	9%	< 10%	0.7%	0.5% - 1.0%	1.3%	< 1.5%	Low
60871002002	353	100%	3	39.53	$20-$40	87.92	87.922	$75-$100	$50-$75k	1,816	34.0%	20%-40%	22%	10% - 30%	1.1%	1.0% - 1.5%	2.4%	1.5% - 2.5%	Low-Moderate
60871002003	548	100%	3.5	44.10	$40-$60	92.38	92.3801	$75-$100	$75-$100k	1,816	26.3%	20%-40%	16%	10% - 30%	0.9%	0.5% - 1.0%	1.8%	1.5% - 2.5%	Low-Moderate
60871002004	295	100%	3	39.39	$20-$40	87.80	87.8008	$75-$100	$100-$150k	1,816	18.9%	< 20%	4%	< 10%	0.5%	0.5% - 1.0%	1.1%	< 1.5%	Low
60871002005	528	100%	2.71	33.41	$20-$40	79.43	79.4301	$75-$100	$50-$75k	1,816	31.9%	20%-40%	36%	30% - 50%	0.9%	0.5% - 1.0%	2.0%	1.5% - 2.5%	Moderate
60871002006	435	100%	3.75	41.49	$40-$60	85.21	85.2059	$75-$100	< $50k	1,816	64.4%	60%-80%	54%	> 50%	4.0%	> 2.5%	7.8%	> 4.5%	High
60871002007	240	100%	3	38.55	$20-$40	86.29	86.293	$75-$100	< $50k	1,816	64.7%	60%-80%	59%	> 50%	3.7%	> 2.5%	8.0%	> 4.5%	High
60871003001	962	59%	3.21	38.18	$20-$40	82.79	90.8962	$75-$100	$75-$100k	1,965	28.9%	20%-40%	39%	30% - 50%	0.8%	0.5% - 1.0%	1.8%	1.5% - 2.5%	Moderate
60871003002	634	100%	4	50.35	$40-$60	100.05	100.052	> $100	$100-$150k	1,965	19.6%	< 20%	13%	10% - 30%	0.6%	0.5% - 1.0%	1.2%	< 1.5%	Low
60871004001	4	0%	3.5	49.64	$40-$60	95.54	115.418	> $100	> $150k	1,575	11.9%	< 20%	10%	< 10%	0.4%	< 0.5%	1.0%	< 1.5%	Low
60871005001	479	100%	4.04	47.68	$40-$60	94.76	94.7602	$75-$100	$100-$150k	2,156	22.7%	20%-40%	32%	30% - 50%	0.6%	0.5% - 1.0%	1.3%	< 1.5%	Low-Moderate
60871005002	823	100%	4.44	51.50	$40-$60	98.64	98.6434	$75-$100	$75-$100k	2,156	29.5%	20%-40%	48%	30% - 50%	1.0%	0.5% - 1.0%	1.9%	1.5% - 2.5%	Moderate
60871005003	894	98%	3.8	46.04	$40-$60	93.38	93.8503	$75-$100	$50-$75k	2,156	47.8%	40%-60%	50%	> 50%	1.9%	1.5% - 2.0%	3.8%	3.5% - 4.5%	High
60871006001	540	100%	4	48.97	$40-$60	96.76	96.7643	$75-$100	$100-$150k	2,251	27.0%	20%-40%	28%	10% - 30%	0.8%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Low-Moderate
60871006002	454	100%	3.5	44.67	$40-$60	93.28	93.2804	$75-$100	$50-$75k	2,251	40.0%	40%-60%	18%	10% - 30%	1.3%	1.0% - 1.5%	2.7%	2.5% - 3.5%	Moderate
60871006003	283	100%	4	50.12	$40-$60	99.39	99.3882	$75-$100	$100-$150k	2,251	26.6%	20%-40%	27%	10% - 30%	0.8%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Low-Moderate
60871007001	476	100%	3	34.45	$20-$40	78.58	78.5756	$75-$100	$50-$75k	1,409	24.3%	20%-40%	27%	10% - 30%	0.8%	0.5% - 1.0%	1.8%	1.5% - 2.5%	Low-Moderate
60871007002	513	100%	2.68	30.06	$20-$40	73.29	73.2928	$50-$75	< $50k	1,409	45.3%	40%-60%	44%	30% - 50%	1.7%	1.5% - 2.0%	4.1%	3.5% - 4.5%	Moderate-High
60871008001	514	100%	2.88	35.63	$20-$40	81.19	81.1921	$75-$100	$75-$100k	1,789	25.8%	20%-40%	18%	10% - 30%	0.7%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Low-Moderate
60871008002	416	100%	2.75	34.97	$20-$40	81.20	81.2048	$75-$100	$75-$100k	1,789	26.6%	20%-40%	51%	> 50%	0.7%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Moderate
60871008003	472	100%	2.85	32.16	$20-$40	75.72	75.7215	$75-$100	$50-$75k	1,789	41.1%	40%-60%	37%	30% - 50%	1.2%	1.0% - 1.5%	2.9%	2.5% - 3.5%	Moderate
60871008004	734	100%	3.06	35.49	$20-$40	79.34	79.3365	$75-$100	< $50k	1,789	54.3%	40%-60%	58%	> 50%	2.3%	2.0% - 2.5%	5.0%	> 4.5%	High
60871008005	445	100%	3	37.25	$20-$40	83.06	83.0592	$75-$100	$50-$75k	1,789	31.9%	20%-40%	15%	10% - 30%	1.0%	0.5% - 1.0%	2.1%	1.5% - 2.5%	Low-Moderate
60871008006	285	100%	3	38.36	$20-$40	85.18	85.1803	$75-$100	$50-$75k	1,789	31.5%	20%-40%	36%	30% - 50%	1.0%	0.5% - 1.0%	2.1%	1.5% - 2.5%	Moderate

GEOID	Housing Units	% In-City Housing Units	Median Feb CCF	Median Water Bill	Median Water Bill Category	Median Water & Sewer Bill	Median Water & Sewer Bill Category	Median Monthly Income	Median Annual Income Category	Median Monthly Housing Cost	Median Housing Cost % of MHI	Median Housing Cost % of MHI Category	Poverty Prevalence %	Poverty Prevalence Category	AR Water	AR Water Category	AR Water & Sewer	AR Water & Sewer Category	Water & Sewer Financial Burder Score
60871009001	562	100%	3	37.41	$20-$40	84.44	84.4393	$75-$100	$75-$100k	1,976	29.4%	20%-40%	39%	30% - 50%	0.8%	0.5% - 1.0%	1.7%	1.5% - 2.5%	Moderate
60871009002	825	100%	2.37	28.77	$20-$40	73.15	73.15	$50-$75	$75-$100k	1,976	27.9%	20%-40%	22%	10% - 30%	0.6%	0.5% - 1.0%	1.4%	< 1.5%	Low
60871009003	270	100%	3	37.90	$20-$40	84.03	84.0338	$75-$100	$50-$75k	1,976	36.9%	20%-40%	28%	10% - 30%	1.1%	1.0% - 1.5%	2.4%	1.5% - 2.5%	Low-Moderate
60871009004	340	100%	2.27	29.22	$20-$40	75.04	75.0391	$75-$100	$50-$75k	1,976	31.9%	20%-40%	14%	10% - 30%	0.7%	0.5% - 1.0%	1.7%	1.5% - 2.5%	Low-Moderate
60871009005	304	100%	2	27.17	$20-$40	73.46	73.4647	$50-$75	$100-$150k	1,976	22.8%	20%-40%	18%	10% - 30%	0.4%	< 0.5%	1.1%	< 1.5%	Low
60871010001	743	100%	3.15	33.71	$20-$40	76.14	76.1393	$75-$100	< $50k	1,438	83.7%	> 80%	79%	> 50%	10.8%	> 2.5%	21.4%	> 4.5%	High
60871010002	320	100%	3.2	36.65	$20-$40	80.36	80.3647	$75-$100	$50-$75k	1,438	28.9%	20%-40%	44%	30% - 50%	1.0%	1.0% - 1.5%	2.2%	1.5% - 2.5%	Moderate
60871010003	289	100%	3.75	46.36	$40-$60	94.02	94.0239	$75-$100	$100-$150k	1,438	12.9%	< 20%	52%	> 50%	0.5%	< 0.5%	1.0%	< 1.5%	Low-Moderate
60871010004	302	100%	3.09	33.81	$20-$40	76.15	76.1489	$75-$100	< $50k	1,438	73.8%	60%-80%	94%	> 50%	6.2%	> 2.5%	13.0%	> 4.5%	High
60871010005	223	100%	3	39.60	$20-$40	88.08	88.0788	$75-$100	$75-$100k	1,438	20.5%	20%-40%	49%	30% - 50%	0.7%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Moderate
60871010006	972	100%	3.94	42.04	$40-$60	84.97	84.969	$75-$100	< $50k	1,438	44.7%	40%-60%	50%	30% - 50%	2.3%	2.0% - 2.5%	4.6%	> 4.5%	High
60871010007	671	100%	2.36	26.65	$20-$40	69.34	69.3365	$50-$75	< $50k	1,438	50.9%	40%-60%	52%	> 50%	1.9%	1.5% - 2.0%	4.8%	> 4.5%	High
60871011001	412	100%	4	49.97	$40-$60	99.02	99.0215	$75-$100	$100-$150k	2,336	24.6%	20%-40%	18%	10% - 30%	0.7%	0.5% - 1.0%	1.4%	< 1.5%	Low
60871011002	420	100%	2.5	32.63	$20-$40	79.85	79.845	$75-$100	$50-$75k	2,336	48.0%	40%-60%	22%	10% - 30%	1.3%	1.0% - 1.5%	3.1%	2.5% - 3.5%	Moderate
60871011003	320	100%	4	50.19	$40-$60	99.60	99.6022	$75-$100	$100-$150k	2,336	23.4%	20%-40%	18%	10% - 30%	0.7%	0.5% - 1.0%	1.3%	< 1.5%	Low
60871011004	814	100%	3.73	45.95	$40-$60	93.88	93.881	$75-$100	$100-$150k	2,336	27.8%	20%-40%	20%	10% - 30%	0.8%	0.5% - 1.0%	1.5%	1.5% - 2.5%	Low-Moderate
60871011005	363	100%	3	39.81	$20-$40	88.68	88.6848	$75-$100	$75-$100k	2,336	29.1%	20%-40%	50%	30% - 50%	0.7%	0.5% - 1.0%	1.5%	1.5% - 2.5%	Moderate
60871012001	396	100%	3.38	39.05	$20-$40	84.40	84.3963	$75-$100	< $50k	1,833	50.7%	40%-60%	68%	> 50%	2.1%	2.0% - 2.5%	4.5%	> 4.5%	High
60871012002	399	100%	3	40.13	$40-$60	89.45	89.4513	$75-$100	$100-$150k	1,833	16.8%	< 20%	13%	10% - 30%	0.4%	< 0.5%	1.0%	< 1.5%	Low
60871012003	523	100%	6	77.67	> $60	124.41	124.406	> $100	$50-$75k	1,833	36.8%	20%-40%	32%	30% - 50%	2.4%	2.0% - 2.5%	3.8%	3.5% - 4.5%	Moderate-High
60871202001	39	0%	4	54.45	$40-$60	100.94	120.844	> $100	$75-$100k	1,688	22.9%	20%-40%	31%	30% - 50%	0.9%	0.5% - 1.0%	2.1%	1.5% - 2.5%	Moderate
60871207003	144	0%	5	69.08	> $60	119.33	139.396	> $100	$75-$100k	1,915	25.1%	20%-40%	12%	10% - 30%	1.2%	1.0% - 1.5%	2.4%	1.5% - 2.5%	Low-Moderate
60871208002	244	0%	4	57.59	$40-$60	107.79	127.857	> $100	> $150k	2,118	16.1%	< 20%	12%	10% - 30%	0.5%	0.5% - 1.0%	1.1%	< 1.5%	Low
60871208003	583	26%	3	43.84	$40-$60	92.91	107.677	> $100	> $150k	2,118	15.4%	< 20%	5%	< 10%	0.4%	< 0.5%	0.9%	< 1.5%	Low
60871211002	253	0%	2.53	29.37	$20-$40	70.89	90.5753	$75-$100	$75-$100k	1,682	26.4%	20%-40%	26%	10% - 30%	0.6%	0.5% - 1.0%	1.9%	1.5% - 2.5%	Low-Moderate
60871212001	34	0%	4.5	61.53	> $60	109.59	129.567	> $100	> $150k	2,534	16.3%	< 20%	15%	10% - 30%	0.5%	< 0.5%	1.0%	< 1.5%	Low
60871212003	162	37%	4	54.40	$40-$60	103.70	116.294	> $100	$100-$150k	2,534	23.1%	20%-40%	10%	< 10%	0.6%	0.5% - 1.0%	1.4%	< 1.5%	Low
60871212004	47	0%	3.33	47.46	$40-$60	94.43	114.36	> $100	> $150k	2,534	19.5%	< 20%	9%	< 10%	0.5%	< 0.5%	1.1%	< 1.5%	Low
60871212005	419	84%	4	50.96	$40-$60	100.37	103.559	> $100	> $150k	2,534	18.0%	< 20%	30%	30% - 50%	0.4%	< 0.5%	0.9%	< 1.5%	Low-Moderate

GEOID	Housing Units	% In-City Housing Units	Median Feb CCF	Median Water Bill	Median Water Bill Category	Median Water & Sewer Bill	Median Water & Sewer Bill Category	Median Monthly Income	Median Annual Income Category	Median Monthly Housing Cost	Median Housing Cost % of MHI	Median Housing Cost % of MHI Category	Poverty Prevalence %	Poverty Prevalence Category	AR Water	AR Water Category	AR Water & Sewer	AR Water & Sewer Category	Water & Sewer Financial Burder Score
60871213001	772	0%	4	51.32	$40-$60	96.68	116.533	> $100	$50-$75k	2,131	35.3%	20%-40%	9%	< 10%	1.3%	1.0% - 1.5%	2.9%	2.5% - 3.5%	Low-Moderate
60871213002	232	0%	5	69.12	> $60	119.62	139.696	> $100	$100-$150k	2,131	25.6%	20%-40%	5%	< 10%	1.1%	1.0% - 1.5%	2.2%	1.5% - 2.5%	Low
60871213003	377	0%	3.88	52.52	$40-$60	99.36	119.28	> $100	$100-$150k	2,131	24.0%	20%-40%	5%	< 10%	0.8%	0.5% - 1.0%	1.7%	1.5% - 2.5%	Low
60871213004	304	0%	5.57	77.56	> $60	120.34	140.083	> $100	$50-$75k	2,131	41.4%	40%-60%	38%	30% - 50%	2.5%	> 2.5%	4.4%	3.5% - 4.5%	Moderate-High
60871214011	401	0%	3.25	43.01	$40-$60	88.16	108.011	> $100	$50-$75k	1,903	36.0%	20%-40%	43%	30% - 50%	1.3%	1.0% - 1.5%	3.1%	2.5% - 3.5%	Moderate
60871214012	560	0%	4	55.22	$40-$60	103.11	123.076	> $100	$100-$150k	1,903	21.4%	20%-40%	19%	10% - 30%	0.8%	0.5% - 1.0%	1.7%	1.5% - 2.5%	Low-Moderate
60871214021	540	0%	4	52.11	$40-$60	97.01	116.844	> $100	$50-$75k	1,819	41.2%	40%-60%	33%	30% - 50%	2.0%	1.5% - 2.0%	4.3%	3.5% - 4.5%	Moderate-High
60871214022	791	0%	3.37	44.58	$40-$60	89.70	109.541	> $100	$75-$100k	1,819	25.7%	20%-40%	36%	30% - 50%	0.8%	0.5% - 1.0%	2.0%	1.5% - 2.5%	Moderate
60871214023	228	0%	4.25	55.10	$40-$60	101.20	121.093	> $100	$75-$100k	1,819	22.2%	20%-40%	16%	10% - 30%	0.9%	0.5% - 1.0%	1.9%	1.5% - 2.5%	Low-Moderate
60871214031	800	0%	3.31	43.23	$40-$60	88.17	108.013	> $100	$50-$75k	1,788	35.9%	20%-40%	26%	10% - 30%	1.3%	1.0% - 1.5%	3.3%	2.5% - 3.5%	Moderate
60871214032	338	0%	3.96	52.63	$40-$60	99.00	118.895	> $100	$75-$100k	1,788	22.4%	20%-40%	11%	10% - 30%	0.8%	0.5% - 1.0%	1.9%	1.5% - 2.5%	Low-Moderate
60871214033	272	0%	4	50.73	$40-$60	95.34	115.167	> $100	$100-$150k	1,788	20.2%	20%-40%	41%	30% - 50%	0.7%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Moderate
60871215001	533	0%	2	32.00	$20-$40	79.51	99.4638	$75-$100	$100-$150k	1,453	15.6%	< 20%	22%	10% - 30%	0.4%	< 0.5%	1.3%	< 1.5%	Low
60871215002	537	0%	3	40.83	$40-$60	86.28	106.138	> $100	$50-$75k	1,453	26.0%	20%-40%	45%	30% - 50%	1.0%	0.5% - 1.0%	2.5%	2.5% - 3.5%	Moderate
60871215003	810	0%	3.69	43.81	$40-$60	86.01	105.728	> $100	$50-$75k	1,453	32.2%	20%-40%	29%	10% - 30%	1.4%	1.0% - 1.5%	3.3%	2.5% - 3.5%	Moderate
60871215004	585	0%	2	31.62	$20-$40	78.25	98.0951	$75-$100	$50-$75k	1,453	27.4%	20%-40%	33%	30% - 50%	0.8%	0.5% - 1.0%	2.5%	1.5% - 2.5%	Moderate
60871215005	330	0%	4.61	54.86	$40-$60	97.39	117.119	> $100	$50-$75k	1,453	26.6%	20%-40%	42%	30% - 50%	1.4%	1.0% - 1.5%	2.8%	2.5% - 3.5%	Moderate
60871216001	391	0%	3.5	46.09	$40-$60	91.18	111.023	> $100	$50-$75k	1,499	25.5%	20%-40%	26%	10% - 30%	1.0%	1.0% - 1.5%	2.5%	1.5% - 2.5%	Low-Moderate
60871216002	127	0%	2	33.35	$20-$40	81.89	101.885	> $100	$75-$100k	1,499	19.7%	< 20%	15%	10% - 30%	0.5%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Low-Moderate
60871216003	1007	0%	3	41.33	$40-$60	87.14	107.013	> $100	$50-$75k	1,499	24.8%	20%-40%	16%	10% - 30%	0.9%	0.5% - 1.0%	2.3%	1.5% - 2.5%	Low-Moderate
60871216004	776	0%	2.96	42.04	$40-$60	88.87	108.786	> $100	$100-$150k	1,499	15.6%	< 20%	21%	10% - 30%	0.5%	0.5% - 1.0%	1.3%	< 1.5%	Low
60871216005	474	0%	2.74	33.07	$20-$40	75.46	95.1881	$75-$100	< $50k	1,499	47.7%	40%-60%	62%	> 50%	2.0%	1.5% - 2.0%	5.5%	> 4.5%	High
60871217001	154	0%	2.54	34.03	$20-$40	79.04	98.8784	$75-$100	$75-$100k	1,829	26.4%	20%-40%	30%	30% - 50%	0.7%	0.5% - 1.0%	1.9%	1.5% - 2.5%	Moderate
60871217002	258	0%	3.79	51.47	$40-$60	98.55	118.481	> $100	$75-$100k	1,829	25.0%	20%-40%	27%	10% - 30%	0.9%	0.5% - 1.0%	2.1%	1.5% - 2.5%	Low-Moderate
60871217003	315	0%	4.23	55.25	$40-$60	101.34	121.232	> $100	$100-$150k	1,829	20.6%	20%-40%	0%	< 10%	0.8%	0.5% - 1.0%	1.7%	1.5% - 2.5%	Low
60871217005	393	0%	4.65	60.54	> $60	106.59	126.48	> $100	$75-$100k	1,829	23.0%	20%-40%	28%	10% - 30%	1.0%	0.5% - 1.0%	2.0%	1.5% - 2.5%	Low-Moderate
60871217006	319	0%	4.23	53.22	$40-$60	97.66	117.476	> $100	$100-$150k	1,829	20.5%	20%-40%	3%	< 10%	0.7%	0.5% - 1.0%	1.6%	1.5% - 2.5%	Low
60871220034	17	0%	4	54.21	$40-$60	99.30	119.144	> $100	$75-$100k	1,968	26.9%	20%-40%	33%	30% - 50%	1.0%	1.0% - 1.5%	2.2%	1.5% - 2.5%	Moderate
60871220035	181	0%	3.54	41.15	$40-$60	82.96	102.659	> $100	$50-$75k	1,968	44.5%	40%-60%	21%	10% - 30%	1.6%	1.5% - 2.0%	4.0%	3.5% - 4.5%	Moderate

WATER COMMISSION
INFORMATION REPORT

DATE: 12/01/2022

AGENDA OF: 12/05/2022

TO: Water Commission

FROM: Matt Zeman, Engineering Associate

SUBJECT: Briefing on Graham Hill Water Treatment Plant Facility Improvements Project

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RECOMMENDATION: That the Water Commission receive a briefing on the Graham Hill Water Treatment Plant Facility Improvements Project.

PURPOSE: As per guidance received in March 2019 from the Water Commission, certain projects will be vetted more frequently and in greater detail with the Commission prior to seeking City Council approval(s). While not wishing to in any way limit the Council's interest and ability in gaining the details of a project, staff believed that it may be useful to the City Council if, in the recommendation, it was clear that the Water Commission had vetted certain projects and was in support of staff's recommendation. The Graham Hill Water Treatment Plant Facility Improvements Project (FIP) falls into this category due to its scale, complexity, funding mechanism, and alternative delivery method. The Commission last received an update on the FIP in May and August 2021 and will receive a future update in early 2024 prior to the release of the Final Environmental Impact Report (EIR) in March 2024. Updates follow a standard format of project summary followed by review of technical, environmental, and financial elements, and provide multiple opportunities to discuss the project as it proceeds through design, permitting and environmental review.

BACKGROUND: The Graham Hill Water Treatment Plant (GHWTP), commissioned in 1960, is a conventional water treatment plant that is a critical component of the City's drinking water system. It is the City's only surface water treatment plant and treats over 95 percent of the water served to City customers. While the facility was state-of-the-art at the time of construction, dozens of drinking water regulations impacting the performance standards the GHWTP must meet have been developed and promulgated since GHWTP's commissioning. Further, the GHWTP was not designed to meet the current reliability and resiliency standards in the face of new 21st-century challenges, such as improvements in identifying emerging contaminants, climate change that increases severe drought, intense storm events, widespread wildfire, and the associated impacts these events have on water quality and water supply. In response, staff have

been collaborating with the design-builder, AECOM/W.M. Lyles, on design of the Facility Improvements Project, or FIP, to modernize the GHWTP.

The FIP is a comprehensive upgrade of the facility that identifies the most cost-effective improvements to meet water treatment objectives and improve overall reliability and resiliency of the plant. The purpose of the FIP is to modernize the GHWTP so that it continues to perform reliably and can respond to the anticipated future treatment and supply challenges including climate-induced impacts to water quality.

The FIP is being implemented with the best value, Progressive Design-Build (PDB) project delivery model. Progressive Design-Build provides for an integrated design and construction team to be closely involved from the early design stages of the project, anticipating, and mitigating the complex issues related to reconstructing the treatment plant while it remains in operation. The FIP construction will begin when the design and environmental review are complete, a guaranteed maximum construction cost proposal (GMP) is accepted and approved by City Council. The FIP project schedule overview is shown below:

- Basis Of Design Report: August 2022
- 30% Design: December 2022
- 60% Design: June 2023
- Issue Draft EIR: July 2023
- 90% Design: December 2023
- 100% Design: March 2024
- Certify Final EIR: March 2024
- GMP: June 2024
- Anticipated Construction Duration: November 2024 - 2028

Staff will engage with the Water Commission and City Council at a number of milestones during the course of this project. Key future milestones are the certification of the Environmental Impact Report and the approval of the guaranteed maximum price proposal which will allow the project to move into the construction phase. Since staff are seeking Drinking Water State Revolving Fund (DWSRF) and the United States Environmental Protection Agency's (EPA) Water Infrastructure and Innovation Act (WIFIA) program funding, several separate Council authorizations are required. Previous and future Council and Water Commission actions related to the FIP are listed below.

Previous actions:

- December 3, 2018: Water Commission Workshop on Water Treatment
- September 24, 2019: City Council awarded a Master Services Agreement (MSA) for California Environmental Quality Act (CEQA) Compliance and Environmental Permitting Services
- April 14, 2020: City Council approved Phase I environmental services Contract Amendment No. 1 with DUDEK on the GHWTP FIP
- June 1, 2020: Water Commission Presentation on FIP to summarize key findings in the FIP report, project delivery methods, environmental approach, neighborhood outreach, and project financing

- June 23, 2020: City Council approved recommendation on best value progressive design-build delivery approach for the GHWTP FIP and authorization to submit a letter of interest for WIFIA funding.
- October 13, 2020: City Council authorized outside legal counsel services with Hunt Ortmann for the GHWTP FIP
- December 8, 2020: City Council authorized the application for DWSRF funding
- April 13, 2021: City Council approved Phase II environmental services Contract Amendment No. 2 with DUDEK on the GHWTP FIP
- May 2021: Water Commission received an informational briefing on the FIP
- August 2021: Water Commission received an informational update for the selection of Design-Builder for Phase 1 – Design
- August 2021: City Council awarded the progressive design-build contract for Phase 1 – Design to AECOM/W. M. Lyles
- August 2022: City Council ratified the WIFIA application fee

Future actions:

- Early 2023: City Council - Authorization to execute WIFIA financial agreement
- February 2024: Water Commission - Support staff recommendation for certification of Final Environmental Impact Report
- March 2024: City Council - Certification of Final Environmental Impact Report
- Mid-2024: City Council - Authorization to execute DWSRF financial agreement
- September 2024: Water Commission - Informational update for Phase 2 – Construction
- October 2024: City Council - Approval of construction guaranteed maximum price agreement for Phase 2 – Construction

This informational item will be paired with a presentation at the December 5, 2022 Water Commission meeting to accomplish the goal of developing a more detailed understanding of the project as staff will be seeking Water Commission support for various recommendations to City Council over the course of the FIP. Below is a comprehensive summary of the FIP on four topic areas: Project Summary, Technical, Environmental, and Financial.

DISCUSSION: Staff have been working with AECOM/W.M. Lyles since August 2021 to complete a Basis of Design Report (BODR) for the project, detailing the selected processes, performance criteria, equipment list and proposed site layout. Starting with a condition assessment of the facility, alternative treatment processes were evaluated, jar testing and bench-top studies to analyze treatment alternatives were performed and a plan was developed to address non-treatment items such as deficient office space and seismic upgrades to the operations building. AECOM/W. M. Lyles submitted the GHWTP FIP BODR and 10% Design Drawings in August of 2022.

PROJECT SUMMARY/TECHNICAL

The FIP project overview and purpose are described in the BODR Foreword and Executive Summary (Attachment 1). The project would replace the existing water treatment processes at the GHWTP and associated infrastructure with modern facilities capable of treating 18.2 million gallons per day.

The upgrade would improve the reliability of the GHWTP to meet anticipated future water quality requirements, increase the ability to treat variable and degraded source water quality conditions, support treatment of winter water to facilitate implementation of the City's water supply augmentation strategy, and modernize the facility to meet contemporary requirements such as those for seismic and wildfire resiliency. The project would improve the existing GHWTP's ability to treat poly- and perfluoroalkyl substances (PFAS) and Contaminants of Emerging Concern (CECs), address post-wildfire and severe stormwater quality impacts, and would "future-proof" the facility against anticipated future water quality and regulatory requirements.

The project will comply with California State Water Resources Control Board, Division of Drinking Water requirements and be designed to meet standard treatment plant best practices. The FIP would replace the existing, conventional pretreatment process with three-stage flocculators and plate settlers – a high-rate clarification process. Water would then be treated with several new processes: ozone contact to provide advanced oxidation and to break down organic contaminants, biological filtration to remove organic material granular activated carbon adsorbers will further polish the filtered water and remove synthetic compounds before sending water to the new concrete tanks for final disinfection prior to entering the water distribution system. The facility layout will retain space for a future ultraviolet disinfection process should source water quality require even more advanced treatment. The project would also construct new chemical storage and feed facilities to support the treatment process.

In addition to the new treatment processes the project would include a new facility for handling water treatment residuals, the by-products of water treatment, and general site improvements such as a replaced operations building, a new administration building and a new maintenance building, replacement of the existing washwater supply tank, installation of a new washwater maintenance tank to facilitate future tank inspection and upkeep, and installation of new electrical and control equipment.

ENVIRONMENTAL

The project will require compliance with the California Environmental Quality Act (CEQA) and is subject to review and/or permitting by various state and federal agencies. The City has contracted with Dudek to provide environmental compliance services.

CEQA requires local governments to identify, seek to mitigate (as feasible), and publicly disclose the significant environmental impact of certain projects prior to making the final decision on the project. Preparation of an Environmental Impact Report (EIR) has been determined as the appropriate level of environmental review for the project. A 30-day public review period was provided for the Notice of Preparation (Attachment 2) from June 27, 2022, to July 26, 2022, to provide an opportunity for interested persons and agencies to comment on the scope and proposed content of the EIR. During this review period, two public informational meetings were held on July 19, 2022, to discuss the project and the process to submit comments. Five comment letters were received: two State agency comments and three private-citizen comments.

The CA Department of Fish and Wildlife provided comments relating to an increase in impervious surfaces and associated stream hydromodification impacts, artificial lighting and associated impacts on fish and wildlife, and suggested the project establish riparian setbacks for

proposed development activities near streams. The Native American Heritage Commission provided an informational letter with a review of applicable tribal cultural resource regulations and recommended consultation with California Native American tribes that are traditionally and culturally affiliated with the project area. A letter from a neighboring resident requested consideration of solar and battery storage, wildfire resiliency, reduction in long-term operational noise and lighting, fencing improvements, and facilitation of sewer connections of neighboring parcels. Two of the private-citizen letters did not provide comments on the project; one letter requested consideration of pedestrian and cycling access through the GHWTP, while the other letter provided grammatical and writing style advice. The comment letters will be included in the EIR, with a narrative indicating where they are addressed in the EIR or if they are beyond the scope of the EIR. These suggestions, if within the project's scope and budget, will be incorporated during the design process.

Work on the EIR began in 2022 and the draft EIR is scheduled to be released for public review and comment in 2023, with City Council consideration of the Final EIR and Project approval in 2024.

The EIR is expected to include an analysis of the following environmental issue areas:

- Aesthetics
- Air Quality and Greenhouse Gas Emissions
- Biological Resources
- Cultural and Tribal Cultural Resources
- Energy
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise and Vibration
- Transportation
- Utilities
- Wildfire
- Other CEQA-Required Sections: Cumulative Impacts, Alternatives, Significant Unavoidable Impacts, Significant Irreversible Changes, and Growth Inducement

Several project permits and approvals are anticipated for the project, including:

Federal:

- U.S. Army Corps of Engineers 404 permit for construction within waters of the U.S. if the project impacts the San Lorenzo River due to storm drain modifications and associated consultation with National Marine Fisheries Service for potential impacts to U.S. fisheries.
- U.S. Environmental Protection Agency NEPA compliance and consultations with federal agencies to comply with federal regulatory requirements associated with WIFIA loan program.
- U.S. Fish and Wildlife Service compliance with existing Incidental Take Permits for federally listed species that occur in the project area.

State:

- State Water Resources Control Board, Division of Drinking Water Domestic Water Supply Permit Amendment.
- State Water Resources Control Board, Division of Financial Assistance. Responsible Agency if the project obtains financing through the DWSRF program.
- California Department of Fish and Wildlife (CDFW) Lake and Streambed Alteration Agreement if construction activities impact the San Lorenzo River due to storm drain modifications.
- Central Coast Regional Water Quality Control Board Clean Water Act Section 401 Water Quality Certification Permit if the Proposed Project impacts the San Lorenzo River due to storm drain modifications. Also, the Regional Water Quality Control Board would oversee the City's Notice of Intent to Comply with the National Pollutant Discharge Elimination System Construction General Permit.
- Monterey Bay Air Resources District. Authority to Construct, Modify Existing Permit, Permit to Operate. Authority to Construct and Permit to Operate for any new or modified machine, equipment, or other device which may emit any of the criteria air pollutants, any of the toxic air contaminants, or odorous pollutants. Specifically, the ozone facility and chemical storage tanks will require review and permitting by MBARD.

Local:

- City of Santa Cruz, Building and Safety. Building Permit for occupied buildings (includes Green Building)
- City of Santa Cruz Park and Recreation Department. Heritage Tree & Street Tree Permit
- City of Santa Cruz, Public Works, Stormwater. Stormwater Control Plan
- City of Santa Cruz, Public Works, Traffic. Temporary Encroachment Permit & Traffic Control Plans; Oversize Load Permit
- City of Santa Cruz, Public Works, Wastewater. Wastewater Discharge Permit Amendment
- County of Santa Cruz, Environmental Health Dept., Certified Unified Program Agency. Hazardous Materials Management Plan Amendment
- Santa Cruz County, Public Works Department. Encroachment Permit Traffic Control Permit
- Santa Cruz County, Public Works Dept., Sanitation. Sewer Connection Permit & Waste Discharge Permit
- Local Agency Formation Commission. Extraterritorial Service Authorization. Responsible Agency for LAFCO Extraterritorial Service authorization to receive a single service from County Sanitation if the Proposed Project connects to the County sewer main in Graham Hill Road.

These approvals will be sought at various milestones throughout the design process with the goal to have all permits in place prior to construction.

In addition to the formal public engagement opportunities during the EIR process, this project will provide community engagement via regular project updates and emailed newsletters, a

dedicated and up-to-date project website, articles in the biannual SCMU Review newsletter that is mailed to all customers, social media posts for project highlights, and public open houses and periodic tours of the facility. The FIP Website is www.cityofsantacruz.com/fip

FINANCIAL

City Council authorized the Water Department to apply for a DWSRF loan for the FIP project on December 8, 2020. The application consists of many different packages and requires several key components, such as a completed BODR and 10% design, and will be submitted in early 2023. Because the formal approval of the loan requires the CEQA EIR process and the project design to be complete, this loan is expected to be finalized sometime in mid-2024, prior to the beginning of construction.

City Council authorized the Water Department to submit a letter of interest for a WIFIA loan to fund up to 49% of the project cost for the FIP and three other large drinking water capital projects on June 23, 2020. Staff received notice in October 2021 that the WIFIA application passed the initial stage of approvals, and in July 2022 the full application package and application fee was submitted to the EPA. Formal approval of the WIFIA loan is expected in early 2023.

The FIP's total estimated project budget encompassing planning, design, construction, and environmental is approximately $153M, including an estimated construction value of $118M.

FISCAL IMPACT: None.

PROPOSED MOTION: This is an informational item only. No motion is required.

ATTACHMENTS:

1. Facility Improvements Project Basis of Design Report Foreword and Executive Summary, September 2022
2. Notice of Preparation of an Environmental Impact Report and Public Scoping Meeting, Graham Hill Water Treatment Plant Facility Improvements Project, June 27, 2022

Foreword

This 10% Basis of Design Report (BODR) for the Graham Hill Water Treatment Plant Facility Improvements Project (FIP) includes a wealth of engineering, technical and water quality details about the current state and potential future of the City of Santa Cruz's only surface water treatment plant. What it doesn't cover is the broader context of how water treatment fits into the Santa Cruz water system or drinking water systems in general. And it doesn't cover, but does include the results of, the looking-ahead process that Water Department staff and the FIP consulting team have gone through to guide planning and design for the FIP.

The typical reader or user of a BODR will usually already have a good sense of the larger context in which planning work for the FIP is being done. However, because the FIP is such an important and high-profile project for the Water Department, this Foreword is being added to help more general readers understand the document and what it covers.

First, it is important for any reader of the BODR to understand the role that water treatment plays in providing drinking water to a community. Water treatment is, and has been for more than 100 years, the centerpiece of any water system producing and delivering drinking water. Few water systems don't require some kind of treatment to address microorganisms, at a minimum, as well as other source water quality characteristics such as the corrosivity of very soft water that can result in increased lead in water from home plumbing fixtures.

For surface water suppliers such as Santa Cruz, federal and state regulations dictate minimum standards for water treatment to assure water produced by a surface water treatment facility such as the Graham Hill Water Treatment Plant address both microbiological and chemical constituents of concern. Regulatory requirements have and will continue to evolve over time, but the major regulations governing surface water treatment were promulgated in 1989 with the Surface Water Treatment Rule, which was after the last significant financial investment was made in the 1960s era Graham Hill Water Treatment Plant. Further changes in regulations related to surface water treatment occurred in the late 1990s and early 2000s. The newer regulations were specifically focused on improved treatment for pathogenic organisms such as *Giardia lamblia* and *Cryptosporidium parvum. Giardia* is substantially more resistant to chlorine disinfection, a very common practice in surface water treatment, than either bacterial or viral pathogens, and *Cryptosporidium* is not treatable using just chlorination.

A second major area of emphasis of the recent regulations focused on surface water treatment are the Disinfection and Disinfection Byproducts rules that address the chemical compounds formed by the interaction of organic material in surface water with disinfectants used in water treatment, particularly chlorinated compounds. Typically, the regulations focused on microbiological contaminants and those focusing on disinfection byproducts are developed together because they are so interrelated. For example, if regulations governing microbiological contaminants are increased, it may require utilities to increase their use of chlorine or other disinfectants such as ozone, which may increase consumers' exposure to disinfection byproducts. This circumstance creates a risk-risk trade-off that must be carefully balanced to ensure that water treatment processes produce the best quality water feasible given the realities of source water variability and the laws of chemistry.

For any utility embarking on a major reinvestment in its surface water treatment facility, clearly there must be a focus on what is required to meet current regulatory requirements but there must also be a

clear vision of what the future may bring in terms of regulations for additional contaminants that will need to be addressed at the treatment plants. Currently unregulated contaminants such as constituents of emerging concern, including pharmaceuticals and personal care products, and perfluorooctanesulfonic acid (PFOS) and pefluorooctanoic acid (PFOA), otherwise known as "forever" chemicals, are likely to become a focus of surface water treatment (and groundwater treatment where these contaminants are found) during the 20-to-30-year timeframe before additional large scale capital maintenance is scheduled. As an example of evolving regulations, PFAS/PFOA regulations are under development by EPA now and are apparently on track to be proposed in 2023 and then finalized as soon as feasible after the proposal process, which includes a public review and comment phase, is completed.

A sound foundation for decision-making and effective treatment process planning is created by having a robust understanding about the characteristics of a utility's source waters and the current and potential future regulations that will need to be met. The treatment plant design, and its daily operation is the critical link between source water quality and finished (treated) water quality that meet regulations. To support treatment planning and the ability to do data-driven decision-making, the Water Department has invested heavily in the last decade on increased water quality sampling and data analysis work as well as engaged water quality experts in assessing the potential implications of future regulation given source water characteristics and the treatment process design that is under consideration.

But no one can truly anticipate what regulatory or other water quality issues, perhaps driven by climate change, the future will bring. So, the solution must include building in adaptive flexibility that allows for changes to be implemented over time. This is no small task for a water treatment plant with a constrained site such as the Graham Hill Water Treatment Plant. Given the realities and constraints of the Graham Hill site, the Water Department and Design-Build contractor team working on the BODR has done a great deal of careful thinking and planning for the site layout with a goal of preserving space for the addition of Ultraviolet Light (UV) disinfection to replace or further limit the use of chemical oxidants such as chlorine, or to expand the planned use of granular activated carbon (GAC) contactors for the removal of both disinfection byproducts precursor compounds and PFOA/PFAS. We've looked carefully at current source water quality, regulatory requirements, treatment technologies, and considered how the planned new treatment process can address current and likely future regulatory requirements and the Department's water quality goals for finished water. In other words, we've done a thorough and very deliberate job of planning the major upgrade of the Graham Hill Water Treatment Plant to meet the needs of today and tomorrow.

So, if you're reading the BODR and following all the information on systems, facilities, and processes it contains, I hope having read this Foreword you will give you important context that describes in a big-picture kind of way, what the project is about and the role it will play in the Santa Cruz water system in the coming years.

Rosemary Menard
Water Director, City of Santa Cruz Water Department
October 2022

EXECUTIVE SUMMARY

The City of Santa Cruz Water Department is working to implement the Facility Improvements Project (FIP, Project)—a major upgrade to the existing Graham Hill Water Treatment Plant (GHWTP) that supplies drinking water to the City. In support of the Project and under contract to the City, AECOM/W.M. Lyles VII (AECOM/WML), a Joint Venture, prepared this Basis of Design Report (BODR) to establish the technical requirements and criteria on which subsequent phases of the design will be based.

The FIP is following a Progressive Design-Build project delivery model. This model uses a consensus-based, collaborative approach to resolve the technical challenges of the Project. The BODR therefore represents the culmination of a series of collaboration sessions and technical workshops, as well as studies and reports completed since the onset of the FIP, with the specific goal of providing guidance for the BODR. The completion of the BODR is a critical milestone in the Project, which documents the significant collaboration to date between the City, the AECOM/WML team, the City's Program Manager—HDR, and the City's environmental consultant—Dudek.

The Project's cost estimate has been provided to the City and will be updated concurrently with all design submittals, and leading into the Guaranteed Maximum Price (GMP) Proposal. Further, each estimate will be compared to the previous values, dating back to the original FIP opinion of the probable cost provided with the request for proposals.

The following Executive Summary describes the Project's purpose and need, and the various Project elements.

Project Need

Across the Country, under-investment in critical infrastructure has resulted in aging and inadequate facilities that are underprepared to respond to the stressors posed by a changing climate. In specific, the GHWTP, designed in the 1950s and constructed in the 1960s, has not been significantly improved since the 1980s. Although the facility was undoubtedly state-of-the-art at the time of construction, the City of Santa Cruz Water Department has subsequently learned much more about water quality concerns, in part because analytical techniques have allowed the detection of ever-smaller concentrations of pollutants in water. Further, dozens of regulations impacting the performance standards of the GHWTP have been developed and promulgated. The GHWTP was not designed to meet the current expectations for reliability and resiliency in the face of so many new 21st century challenges, including improvements in identifying what are known as emerging contaminants, such as per- and polyfluoroalkyl substances (PFOA and PFOS), climate change that increases severe drought, intense storm events, widespread wildfire, and the associated impacts these events have on water quality and water supply.

The Water Department anticipates that future source water quality could become more impaired, while future treatment standards become more stringent. For the GHWTP to perform reliably into the future, a major reinvestment is necessary, and is proposed in the FIP. The City has to upgrade the GHWTP, and is planning to do so in such a way that it can respond appropriately to the known treatment challenges identified, and will be designed to respond to treatment and supply challenges that might be coming in the years ahead. More information on the Project background and purpose can be found in Section 1 of the BODR.

Description of the Facility Improvements Project

The FIP will not increase the overall GHWTP treatment capacity; rather, the improvements will address climate change and aging infrastructure, support water supply augmentation projects, and include treatment

processes to address emerging contaminants. In contrast to the plant's current rated capacity of 24 million gallons per day (mgd), the FIP is being designed to produce 18.2 mgd (current demands rarely exceed 12 mgd). The FIP was sized to meet known future demands, plus the amount that could be needed to support the Water Supply Augmentation Strategy (WSAS), as well as a factor of safety. Table ES-1 shows the current and future flows used to determine the sizing of the new treatment processes. More information can be found in Section 3 of the BODR.

Table ES-1 Current and Future System Demands.

Demand-Season	Current System Demands	Water Supply Augmentation	Needed GHWTP Capacity for Distribution System
Minimum	3.0 mgd	0 mgd	3.0 mgd
Max Day-Summer	12 mgd	0 mgd	13.2 mgd[1]
Max Day-Winter Spring	9.5 mgd	7 mgd	18.2 mgd[1]
Annual Average	7.5 mgd	3 mgd	10.5 mgd

Notes:
[1] Max day capacities includes a 10 percent factor of safety
GHWTP = Graham Hill Water Treatment Plant
mgd = million gallons per day

Figure ES-1 illustrates a schematic flow diagram of the treatment process before and after the upgrade. More information can be found in Section 4 of the BODR. Sections 5 through 17 of the BODR provide design criteria, standards, and assumptions for each design discipline. The major elements of the FIP are described below.

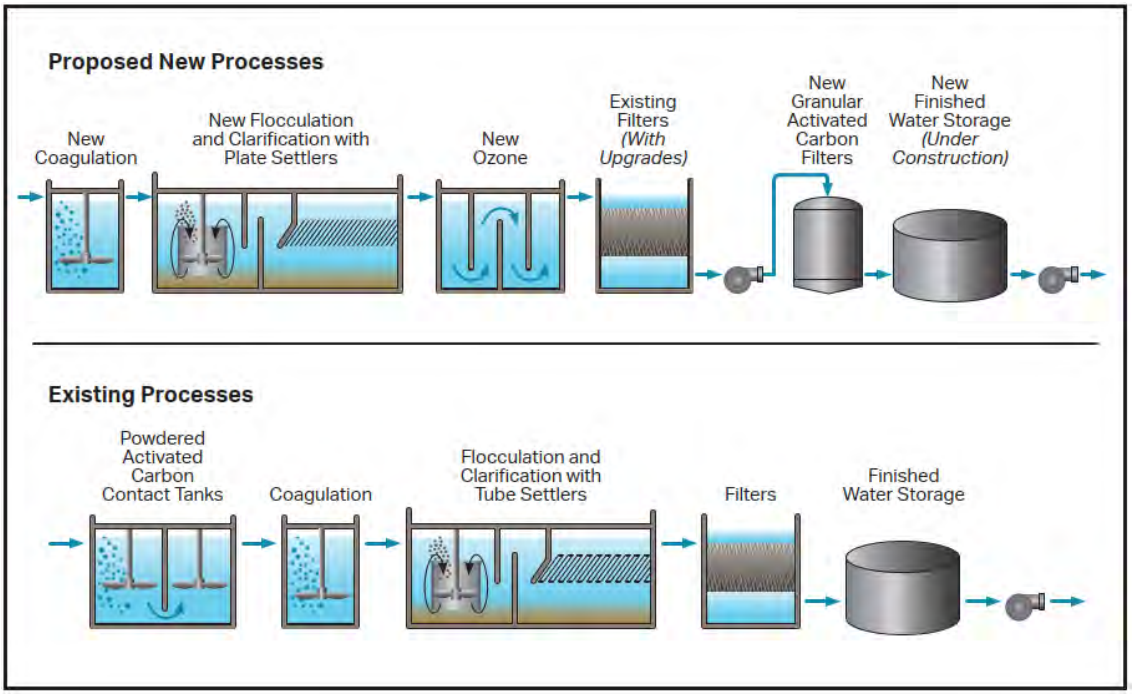


Figure ES-1. Schematic Flow Diagram of Existing Unit Processes and Post-upgrade Unit Processes.

New Water Treatment and Related Processes

Pretreatment Processes

The pretreatment process refers to the initial steps of coagulation, flocculation, and clarification of water. For the FIP, the pretreatment process is being designed to remove sediment and other impurities prior to ozonation, filtration, and GAC adsorption. The FIP pretreatment process will mirror existing processes at the GHWTP, except that the FIP will use high-rate clarification through the use of plate settlers, as contrasted to the existing use of tube settlers. Plate settlers have the benefit of requiring a smaller footprint compared to tube settlers, which will provide space at the site for additional treatment processes.

Ozone

Ozone is a naturally occurring but unstable atmospheric gas that is generated and used in water treatment to oxidize taste- and odor-producing compounds and other organic matter, and to provide disinfection of pathogens, bacteria, and viruses.

Granular-Activated Carbon (GAC)

GAC is a porous adsorption media with extremely high surface area that is useful for the further reduction of taste- and odor-producing compounds, organic matter, volatile organic compounds, synthetic organic compounds (e.g., PFOA/PFOS), and disinfection by-product precursors.

Reclaimed Water Clarifiers

In normal treatment plant operations, water used to rinse out the sediment basins and backwash the mixed-media filters is sent to the Reclaimed Water Tank. Rather than sending this water to waste, the water is metered out of this tank to clarification units that remove sediment from the water. Through this process, the reclaimed water achieves less than 2 nephelometric turbidity units (NTUs), and is sent back to the front of the treatment plant to go through the treatment process again, resulting in finished treated water.

Future Ultra-violet (UV) Disinfection

As part of the FIP, space at the GHWTP will be reserved for the implementation of a UV disinfection system, should such a technique become necessary due to regulatory changes, reduced source water quality, or a combination of both factors.

Solids Dewatering

Climate change will increase the need to treat water that has a higher content of sediment as compared to historical source water quality. The current GHWTP struggles at times to manage the high sediment concentration removed from source waters after heavy rain events during the treatment process, and must rely only on a 4-inch-diameter sludge disposal line. Therefore, the FIP will seek to improve the ability to manage removed solids by including a process that will mechanically concentrate the sediments from the water treatment process, and off-haul that material from the site.

Chemical Feed System Upgrades

New facilities for chemicals and dosing pumps are needed to support the treatment process. These systems will be designed for full compliance with current safety codes, with provisions for emergency eye wash/ shower stations, chemical spill containment areas, and fire-suppression systems.

New and Upgraded Buildings

In addition to the new water treatment facilities, new and upgraded buildings are proposed as a part of the project. These new and upgraded buildings include:

- New Administration Building (Single story, 3,510 square feet [SF])
- Upgraded Operations Building (Single story, 5,740 SF)
- New Maintenance Building (Single story, 2,784 SF)
- Upgrade of the existing Filter Gallery Building (Two levels, 8,364 SF)
- New Ozone Building (Two levels, 2,704 SF)
- Solids Dewatering (Two stories, 2,052 SF)
- Chemical Storage and Feed Facilities (Single story, 2,200 SF)
- Removal of Some Existing Facilities (Filter Building roof and enclosure, existing Operations Building, existing Chemical Building).

Infrastructure and Site Improvements

The new facility will be fully contained within the existing site. The key features of the site improvements are listed below.

- Expansion of the existing electrical system to accommodate new loads; heating, ventilation, and air conditioning systems in new buildings; and new instrumentation and control systems.
- Stormwater controls during construction and permanent stormwater systems to control site runoff and meet regulatory requirements, which may include construction of permeable pavement, bioswales, and bioretention areas.
- Vehicular access improvements to allow for truck traffic circulation for chemical delivery trucks, fire-trucks, and dewatered solids removal. Additional staff and visitor parking is also included.
- Screening and landscaping improvements using locally native drought-resistant plantings.
- Hardscaping using crushed stone and river cobbles to assist stormwater infiltration and reduce irrigation needs.
- Fencing and site security improvements, including camera and video surveillance, to harden the facility and to maximize the safety of plant personnel.
- Sewer connection for removal of sanitary flows process residuals.

Environmental Compliance and Sustainability Features

The BODR describes the anticipated environmental permits needed to complete the FIP. The City is currently preparing a draft Environmental Impact Report (DEIR) for public review in the summer of 2023. This report is necessary to comply with the California Environmental Quality Act, mandatory for all publicly funded projects. More information on this, as well as anticipated permitting requirements for this Project, can be found in Section 19 of the BODR.

Project Operations and Maintenance

Section 18 presents a summary of the cost of operations for power consumption, chemicals usage, and filter and GAC media. Operation and maintenance of the new facility will include many activities largely consistent with current activities. These include filter backwashing practices, sedimentation basin sludge removal, managing and handling chemical deliveries, and maintaining equipment. New unit processes will be added, such as ozone facilities, solids handling system, and second-stage GAC filtration. These processes will require additional operations support, as well as additional maintenance requirements. The new solids process will require dewatered solids trucking for off-site disposal. The new second-stage GAC adsorbers will require periodic removal and replacement of GAC media.

Table ES-2 shows a comparison between the existing GHWTP unit processes and the unit processes that will be included in the upgraded facility. In Table ES-2, the water quality objectives are listed on the left side of the table, against which various "tools" as listed can be used to meet the water quality objective—either with the existing GHWTP, or post-upgraded GHWTP unit processes. Some of these tools are existing and will be retained; for example, chlorination. Other systems will be retained but upgraded with new equipment. These include coagulation, flocculation, settling, and filtration. A new treated water storage tank is also under construction as part of a separate project.

The existing GHWTP does not have the ability to properly address more stringent future water quality objectives, such as poly- and perfluoroalkyl substance (PFAS) and Contaminants of Emerging Concern (CECs), and therefore new unit processes will be needed. These new processes include ozone and post-filtration GAC adsorption, for example. These processes will address CECs and PFAS, and will essentially help to "future-proof" the facility against anticipated future requirements.

This Project will install best-in-class technology to treat source water and produce high-quality drinking water. The Project includes ozonation, biological filtration, and GAC treatment facilities. The addition of a new ozone facility will provide advanced oxidation and remove contaminants, while also reducing the City's use of chlorine for primary disinfection. GAC is a proven technology used to remove natural organic and synthetic compounds from drinking water. Figure ES-1 illustrates the comparison between the existing GHWTP unit processes and the post-upgraded unit processes.

Description of the Facility Improvements Project

The construction is anticipated to begin in late 2024, and substantial completion is expected by Spring 2028. Section 20 of the BODR presents a preliminary project implementation schedule.

Table ES-2: Comparison of Existing GHWTP Unit Processes and Upgraded GHWTP Unit Processes

Treatment Objective	Process Unit	Existing GHWTP	Upgraded GHWTP
Disinfection by-product control	- Coagulation	✓	
	- Enhanced coagulation		✓
	- Post-chlorination		✓
	- PAC[1]	✓	
	- Biofiltration		✓
	- Ozone AOP		✓
	- Post-filter GAC		✓
Taste and Odor Control	- PAC[1]	✓	
	- Ozone AOP		✓
	- Biofiltration		✓
	- Post-filter GAC		✓
Source Water Microbial Contaminants	- Pre-chlorination	✓	
	- Post-chlorination		✓
	- Ozone AOP		✓
	- Source blending	✓	✓
Contaminants of Emerging Concern			
- HAA9s	- Coagulation	✓	
	- Enhanced coagulation		✓
	- Post-chlorination		✓
	- PAC[1]	✓	
	- Ozone AOP		✓
	- Post-filter GAC		✓
- Source water pharmaceuticals, pesticides	- PAC[1]	✓	
	- Ozone AOP		✓
	- Post-filter GAC		✓
PFAS/PFOS	- Post-filter GAC		✓
Solids Handling (WSAS will require treatment of high turbidity source water)	- On-site dewatering		✓

Notes:
AOP = advanced oxidation process
GAC = granular-activated carbon
PAC = powdered activated carbon
PFAS = perfluorooctanoic acid
PFOS = perfluorooctane sulfonate
WSAS = Water Supply Augmentation Strategy

212 Locust Street, Suite C, Santa Cruz, CA 95060 ◆ (831) 420-5200

June 27, 2022

Notice of Preparation of an Environmental Impact Report and Public Scoping Meeting

RE: Graham Hill Water Treatment Plant Facility Improvements Project

To Interested Persons and Agencies:

The City of Santa Cruz (City) as the Lead Agency for the Graham Hill Water Treatment Plant (GHWTP) Facility Improvements Project (Proposed Project) has issued this Notice of Preparation (NOP) pursuant to the California Environmental Quality Act (CEQA) to notify interested persons and agencies that an Environmental Impact Report (EIR) for the Proposed Project will be prepared. The EIR will evaluate potential environmental impacts of the Proposed Project. The purpose of this NOP is to provide an opportunity for interested persons and agencies to comment on the scope and proposed content of the EIR.

The NOP provides information about the public review and comment period, proposed project location (page 4), purpose and need (page 5), project description (page 7), and probable environmental effects (page 8) of the Proposed Project, and is posted on the City's website at: https://www.cityofsantacruz.com/government/city-departments/water/online-reports/environmental-documents.

Written comments are requested from interested persons and agencies regarding the scope and evaluation of potential environmental issues associated with the Proposed Project. Written comments are due within 30 days of the receipt of this notice, as provided by state law. As such, a 30-day public review and scoping period is established from **June 27, 2022 to July 26, 2022**. Written comments may be submitted by postal mail or email. All comments should indicate a contact person, if applicable.

All written comments are requested to be received by 5:00 p.m. on July 26, 2022, and should be sent to the following address:

Jessica Martinez-McKinney, Associate Planner II
City of Santa Cruz Water Department
212 Locust Street, Suite C
Santa Cruz, CA 95060
Email: jmartinezmckinney@cityofsantacruz.com

Español • Este adviso contiene información importante sobre el proyecto que mejoras las instalaciones en la planta de tratamiento de agua de Graham Hill (Graham Hill Water Treatment Plant Facility Improvements Project). Para asistencia en Español, comuníquese con el Departamento de Agua de la Ciudad de Santa Cruz al (831) 420-5220 o 212 Locust Street, Suite D; Santa Cruz, CA 95060.

Scoping Meeting

Two virtual (online) public scoping meetings (webinars) regarding the Proposed Project and EIR will be held. The webinars will each cover the same material. All interested persons and public agencies are invited to attend either (or both) of these meetings to learn more about the Proposed Project and the scope and proposed content of the EIR. This webinar will also include a brief overview of the CEQA environmental process and allow time for questions about the CEQA process and Proposed Project.

Date:	July 19, 2022
Time:	3:30-4:30 PM and 5:30-6:30 PM *Interested parties are invited to attend either (or both), the same content will be covered during each webinar.*
Zoom Links (same info for both meetings)	**Zoom Link:** https://us06web.zoom.us/j/87403686774 **Webinar ID:** 874 0368 6774
Dial In/Code:	iPhone one-tap: US: +12532158782,,87403686774# or +13462487799,,87403686774#
Telephone (for higher quality, dial a number based on your current location):	Telephone: US: +1 253 215 8782 or +1 346 248 7799 or +1 720 707 2699 or +1 301 715 8592 or +1 312 626 6799 or +1 646 558 8656 or 877 853 5247 (Toll Free) or 888 788 0099 (Toll Free) or 833 548 0276 (Toll Free) or 833 548 0282 (Toll Free)
International numbers available:	https://us06web.zoom.us/u/kfhF7tgAp

Agency Review and Comment

The EIR will be used in the planning and decision-making process by the City for approval of the Proposed Project. Other public agencies may need to use the EIR when considering permit issuance or other approvals for the Proposed Project, if any are required. Agencies are requested to respond with written comments regarding the proposed scope and content of the EIR as it relates to the agency's area of statutory responsibility and area of concern and expertise.

Comments received from State of California agencies should address (1) whether the agency will be a Responsible Agency or a Trustee Agency for the Proposed Project, and (2) if the agency is a Responsible Agency, any significant environmental issues and reasonable alternatives and mitigation measures that the Responsible Agency will need the City to have explored in the EIR analysis. We will also need the name, address, telephone number, and email address of the contact person for your agency.

Public agencies that may be expected to use the EIR in their decision-making processes (including ministerial actions) as Responsible or Trustee Agencies include but are not limited to:

- **State Water Resources Control Board, Division of Drinking Water**. Responsible Agency for issuing a Domestic Water Supply Permit Amendment.

- **State Water Resources Control Board, Division of Financial Assistance.** Responsible Agency if the Proposed Project obtains financing through the Drinking Water State Revolving Fund (SRF) Program. The EIR will include federal cross-cutting documentation if funding is pursued.

- **California Department of Fish and Wildlife (CDFW).** Trustee Agency for projects that may affect fish, wildlife, or their habitat and potentially a Responsible Agency for issuing a Lake and Streambed Alteration Agreement should construction activities result in fill of waters of the state if the Proposed Project impacts the San Lorenzo River due to storm drain modifications. State-listed endangered plant species that have potential to occur in the biological study area (BSA) include Santa Cruz wallflower, Santa Cruz tarplant, and San Francisco popcornflower. State-listed endangered animal species that have potential to occur in the BSA include coho salmon (in the San Lorenzo River). Potential for these endangered plant and animal species to occur in the BSA is considered low.

- **California Central Coast Regional Water Quality Control Board.** Responsible Agency for approval of a Clean Water Act Section 401 Water Quality Certification Permit in areas of impacts to waters or wetlands of the U.S., if the Proposed Project impacts the San Lorenzo River due to storm drain modifications. Also, the Regional Water Quality Control Board would oversee the City's Notice of Intent to Comply with the National Pollutant Discharge Elimination System Construction General Permit.

- **Monterey Bay Air Resources District**. Responsibility Agency for Authority to Construct and Permit to Operate for any new generators or other stationary sources.

- **County of Santa Cruz, Department of Public Works Sanitation Division.** Responsible Agency for issuing a Sewer Connection Permit and Wastewater Discharge permit if the Proposed Project connects to the County sewer main in Graham Hill Road. County of Santa Cruz would allow issue an encroachment permit for any work in Graham Hill Road.

- **Local Agency Formation Commission of Santa Cruz County.** Responsible Agency for LAFCO Extraterritorial Service authorization to receive a single service from County Sanitation if the Proposed Project connects to the County sewer main in Graham Hill Road.

In addition to state and local agencies, the CEQA document may also be used by the following federal agencies during their environmental review (under the National Environmental Policy Act [NEPA]) for consideration of permits on the Proposed Project:

- **U.S. Army Corps of Engineers**. Federal agency that may issue a Clean Water Act Section 404 permit should construction activities result in fill of waters of the U.S. (i.e., if the Proposed Project impacts the San Lorenzo River due to storm drain modifications).

- **U.S. Environmental Protection Agency.** Federal agency that may administer and provide funding for the Proposed Project through the Water Infrastructure Finance and Innovation Act

(WIFIA) loan program. The EIR will include federal cross-cutting documentation if funding is pursued.

- **U.S. Fish and Wildlife Service.** Federal agency that consults under Section 7 of the Endangered Species Act for projects that impact sensitive species of fish, wildlife, or their habitat. The City currently has two Incidental Take Permits for federally listed species that could cover the Proposed Project.
- **National Marine Fisheries Service.** Federal agency that consults under Section 7 of the Endangered Species Act for projects that impact U.S. fisheries. This may be required if the Proposed Project impacts the San Lorenzo River due to storm drain modifications.

Proposed Project Location

The Proposed Project would primarily be constructed at the City's existing GHWTP, located within Santa Cruz City limits. Additionally, the Proposed Project is anticipated to involve activities outside of the GHWTP for the purposes of temporary construction staging and potential utility and traffic safety improvements. These activities would occur in both City and County of Santa Cruz jurisdictions. The Proposed Project is anticipated to be located at four locations, which together constitute the Project site. The Proposed Project locations include:

- The approximately 14.88-acre primary Project site consisting of:
    - The approximately 12.4-acre City-owned GHWTP parcel located at 715 Graham Hill Road in Santa Cruz, CA 95060 on Assessor Parcel Number (APN): 060-141-05;
    - The approximately 0.18-acre, 550-linear-foot utility corridor between the GHWTP parcel and the San Lorenzo River via Ocean Street Extension and a 15-foot right-of-way on APN: 060-151-05;
    - Approximately 2.3-acres, 1,620 linear feet of the Graham Hill Road public right-of-way between just north of Mosswood Court and just south of Lyle Way;
- The approximately 5.14-acre staging area for the Proposed Project (Mt. Hermon Road Staging Area) located at the northern intersection of Graham Hill Road and Mt. Hermon Road, in Felton, CA at APN: 071-201-43; and
- The approximately 1.86-acre staging area for the Proposed Project (Ocean Street Extension Staging Area) located at 1941 Ocean Street Extension at APN: 008-031-16.
- The alternate sanitary sewer lateral improvement area from the southwest corner of the GHWTP parcel at Ocean Street Extension and along Ocean Street Extension for approximately 4,500 linear feet to the City Public Works Department maintained sanitary sewer connection at Graham Hill Road.

Figure 1 - Project Site and Vicinity shows the Proposed Project location and **Figure 2 - Existing GHWTP Site Layout** provides the existing facilities at the GHWTP.

The GHWTP is located in an area of single-family residential land uses on the northern, eastern, and southern perimeters. The western perimeter slopes down toward the San Lorenzo River and is an area of scattered residential dwellings. A narrow extension of the GHWTP extends from the otherwise rectangular parcel from the southwest corner down to Ocean Street Extension. This vegetated extension

is a corridor for several different types of utilities. The site is characterized by a mix of industrial development for the purpose of water treatment, open space and vegetation. The site is generally accessed from the south on Graham Hill Road via Ocean Street off of State Route 1 (locally referred to as Highway 1) but can also be accessed from the north on Graham Hill Road via Sims Road or Mount Hermon Road off of State Route 17 (locally referred to as Highway 17).

The Mt. Hermon Road Staging Area is located adjacent to heavily forested open space, as well as commercial and low/very low-density residential land uses. The Ocean Street Extension Staging Area is located adjacent to a crematorium and low/very low-density residential land uses, off of Ocean Street Extension.

Purpose and Need for the Proposed Project

The GHWTP is a conventional[1] water treatment plant that is a critical component of the drinking water system. It is the City's only surface water treatment plant and treats over 95% of the water served to its customers. The GHWTP treats local surface waters from multiple sources: the San Lorenzo River (at the Tait Diversion, Felton Diversion[2], and Tait Wells[3]), Majors Creek, Laguna Creek, Reggiardo Creek (by way of Laguna Creek Diversion), Liddell Spring, and Newell Creek (from the Loch Lomond Reservoir). The City selects its water source and blend for treatment based on multiple variables including demands, source water availability, and source water quality. These selections vary seasonally.

For drinking water utilities that rely on surface water sources, water treatment is a critically important public health protection function, and utilities must maintain treatment standards at all times without failure. The science of water treatment and treatment standards that utilities need to plan for and comply with continuously evolves. While surface water treatment plants are designed for standards at the time of construction and are often considered "state of the art," once constructed these water treatment plants can experience challenges to consistently meet changed regulations and/or changed source water conditions, as is the case for the GHWTP.

The GHWTP was originally constructed and placed into service in 1960. In the late 1960s the facility was expanded, and in the 1980s the mechanical, electrical and chemical equipment and control systems were modernized. The majority of the regulations impacting the operation and performance standards of the GHWTP began to emerge after those investments in 1989 with the passage of the Environmental Protection Agency Surface Water Treatment Rule, which was later augmented with a number of additional rules through the 2000s. During this time multiple major drinking water regulations affecting surface water treatment and distribution system water quality were developed and promulgated. Despite its original age, the GHWTP has adapted to operate and comply with these new regulations; however, a changing climate presents a new set of challenges that when combined

[1] Conventional water treatment is a method of treating raw water through a combination of coagulation, flocculation, sedimentation, filtration, and disinfection to achieve safe drinking water.

[2] At the time of the NOP release the City pumps water from the San Lorenzo River at the Felton Diversion to Loch Lomond Reservoir for storage before being treated at the GHWTP. Pending approval by the State Water Board the City may in the future have the flexibility to divert directly from San Lorenzo River from the Felton Diversion to the GHWTP under the Santa Cruz Water Rights Project.

[3] The Tait wells refers to three groundwater wells under the direct influence of surface water near the Tait Diversion.

with the GHWTP's aging infrastructure and treatment processes, requires a more comprehensive upgrade. Specifically, the City expects that future source water quality could become more impaired, while standards become more stringent. Future source water conditions could be impacted by the City's increased reliance on winter streamflows, rainfall patterns that involve more intense rain events, increases in wildfires, and more frequent droughts that all impact both how much water is available for treatment and the treatability of source water, as well as increases in contaminants of emerging concerns.

The Proposed Project is needed to provide the community with a resilient surface water treatment plant that will meet the regulatory and climate change challenges of the 21st century. The Proposed Project includes both upgrades to address aging infrastructure such as buildings and treatment basins that do not meet modern seismic standards and the water treatment process to provide reliable and efficient performance to meet existing and reasonably foreseeable regulations. The upgraded water treatment process will include the flexibility to adapt the treatment process to meet a wide range of potential future regulations and future source water quality conditions.

Existing GHWTP Facilities

The GHWTP has a rated capacity of 24 million gallons per day (mgd), and since 2012 maximum daily demands have typically ranged from approximately 9 to 12 mgd. The existing GHWTP has an entrance access road off of Graham Hill Road with a security gate; internal access roads; operations building; filtration basins and filter gallery building; emergency back-up generator; electrical building, water quality laboratory, multi-use trailers and outbuildings for equipment/supply storage; three water treatment trains composed of carbon contact basins and flocculation/sedimentation basins; two flash mixing units; chemical storage facilities and chemical feed systems; concrete tanks for wash water, solids storage, reclaimed water and filtered water; lamella plate settler clarification system; pump stations; air compressors; pipelines, storm drains, and electrical systems; "heating, ventilation and air conditioning" (HVAC), "supervisory control and data acquisition" (SCADA) infrastructure, and "programmable logic controller" (PLC) units; and perimeter fencing. Prominent existing site features are labeled on **Figure 2**.

Previous and Current GHWTP Improvements

The GHWTP has undergone several improvements since its commissioning. Most notably, the GHWTP was expanded in 1968 with the addition of a third sedimentation basin and two additional filters. The GHWTP was then modernized in 1986 with the addition of flocculators and tube settlers and new chemical handling equipment. Since that time, investments into the GHWTP have focused on upgrades to the filters, addition of a lamella clarifier, in-kind repairs and replacements, seismic upgrades to the filter basins, and other minor improvements. Recent operational maintenance includes replacement of the tube settlers and the flocculators. Additionally, the replacement of three of the four on-site concrete tanks is underway and is scheduled for completion in Fall 2024, in advance of the Proposed Project (refer to **Figure 2**, which shows the Concrete Tanks and Pad [Under Construction]).[4]

While these investments have enabled GHWTP to adapt to changing source water conditions and regulatory treatment standards, due to the age and characteristics of the GHWTP infrastructure, additional upgrades and modernization are necessary to facilitate the GHWTP's ability to efficiently

[4] The Graham Hill Water Treatment Plan Concrete Tanks Replacement Project is scheduled for completion in Fall 2024, Graham Hill Water Treatment Plant Concrete Tanks Replacement Project.

adapt to future regulatory requirements, to meet water supply needs, and to account for future source water conditions.

Description of the Project

The Proposed Project consists of improvements at the GHWTP to address aging infrastructure and to provide for efficiently and reliably meeting future water quality objectives and water supply needs. At the time of this NOP the Proposed Project is still at a conceptual level of design, which includes a wide range of technical studies, evaluations, and inspections to define the placement and scope of the Proposed Project improvements. As the design process progresses the Proposed Project buildings and facilities will be sized and configured within the GHWTP site appropriately, based on the information collected during the early design phase and as informed by comments received during scoping.

The Proposed Project includes the following:

- **New Water Treatment and Related Processes.** New water treatment and related processes would rehabilitate, replace or augment the existing treatment systems at the GHWTP. The proposed treatment processes would allow the City to reliably and efficiently meet existing and reasonably foreseeable regulations even with source water that is more difficult to treat as described in the Purpose and Need section. The Proposed Project would include solids dewatering to allow for more efficient separation and disposal of solids that are removed from the raw water during the treatment process. Upgrades to the chemical feed systems would also be included as well as a replacement washwater supply tank, a new ozone contactor, pre-treatment processes, granular activated carbon contactors, and recycled water clarifiers. Space would also be reserved for a UV disinfection system and other additional treatment processes, if needed in the future. The design capacity of the Proposed Project would be approximately 18 mgd (net), a decrease from the 24 mgd capacity of the existing treatment plant.
- **New and Upgraded Buildings.** The Proposed Project would include new and upgraded buildings including a new administration building and/or operations building, new maintenance building, HVAC improvements, replacement or upgrade of the filter gallery building, and new ozone, solids dewatering, and chemical storage facilities.
- **Infrastructure and Site Improvements.** The Proposed Project would include infrastructure and site improvements including piping and storm water management improvements; electrical, and SCADA improvements; vehicular access improvements; landscaping improvements; and may include fencing and site security.
- **Removal of Existing Facilities.** The Proposed Project would include demolition of some existing buildings, water treatment facilities (e.g. sedimentation basins), and infrastructure, as needed to address facilities beyond their useful life or to accommodate new facilities.

Figure 3 - Proposed Project Development Areas provides a conceptual illustration of the locations in the Proposed Project that are being considered for development. The areas shown in the *Known Development Envelope* would be prioritized for development and permanent facilities. The *Optional Development Envelope – Low Priority* is the area that could be developed but that would be less desirable because of location, topography, or other factors. Since the GHWTP is a geographically constrained site, the *Optional Development Envelope – Low Priority* portion of the Proposed Project is being retained in the event that the *Known Development Envelope* is insufficient in accommodating

the necessary improvements. Specific activities, buildings, or facilities, if any, that would be placed in the *Optional Development Envelope - Low Priority Area* are not defined or known at this time. However, should activities or development be needed in the *Optional Development Envelope - Low Priority Area* those developments and activities would be described and disclosed in the Draft EIR (anticipated schedule is described below). **Figure 3** also illustrates a *Traffic and Utility Improvements Area,* which could include infrastructure and site improvements including piping and storm drain system improvements; electrical, and SCADA improvements; vehicular access improvements; landscaping improvements; and site security. While not indicated on **Figure 3**, the existing fencing may be improved or replaced along the perimeter of the GHWTP as a part of the Proposed Project.

The two staging areas (Mt. Hermon Road Staging Area and Ocean Street Extension Staging Area) that would be used during construction of the Proposed Project are shown in **Figure 1.** In addition, locations within the GHWTP may also be may also be used for temporary staging, laydown of equipment and/or storage during construction.

Proposed Project Schedule

Design of the Proposed Project is expected to continue through 2024. Milestones are anticipated to include conceptual design (up to 30%) through early 2023 and detailed design (30-100%) through 2024. The Draft EIR is expected to be released for public review and comment in 2023 with City Council consideration of the Final EIR and Project approval in 2024.

The Proposed Project construction is anticipated to commence in phases over a four-year period (from 2024 through 2028) while maintaining ongoing operations. As the only surface water treatment plant servicing the City's water service area, the construction sequencing would maintain a continuously operating water treatment plant that produces potable water in accordance with all local, state, and federal permit requirements.

Construction would typically occur during normal weekday work hours, between 8 AM and 5 PM, with potential work outside of those hours or on weekends on an as-needed basis with prior City Water Department Director approval.

The City has identified standard construction practices that would be implemented by the City and/ or its contractors during construction activities to provide erosion and air quality controls, water quality and habitat protection, inadvertent discovery of cultural resources, construction noise practices, and fire safety measures. In addition to the standard construction practices, the Proposed Project would also implement the applicable avoidance and minimization measures from the City's two Habitat Conservation Plans and associated Incidental Take Permits under Section 10(A)(1)(B) of the Endangered Species Act. Traffic controls would be in place for construction activities on Proposed Project roadways. These practices, measures, and controls will be described in the EIR.

Probable Environmental Effects of the Proposed Project

After completing a preliminary review of the Proposed Project, as described in Section 15060(d) of the CEQA Guidelines, the City has determined that an EIR should be prepared to assess the potentially significant environmental impacts of the Proposed Project. Preparation of an Initial Study is not anticipated.

The EIR will address environmental impacts (as detailed in Appendix G: Environmental Checklist Form of the CEQA Statute and Guidelines) of the Proposed Project's construction and operation activities, and

will propose mitigation measures to address significant impacts that are identified. The following describes the anticipated environmental issues that will be addressed in the EIR.

- **Aesthetics.** Impacts related to aesthetics could result from construction and operation of the Proposed Project. Specifically, the new buildings and facilities will be assessed to determine the potential for impacts to: (1) scenic vistas (2) scenic resources along a scenic highway or designated scenic roadway; (3) existing visual character or quality including through scale incompatibility (or conflicts with applicable scenic quality regulations); and (4) day or nighttime views due to new sources of substantial light and glare. A field survey, which would visually document existing views from the Proposed Project site and to the Proposed Project site from publicly accessible vantage points in the surrounding area, will be conducted and 3-dimensional (3D) photo-simulations of the Proposed Project will be prepared from key public view locations to inform the EIR analysis. The Proposed Project area is largely shielded from public view due to surrounding topography, mature vegetation, and residential development. There are no known scenic vistas identified in the City and County general plans that would likely be impacted by the Proposed Project; however, the EIR will include an evaluation of potential impact on scenic vistas. Graham Hill Road is not a designated scenic roadway (City of Santa Cruz 2012).[5] However, Highway 9 (0.25 miles to the west) and Highway 17 (0.75 miles to the east) are eligible State Scenic Highways (Caltrans 2019). Potential impacts of the Proposed Project on eligible scenic highways and existing visual character and quality will be assessed in the EIR.
- **Air Quality and Greenhouse Gas Emissions.** Impacts of the Proposed Project related to air quality and greenhouse gas emissions could result from temporary and short-term construction activities as well as longer-term operational activities. Operational air quality impacts and greenhouse gas emissions would include but not be limited to mobile sources, area sources, natural gas usage, electrical generation (e.g., backup generator), water supply, ozone, wastewater, and solid waste disposal. The Proposed Project is located in the North Central Coast Air Basin. The North Central Coast Air Basin is designated as non-attainment for state coarse particulate matter (PM_{10}) standards. The Air Basin is designated as unclassified or attainment for all other state and federal standards.[6] Both construction and operational emissions of criteria pollutants and greenhouse gases will be estimated using the California Emissions Estimator Model emissions model and compared to the Monterey Bay Air Resources District emissions-based thresholds to assess potential impacts. Construction and operational health risks assessments will also be prepared to assess the effects of diesel emissions from construction equipment and from delivery and hauling trucks during operations. Impacts related to objectionable odors could also result from Proposed Project components and will be evaluated in the EIR.
- **Biological Resources.** Potential impacts on biological resources could result from construction near existing waterways, such as San Lorenzo River, and sensitive habitat areas. Potential direct and indirect impacts to sensitive vegetation communities, special-status plant (e.g., Ben

[5] City of Santa Cruz 2030 General Plan, adopted June 2012 as amended through October 2019. City of Santa Cruz 2030 General Plan.

[6] CARB. 2021. "Maps of State and Federal Area Designations." https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations. Accessed May 12, 2022, and EPA. 2021. "EPA Region 9 Air Quality Maps and Geographic Information." June 10, 2021. https://www3.epa.gov/region9/air/maps/index.html. Accessed May 12, 2022.

Lomond spineflower) and wildlife species (e.g., Mt. Hermon June beetle), and jurisdictional aquatic resources associated with both construction and operation of the Proposed Project will be assessed. A general biological survey of the study area, habitat assessments for special-status plants and wildlife, review of available biological resources evaluations and studies from recent projects in the vicinity, and focused special-status plant surveys will be completed to support the EIR analysis. Results of the literature review and general biological survey, habitat assessments, and focused special-status plant surveys over two seasons (spring and summer) will be incorporated into a biological resources existing conditions technical report that will support the preparation of the EIR. An arborist report will also be prepared to support the EIR analysis. This section will also include discussion of applicable Habitat Conservation Plans (HCPs).

- **Cultural and Tribal Cultural Resources.** Potential impacts to cultural and tribal cultural resources could occur during ground-disturbing construction activities. Cultural and tribal cultural resources include: historic resources including both historic built environment resources (e.g., buildings) and historic resources of an archaeological nature; unique archeological resources; human remains; and tribal cultural resources. The Proposed Project will be evaluated under all applicable federal, state, and local significance criteria. If cultural or tribal cultural resources are found on the Project site or have the potential to be inadvertently discovered during construction, potential impacts from proposed modifications under the Proposed Project will be assessed and mitigation will be recommended, if warranted. A cultural resources inventory and evaluation report (that includes a records search, background research, summary of prior cultural reports that overlap with the Area of Potential Effect (APE), tribal outreach, and a pedestrian survey) is being prepared by archaeologists and architectural historians to support the EIR analysis.

- **Energy.** A temporary increase in the consumption of energy would be required during construction and an increase in the use of power may be required for operations of the new facilities. The impact analysis will assess if the Proposed Project would result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction or operation, or conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

- **Geology and Soils.** Construction of the Proposed Project could result in site-specific impacts on or from local geology and soils conditions. Potential impacts related to geologic, seismic, and soils constraints will be assessed based on existing information available for the area as well as information provided in Proposed Project specific geotechnical and soils studies. Potential impacts to paleontological resources will also be evaluated based on a paleontological records search through the Natural History Museum of Los Angeles County (LACM) to determine the location of any previously recorded fossil discoveries.

- **Hazards and Hazardous Materials.** Construction of the Proposed Project could result in potential impacts related to hazards and hazardous materials, which will be evaluated in the EIR. Specifically, the hazardous materials analysis will include: the potential to encounter contaminated soils during construction based on a regulatory records review; the potential for hazardous materials release associated with transport, use, and disposal of hazardous materials during construction; and the potential for hazardous emissions or hazardous materials use during construction and operations. Building materials studies related to the

potential for lead and asbestos in existing buildings will be used to characterize the conditions of existing buildings planned for demolition.

- **Hydrology and Water Quality.** Construction of the Proposed Project could result in potential impacts related to hydrology and water quality, which will be evaluated in the EIR. This includes temporary and permanent impacts to hydrology and water quality. The Proposed Project would include piping and storm drain system improvements, to address aging stormwater facilities and a possible increase in impervious surfaces, as well as to comply with the City's Phase 2 National Pollutant Discharge Elimination System (NPDES) Permit. The impact analysis will address the adequacy of the proposed improvements in reducing stormwater runoff and water quality impacts to adjacent parcels and downstream water bodies. The impact analysis will also address temporary impacts to water quality during construction.
- **Land Use and Planning.** Potential land use and planning impacts of the Proposed Project will be assessed in the EIR. The analysis will address impacts related to the potential for physically dividing an established community or causing a significant environmental impact due to conflicts with land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating environmental effects. Given that the GHWTP already exists, the Proposed Project would not be expected to result in the potential for physically dividing an established community. The City and County general plans and zoning ordinances will be considered in the analysis of potential conflicts with land use plans, policies, and regulations, as relevant to the Proposed Project.
- **Noise and Vibration.** Construction and operation of the Proposed Project could result in noise and vibration impacts. Potential construction-period noise and vibration impacts to sensitive receivers (e.g., residents) in the vicinity of the Proposed Project will be assessed with modeling based on noise measurements taken at the site and review of construction phases and equipment usage. Operational noise associated with new equipment and processes on the site will also be evaluated. An existing noise conditions report based on long-term and short-term noise measurements will be prepared to document the existing ambient noise levels at the Project site.
- **Transportation.** Construction and operation of the Proposed Project could result in transportation impacts. Construction-related vehicle trips will be estimated and temporary construction-related traffic at the Project site and the staging areas will be evaluated to identify any hazardous conditions on roadways or inadequacies in emergency access that may result during construction of the Proposed Project. Similarly, for operations, the new daily and peak hour trips generated for the Proposed Project will also be estimated and a traffic analysis will be conducted along Graham Hill Road and the Project site driveway, to determine whether potential traffic hazards, such as increased vehicular queueing or hazards to pedestrian and bicycle traffic, could occur. Traffic counts will be collected on Graham Hill Road to support this analysis.

  An appropriate vehicle miles traveled (VMT) evaluation will be conducted and the results of this will be described in the EIR. VMT is the new transportation metric for evaluating changes in project vehicle trips developed in response to Senate Bill 743 and the associated revisions to the CEQA Guidelines that became effective December 2018.
- **Utilities.** The Proposed Project has the potential to result in impacts related to utilities. The EIR will address: the potential impacts on the environment of any required new utility

improvements; the adequacy of the wastewater treatment infrastructure including the capacity of existing sewer lines to serve the Proposed Project; the adequacy of the solid waste capacity of local landfills to serve the Proposed Project, and the compliance of the Proposed Project to meet solid waste reduction goals. While EIRs also typically assess the sufficiency of water supplies to serve a proposed project and other future development, in this case, the Proposed Project will not demand water supply but rather will provide water supply. Therefore, the Proposed Project would not be expected to have a significant adverse impact on water supply.

- **Wildfire.** Construction of the Proposed Project has the potential to exacerbate wildfire risks or interfere with an emergency evaluation plan, which will be evaluated in the EIR. The Proposed Project is located in a Local Responsibility Area (LRA) designated as a LRA Moderate Fire Hazard Severity Zone for wildlife fires (CALFIRE 2007).[7] The analysis will focus on the potential for construction or operation activities of the Proposed Project to impair an emergency response or evacuation plan, exacerbate wildfire risks, and expose people to risks due to postfire effects. The section will also discuss the Proposed Project's consistency with the 2020 City of Santa Cruz Water Department Emergency Response Plan, 2018 City of Santa Cruz Emergency Operations Plan and the 2021 Santa Cruz County Operational Area Management Plan, which directs City and County officials during major emergencies, such as a wildfire.[8]
- **Impacts Not Found Significant.** The EIR will explain why other effects were determined to not be potentially significant and were not discussed in detail in the EIR. For example, the Proposed Project would not occur in an area of agriculture use or protected farmland; therefore, no significant agricultural resource impacts are anticipated. Similarly, no significant impacts are anticipated for population and housing and mineral resources.
- **Other Sections.** The EIR will include additional topics as required by the CEQA Guidelines including growth inducement, cumulative impacts, and alternatives.
    - The Proposed Project would not expand the City's service area and would not increase the plant's capacity. The Proposed Project would support efficiencies in delivering water to meet water supply needs in the existing service area. The potential for growth-inducing impacts to result will be examined.
    - The EIR will address whether the Proposed Project could result in cumulative impacts that are significant when combined with the impacts of other City projects or projects occurring in the area at the same time.
    - The EIR will describe and evaluate a reasonable range of alternatives to the Proposed Project. The alternatives would feasibly attain most of the Proposed Project's basic objectives while simultaneously avoiding or substantially lessening any significant effects of the Proposed Project. The "No Project" alternative will also be evaluated as required by CEQA.

[7] CAL Fire. 2007. 2007 Fire Hazard Severity Zone Maps. Fire Hazard Severity Zones Maps.

[8] 2020 City of Santa Cruz Water Department Emergency Response Plan, 2018 Santa Cruz Emergency Operations Plan. City of Santa Cruz Emergency Operations Plan, and the Fiscal Year 2019-20 & 2020-21 Santa Cruz County Operational Plan. Santa Cruz County Operational Plan.

Further Information

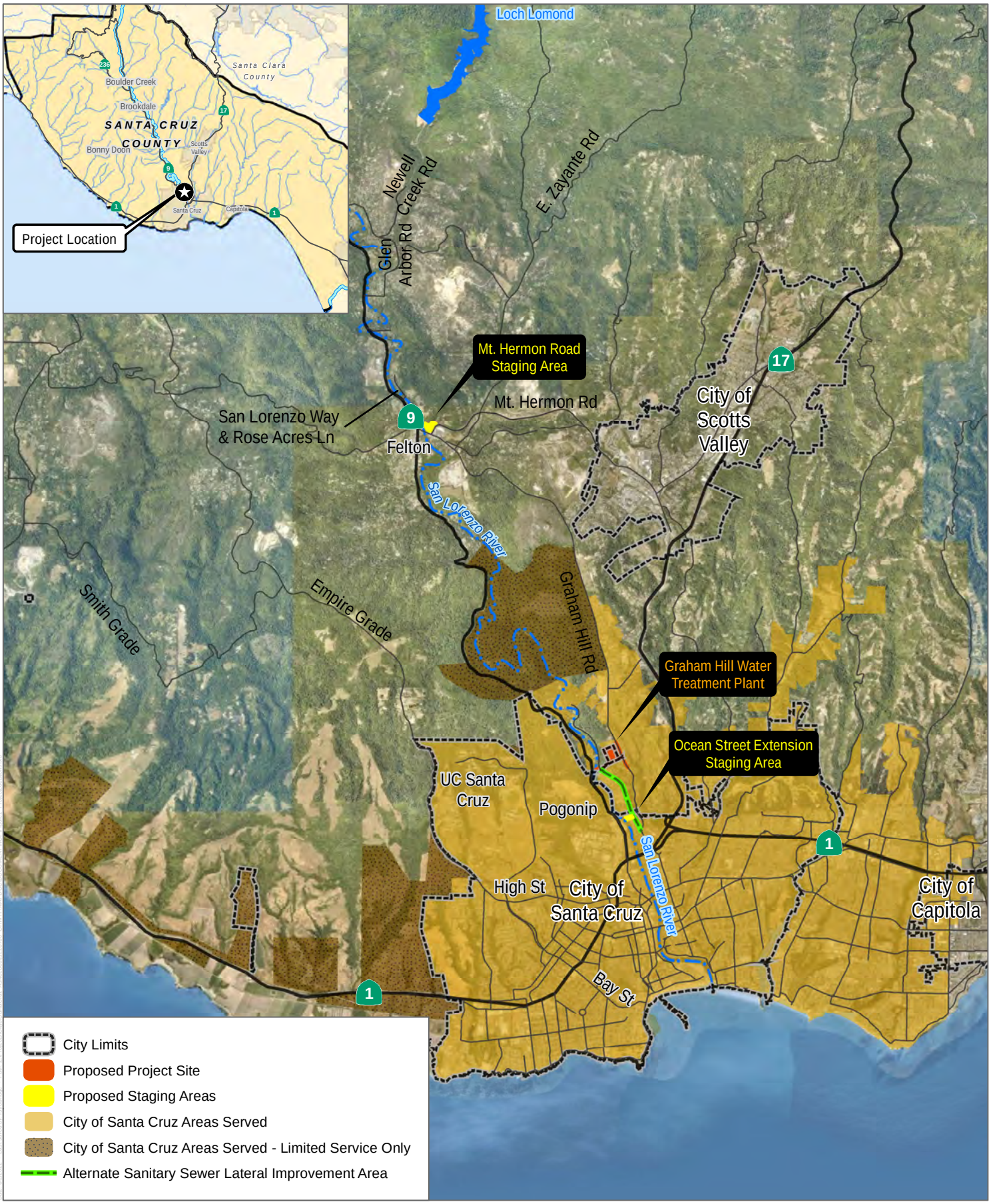
For environmental review information or questions about the Proposed Project, please contact Jessica Martinez-McKinney from my staff at jmartinezmckinney@cityofsantacruz.com.

Sincerely,

Heidi Luckenbach, P.E.
Acting Water Director, Deputy Director/Engineering Manager
City of Santa Cruz Water Department

Attachments

Figure 1: Project Site and Vicinity
Figure 2: Existing GHWTP Site Layout
Figure 3: Proposed Project Development Areas



SOURCE: ESRI 2020, City of Santa Cruz 2020

DUDEK

0 3,800 7,600 Feet

FIGURE 1

Project Site and Vicinity

Graham Hill Water Treatment Plant Facility Improvements Project

SOURCE: Bing Maps 2021, County of Santa Cruz 2021, AECOM 2022, W.M. Lyles Co. 2022

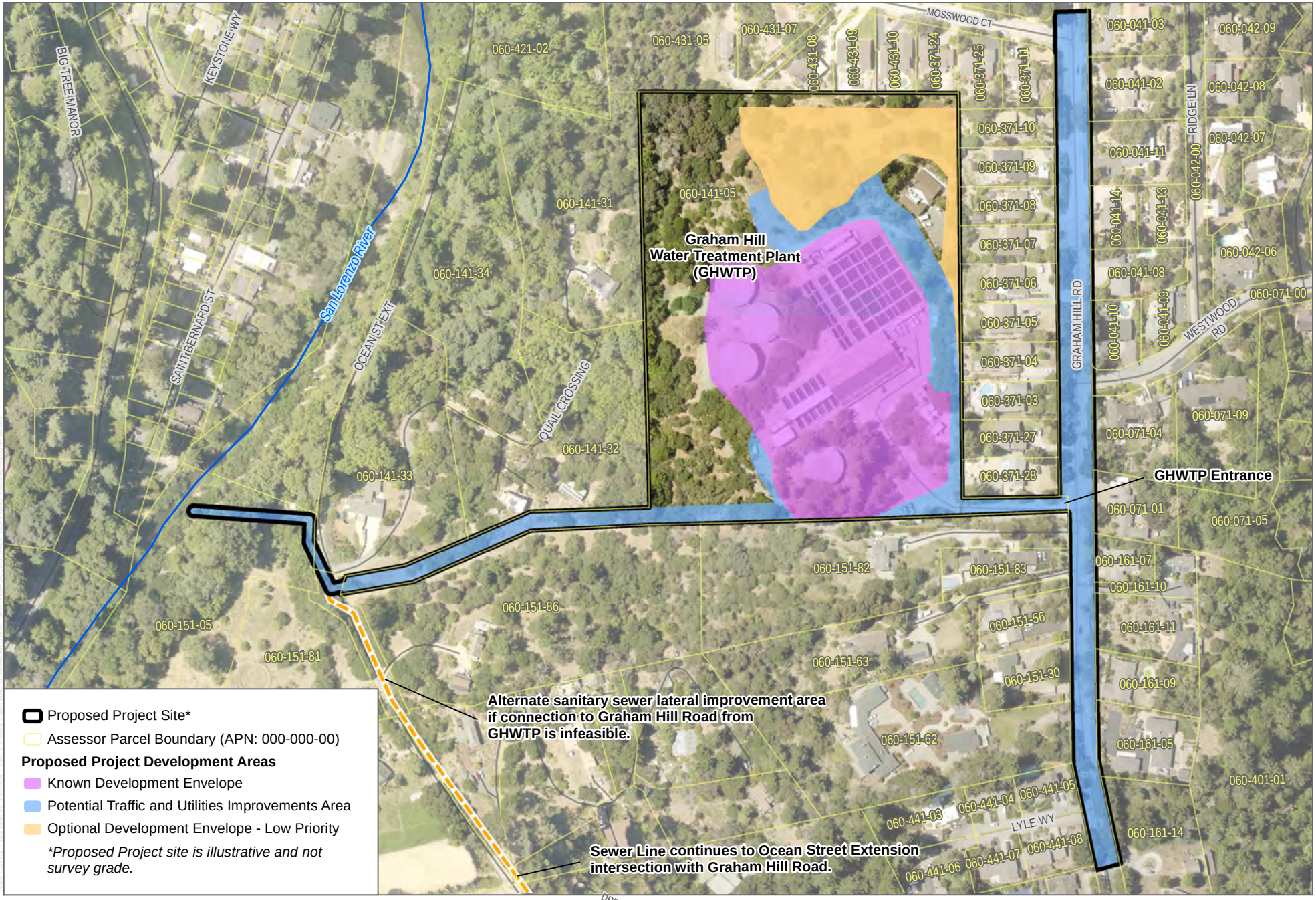
DUDEK

0 135 270 Feet

FIGURE 2

Existing GHWTP Site Layout

Graham Hill Water Treatment Plant Facility Improvements Project



SOURCE: Esri Aerial Imagery, County of Santa Cruz 2021, AECOM 2022, W.M. Lyles Co. 2022

DUDEK

0 125 250 Feet

FIGURE 3

Proposed Project Development Areas

Graham Hill Water Treatment Plant Facility Improvements Project

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Dick Spotswood: Voters just gave everyone at MMWD a clear message

By DICK SPOTSWOOD | spotswood@comcast.net |
November 12, 2022 at 10:50 a.m.

If early results hold, the voters just gave Marin Municipal Water District directors an unambiguous message.

The public wants water security, including a four-year reserve – no more kicking the can down the road. Act and do it now. Planning is essential, but with the time and money already spent on studies, MMWD leaders need to make up their mind and implement decisions.

That message apparently wasn't received until election night by expected outgoing directors Jack Gibson, Larry Bragman and Cynthia Koehler.

Koehler chose to retire instead of running for reelection after serving 17 years. Given the substantial vote margins between the candidates so far, it appears there's little doubt the two incumbents, Gibson and Bragman, were defeated.

The nonpartisan election wasn't about personalities; it was about policy. It's widely agreed that Gibson, Bragman and Koehler are dedicated public officials and talented individuals. Likewise, few dispute that all three of the victors are accomplished in their professional and civic lives.

The Marin County Civil Grand Jury report, "A Roadmap to Water Resilience for MMWD" was damning and pivotal. Its central point was clear. "Last year's drought emergency could have been avoided if MMWD had taken sufficient measures to provide for a resilient water supply. With the mounting challenges posed by climate change, the mistakes of the past cannot be repeated. MMWD must establish a roadmap for achieving water supply resilience without delay."

After threatened water rationing, it didn't take much to convince central and southern Marin voters and the agency's 191,000 customers that change was due. The leading vote-getters, Ranjiv Khush (over Bragman), Matthew Samson (over Gibson) and Jed Smith (leading to succeed Koehler), all have committed to implementing new water supplies at the earliest possible date.

All candidates sought endorsements from community-based organizations and leaders to give them credibility.

In the water board elections, support from Marin's COST, the Coalition of Sensible Taxpayers, turned out to be decisive. COST's goal was targeted: encourage new candidates who will aggressively advocate for innovative water sources at a reasonable price.

It's not just that the candidates on their slate, Khush, Samson and Smith, all won. COST was involved early in recruiting them to enter the contest. Rep. Jared Huffman was separately involved in convincing venture capitalist and environmentalist Smith to jump into the race. Conversely, the vaunted Sierra Club endorsement failed to deliver for its endorsees, Bragman and Gibson.

While the role of conservation remains an important component of achieving adequate water availability, new sources need to not just be studied but obtained. There are ample practical options. They include raising dam heights to increase reservoir capacity, capturing winter Russian River water flowing to the Pacific Ocean and storing it in Sonoma's aquifer, plus desalination. Whatever the conclusion, 2023 must be the year of decision, and implementation needs to follow soon thereafter.

The spotlight now isn't just on the three likely new directors. It's on the two directors who'll see their terms expire in 2024: Monty Schmitt of San Rafael and Tiburon's Larry Russell, the MMWD board's current chair.

Voters' tolerance for dithering is over. If Schmitt and Russell don't get their acts in gear and work with the three new directors to deliver reliable water, they may either choose to retire like Koehler or experience the electoral fate of Gibson and Bragman.

MMWD is blessed with a first-rate staff who properly follows the policy directions of elected board members. We can expect these pros led by MMWD general manager Ben Horenstein to act promptly once the new board sends them clear marching orders. If that happens and actions are taken to implement those decisions, water consumers may soon see light at the end of the (water) tunnel.

Author **Dick Spotswood**

Columnist Dick Spotswood of Mill Valley writes on local issues Sundays and Wednesdays. Email him at spotswood@comcast.net

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Mississippi

US justice department sues city of Jackson over water crisis

City and Mississippi health department sign order agreeing to federal oversight of the failing water system

Erum Salam

Wed 30 Nov 2022 15.56 EST

The US justice department has taken drastic action regarding the crisis in Jackson, Mississippi, that has affected drinking water for its 150,000 residents for several months.

On Tuesday, the city of Jackson and the Mississippi health department signed an order agreeing to federal oversight of the failing water system, in an attempt to restore clean and safe drinking water.

The justice department filed a complaint on behalf of the Environmental Protection Agency (EPA) against the city, for failing to comply with the Safe Drinking Water Act.

In a statement, the US attorney general, Merrick Garland, said he was "taking action in federal court to address longstanding failures in the city of Jackson's public drinking

water system.

“The Department of Justice takes seriously its responsibility to keep the American people safe and to protect their civil rights. Together with our partners at EPA, we will continue to seek justice for the residents of Jackson, Mississippi. And we will continue to prioritize cases in the communities most burdened by environmental harm.”

Several boil water notices have been issued to neighborhoods across Jackson, thanks to aging infrastructure and severe weather.

In August, the situation worsened after heavy flooding and power outages at well water facilities resulted in a water shortage.

In September, Derrick Johnson, the president of the National Association for the Advancement of Colored People (NAACP) rang the alarm about racial inequity exacerbated by the water crisis, which predominantly affected Black residents.

Johnson said: “Somehow, in the year 2022, equality and justice remain out of reach for Black communities across America.

“The disparities facing our community are stark - just look at the catastrophe unfolding in my home town of Jackson, Mississippi. More than 100,000 people, the majority of whom are Black, are without safe access to drinking water for the foreseeable future.”

Johnson called the crisis a “direct result of the failures of politicians”.

City officials implemented months-long emergency distribution of bottled water.

In a statement to the Guardian on Wednesday, the mayor of Jackson, Chokwe Antar Lumumba, said the city was “pleased we have finally reached an agreement that represents a critical next step in our efforts to provide immediate and long-term solutions for Jackson’s water issues”.

Lumumba also said his city government would work with an appointed administrator to “make smart choices for the city’s drinking water system and ensure that we can provide safe, clean and sustainable drinking water for all”.

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the planet. People across the world are losing their lives and livelihoods due to more deadly and more frequent heatwaves, floods, wildfires and droughts triggered by the climate crisis.

At the Guardian, we will not stop giving this life-altering issue the urgency and attention it demands. We have a huge global team of climate writers around the world and have recently appointed an extreme weather correspondent.

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