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

WATER COMMISSION

Regular Meeting

December 7, 2020

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

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

Facebook Live: https://www.facebook.com/SantaCruzWaterDepartment/?epa=SEARCH_BOX

PUBLIC COMMENT:
If you wish to comment during on items 1-4 during the meeting, please see information below:

- **Call any of the numbers below. If one number is busy, try the next one. Keep trying until connected.**
  +1 669 900 9128
  +1 346 248 7799
  +1 253 215 8782
  +1 301 715 8592
  +1 312 626 6799
  +1 646 558 8656

- Enter the meeting ID number: **919 1597 4863**
- 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 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 4 - 17) 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 4 - 5)

   Accept the City Council actions affecting the Water Department.

2. Water Commission Minutes from November 2, 2020 (Pages 6 - 12)

   Approve the November 2, 2020 Water Commission Minutes.

3. FY 2021 1st Quarter Financial Report (Pages 13 - 18)

   Accept the FY 2021 1st Quarter Unaudited Financial Report.

Items Removed from the Consent Agenda

General Business (Pages 19 - 106) Any document related to an agenda item for the General Business of this meeting distributed to the Water Commission less than 72 hours before this meeting is available for inspection at the Water Administration Office, 212 Locust Street, Suite A, Santa Cruz, California. These documents will also be available for review at the Water Commission meeting with the display copy at the rear of the Council Chambers.

4. Informational Presentation on the Affordability of Santa Cruz's Current Water and Wastewater Rates (Pages 19 - 46)

   Receive a presentation and accept the report from M.Cubed on the affordability of Santa Cruz's current water and wastewater rates, and provide feedback to staff.

5. Recommendations on System Development Charges, Elevation Surcharge, and Eliminating the Outside City Surcharge (Pages 47 - 103)

   Approve recommendations to the City Council on:
   1. System Development Charges,
   2. Elevation Surcharge, and
   3. Eliminating the Outside City Surcharge

6. Presentation of the Analysis on the Cost to Provide Water Transfers to Soquel Creek Water District (Pages 104 - 106)

   Receive information on the analysis of the cost of providing water transfers to the Soquel Creek Water District and provide feedback to staff.

Subcommittee/Advisory Body Oral Reports

7. Mid-County Groundwater Agency

8. Santa Margarita Groundwater Agency

9. Ad Hoc Financial Planning Committee

Director's Oral Report

Information Items

Adjournment

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WATER COMMISSION
INFORMATION REPORT

DATE: 12/1/2020

AGENDA OF: December 7, 2020

TO: Water Commission

FROM: Rosemary Menard, Water Director

SUBJECT: City Council Actions Affecting the Water Department

RECOMMENDATION: Accept the City Council actions affecting the Water Department.

BACKGROUND/DISCUSSION:

November 10, 2020

Loch Lomond Reservoir Aeration System Slab Construction – Contract Award (WT)

Motion **carried** to accept the informal bid from Anderson Pacific Engineering Construction, Inc. (Santa Clara, CA) in lieu of a formal bid in the amount of $120,750 for the Loch Lomond Reservoir Aeration System Slab Construction and to authorize the City Manager to execute the agreement in a form acceptable to the City Attorney.

Newell Creek Pipeline Replacement Project, Brackney Landslide Area Pipeline Risk Reduction Segment – Award of Professional Services Agreement (WT)

Motion **carried** authorizing the City Manager to execute an agreement in a form to be approved by the City Attorney with Mott MacDonald (San Jose, CA) for Engineering Design Services for the Newell Creek Pipeline Replacement Project, Brackney Landslide Area Pipeline Risk Reduction Segment and to authorize the Water Director to execute future contract amendments within the approved budget.

Newell Creek Pipeline Replacement Project, Felton to Graham Hill Water Treatment Plant Segment – Award of Professional Services Agreement (WT)

Motion **carried** authorizing the City Manager to execute an agreement in a form to be approved by the City Attorney with Carollo Engineers (Walnut Creek, CA) for Engineering Consulting Design Services for the Newell Creek Pipeline Replacement Project, Felton to Graham Hill Water Treatment Plant Segment and to authorize the Water Director to execute future contract amendments within the approved budget.

November 24, 2020

No items to report.

PROPOSED MOTION: Motion to accept the City Council actions affecting the Water Department.

ATTACHMENTS: None.

Water Commission
7:00 p.m. – November 2, 2020
Council Chambers/Zoom Teleconference
809 Center Street, Santa Cruz

Water Department

Summary of a Water Commission Meeting

Call to Order: 7:00 PM

Roll Call

Present: D. Engfer (Chair) (via Zoom), S. Ryan (Vice-Chair) (via Zoom), J. Mekis (via Zoom), A. Páramo (via Zoom), D. Schwarm (via Zoom), W. Wadlow (via Zoom), L. Wilshusen (via Zoom)

Absent: None

Staff: R. Menard, Water Director (via Zoom); D. Baum, Water Chief Financial Officer (via Zoom); C. Coburn, Deputy Director/Operations Manager (via Zoom); M. Kaping, Management Analyst (via Zoom); H. Luckenbach, Deputy Director/Engineering Manager (via Zoom); D. Valby, Associate Professional Engineer (via Zoom); K. Fitzgerald, Administrative Assistant III (via Zoom); C. Galati, Administrative Assistant III (via Zoom)

Others: 3 members of the public (via Zoom)

Statements of Disqualification: None.

Oral Communications: One member of the public spoke (Becky Steinbruner).

Announcements: Ms. Menard introduced David Baum, the Chief Financial Officer for the Water Department.

Consent Agenda

2. Water Commission Minutes From October 5, 2020

After receiving public comment, the Chair pulled items 1 and 3 from the Consent Agenda.

Commissioner Ryan moved the October 5, 2020 Water Commission Minutes. Commissioner Mekis seconded.

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

Items pulled from the Consent Agenda

1. City Council Items Affecting the Water Department

One public comment was received.

Commissioner Ryan moved the staff recommendation on Item 1. Commissioner Wilshusen seconded.

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

3. FY20 4th Quarterly Financial Report

Why are investment earnings higher than and water sales lower in June than in previous years?

- The interest earnings are based upon the City's pooled cashed. The higher levels of reserves, then the higher interest earned disbursed to contributing funds. There was a 10% reduction in consumption in FY 2020 year over year that can be attributed to the COVID-19 pandemic, however, we are seeing a slight increase in consumption as restrictions are loosened and more businesses are able to resume normal operations.

Can staff clarify the fourth bullet point on page 14 regarding the delay on bond draws?

- Staff has determined that the $8.5 million in bond proceeds was deposited and is reflected in the fund balance for Fund 711 Water Operations rather than being reflected as a revenue. Regardless, the proceeds have been attributed to Fund 711.

Can staff clarify if this report includes transactions from June 2020 as indicated on page 13?

- That is a typo and should say through July 1, 2020. Transactions for June are included in the report.

Commissioners commended Staff on the continuous improvement in the format, content and clarity of these reports, and encouraged Staff to inform the Commission if any components of the report begin to prove overly burdensome for Staff to produce on a regular basis.

One public comment was received.

Ms. Menard responded the budgeted Water Sales amount was reduced at mid-year by $3.25 million. The report shows an additional loss of $606,000 which is about a 10% loss.

Ms. Kaping responded that expenses related to the CIP increased from the last quarterly report because a bigger time period was included in this report.

Commissioner Mekis moved the staff recommendation on Item 3. Commissioner Ryan seconded.

VOICE VOTE: MOTION CARRIED
AYES: All

NOES: None
ABSTAIN: None

General Business

4. Water Cost of Service Analysis

Ms. Menard introduced Mr. Sanjay Gaur from Raftelis for the presentation on Water Cost of Service Analysis update.

Mr. Gaur presented the analysis done in support of updating the Water Department's System Development Charges.

Why was the period of eleven years of the CIP used to determine the Net Asset Value?

- Mr. Gaur responded that the eleven-year period was chosen because it reflects the best available data. By using eleven years versus five, we are able to take future development costs into account. This approach has not received any legal challenges to date. The objective is to develop an estimate of replacement cost minus depreciation. We have a good understanding on replacement cost, now we need to estimate depreciation. Depreciation value should mirror future R&R needs. The eleven year timeframe lets us use the best available data about the cost of fixing the system and reflects the future needs of the system. When a person joins the system, the SDC should cover the assets that are in good conditions and that person's rates will cover the future R&R needs of the system. If we did not take into account the future R&R needs, this person would be double charged for this cost.

How can FY 2020 total assets include the CIP from the next eleven years?

- Mr. Gaur responded that the total assets include the major infrastructure needs as well as the total capacity of the system as a whole.

Why is actual depreciation over the life of the equipment or infrastructure not included in the calculation of total net assets?

- Mr. Gaur responded that the City's accounting practices would not allow us to track this for maintenance on capital assets to be capitalized.

What alternate assessment methodologies could be implemented when assessing system development charges (SDC)?

- Mr. Gaur responded that the more common alternate metrics used to assess system development charges are based on annual acre-feet of future water demand for the project and fixture unit counts that are used to set meter size; however, because Santa Cruz is relatively built out, it makes more sense for the City of Santa Cruz to base its SDC on capacity or meter size.

What is the current SDC based on?

- The current SDC is based on meter size for single-family residential and all commercial customers, and by the number of dwelling units for multi-family residential. Meter sizing for commercial applications, such as hotels, is based on fixture counts.

How many units per meter under the new proposal? Is there a way to show how many dwellings per meter for each size meter?

- As noted above, meter sizing is based on fixture counts and a cross-walk between the number of fixtures and the size of the meter required to ensure that flow is adequate to support all the fixtures being planned.

How can we show that the new proposal promotes affordable housing?

- A current example is a planned development of 120 Single Room Occupancy units (SRO) on the Housing Matters Campus. The current SRO connection fee is $6,067 per unit ($728,040). The meter sizing based on fixture count calls for a 3-inch meter. The new approach of using meter size instead of number of dwelling units would call for a System Development Charge of $195,271, resulting in a $532,769 reduction in this fee.

When considering meter sizes, does the total anticipated capacity include mandated sprinkler requirements for fire lines?

- Single-family residences with fire service line have a separate fire service that is large enough for fire flows. For multi-family residential, fire service lines also have a separate meter for fire flows.

Is there a separate charge for fire service meters?

- System Development Charges are not charged for fire service meters.

Ms. Menard commented that another driver to use this particular methodology is because it has the potential to address concerns with the development of more affordable housing by substituting a meter size based charge for the current dwelling unit based charge for multi-family units.

Chair Engfer opened the meeting for public comments.

One public comment was received.

Mr. Gaur next presented the Cost of Service Analysis through the first two steps of functionalizing costs and allocating costs to components.

How do the costs per meter relate to the overall value of the system?

- Mr. Gaur responded that the costs include the future growth of the service area.

Commissioners requested that in the future it would be very helpful if presentation materials related to the rate-making process are made available prior to Water Commission meetings.

Chair Engfer opened the meeting for public comments.

One public comment was received.

Ms. Menard commented that rate calculations for certain customer classifications such as North Coast Agriculture will require additional analysis and could involve other factors such as the seasonality of use or other terms of service use.

Additional Cost of Service Analysis work that is in process or planned include:

- Developing the units of service;
- Calculating unit costs; and
- Distributing costs to customer classes.

These latter three steps, along with future revenue requirements, which are also under development, are part of the rate setting process and will be among the topics the Water Commission will be receiving information about and working with in 2021.

Ms. Kaping presented the proposed approach for updating the elevation charge.

Chair Engfer opened the meeting for public comments.

One public comment was received.

In response to a question, Ms. Kaping indicated that the $0.19 per unit (a unit is 1 ccf or 748 gallons) elevation charge is the average energy cost for the operation of all system pump stations.

What is the current elevation rate?

- The current charge is $0.52 per unit.

Ms. Menard commented that the elevation surcharge for all similarly situated customers is the same and the Department will not be recommending any elevation surcharge rate differential for inside-city versus outside-city customers.

What would be the justification for distinguishing between inside-city or outside-city customers?

- Mr. Gaur responded that if we wanted to consider a rate differential, one approach would be to evaluate the difference in the ratio of total assets per equivalent meter unit.

Ms. Menard clarified that, although not explicitly stated in the presentation, the staff's recommendation to the City Council on the issue of applying a differential to outside-city customers will be not to do it. The basis for this recommendation is that doing so may result in treating similarly situated customers differently, something that is not allowed under the provisions of Proposition 218. The fundamental requirements of treating similarly situated customers the same was demonstated in the Department's approach to the elevation surcharge, and will be applied to the long-standing issue of applying a surcharge to the cost of water service to outside-city customers.

Chair Engfer opened the meeting for public comments.

Two public comments were received.

In response to a question related to how and when the change to eliminate the outside-city surcharge would be implemented, Ms. Menard responded that the next 5 year rate schedule will be developed in 2021 and needs to be implemented by July 1st, 2022. This schedule is a year later than initially planned due to the deferral of the six percent increase that was supposed to happen on July 1st of this year but was moved to July 1st, 2021 in response to the coronavirus pandemic.

Commissioners thanked Department staff for their work in reevaluating the outside-city surcharge and deciding to recommend that it be eliminated.

Ms. Melissa Elliot from Raftelis presented the planned approach to community engagement related to the rate-making work scheduled for 2021.

How will the outreach strategy outlined in the presentation align with the public process that is required under Prop 218?

- Ms. Elliot responded the goal of this approach is to encourage members of the community to participate and be involved in the rate-making process prior to the initiation of the Prop 218 process.

How will members of the panel groups be selected in a way that assures that the members will accurately represent various types of customers in each customer class?

- Ms. Elliot responded that there is no guarantee that all types of customers from each customer class will be represented in the focus groups; however, panel participants will likely be selected based on key issues that the public cares about the most.

Chair Engfer opened the meeting for public comments.

One public comment was received.

Ms. Elliot responded that the focus groups will not be asked to make recommendations during the rate-making process. The intent of forming focus groups will be to test what information needs to be provided to the community so that it has a better understanding of water rates.

Ms. Menard noted that the work coming up with the Customer Panels and Customer Feedback Community will not produce statistically significant information similar to what has been developed in other surveys that have been conducted over the years. One implication of this is that the Water Commission will not be approving survey questions or related materials that will be given to the public or focus groups. However, the Water Commission will be receiving information about the results of these community engagement efforts.

What is the goal for survey responses and will there be an incentive offered?

- Ms. Elliot responded that the legality of offering incentives in exchange for survey responses is being explored.

Subcommittee/Advisory Body Oral Reports

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

The next meeting will on November 19th and will cover the selection process for the consultant for technical support and data management as well as the installation of additional monitoring wells in the basin to evaluate surface water and groundwater interactions. There will also be a discussion of whether to authorize a Prop 68 grant preparation process.

6. Santa Margarita Groundwater Agency (SMGWA)

The group continues to meet monthly and is working on key definitions of significant and unreasonable effects for the four relevant sustainability criteria (chronic lowering of groundwater levels, reduction in groundwater in storage, degraded water quality, and depletion of

interconnected surface water) and starting the process of considering projects and management action. The first virtual private well owner meeting will be held on December 2.

7. Ad Hoc Financial Planning Committee
The committee met on October 19th, and the purpose was to reach an agreement on a set of Capital Investment Program (CIP) spending scenarios to use in modeling future water revenue requirements. Department staff presented three scenarios, a low one, a medium one and a high one and the results from the modeling of the scenario will be reviewed at the next meeting on November 17th.

Director's Oral Report: Ms. Menard reported that she will be presenting an update on the fire recovery planning at the November 10th City Council meeting.

Ms. Luckenbach provided updates on the Coast Pump Station 20" Raw Water Pipeline Replacement and Newell Creek Dam Inlet/Outlet Replacement projects.

Adjournment Meeting adjourned at 9:37 PM.

Respectfully submitted,

Katy Fitzgerald, Staff

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WATER COMMISSION
INFORMATION REPORT

DATE: 12/2/2020

AGENDA OF: December 7, 2020

TO: Water Commission

FROM: Nicole Dennis, Principal Management Analyst
Malissa Kaping, Management Analyst

SUBJECT: FY 2021 1st Quarter Unaudited Financial Report

RECOMMENDATION: That the Water Commission accept the FY 2021 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. The LRFP includes financial targets for debt service coverage ratio (1.5x), a combined 180 days cash on hand, $3.1 million in an Emergency Reserve, and a $10.0 million Rate Stabilization Reserve.

The data in the Quarterly Financial Report provides a snapshot in time The City operates on a fiscal year basis and allows transactions to post to any period of the year until the books are formally closed after June 30th.

In 2019, an ad hoc subcommittee of the Water Commission and Water Department staff worked together to update the quarterly financial report which debuted a year ago. 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 has 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 2020 and is a snapshot of the transactions posted during the time period of July 1, 2020 through September 30, 2020. 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 continue to reflect the impact of the COVID-19 pandemic and, although early in the year, are 18% below budgeted amounts. As expected, residential consumption is higher while commercial and UCSC consumption is lower. It is important to note budgeted revenues were based upon the fifth year of rate increases to go into effect on July 1st. Due to COVID-19, the six percent rate increase was deferred. If budgeted water sales were reduced to $41,524,000 to take into account this postponement, water sales would be 13% below projections. Staff is exploring the implications of lowering the budgeted water sales revenues.

In FY 2021, staff expects to receive $371,595 in a Federal Emergency Management Agency (FEMA) Hazard Mitigation Grant submitted to FEMA for the Brackney Landslide Pipeline Risk Reduction Project to address the 2017 winter storm damage. And a $4,000 grant from the City's Carbon Fund for a water bottle filling station at the Loch Lomond Recreation area.

Water Department staff recently submitted two Drinking Water State Revolving Fund disbursement claims to the State Water Resources Control Board for the Newell Creek Inlet/Outlet R project totaling $23.5 million. These revenues will be reflected in the 3rd Quarter Financial Report as will the last draw of the remaining $7 million in water revenue bonds.

All of the actions described above will help improve cash flow and the Days' Cash metric.

Operating Expenses

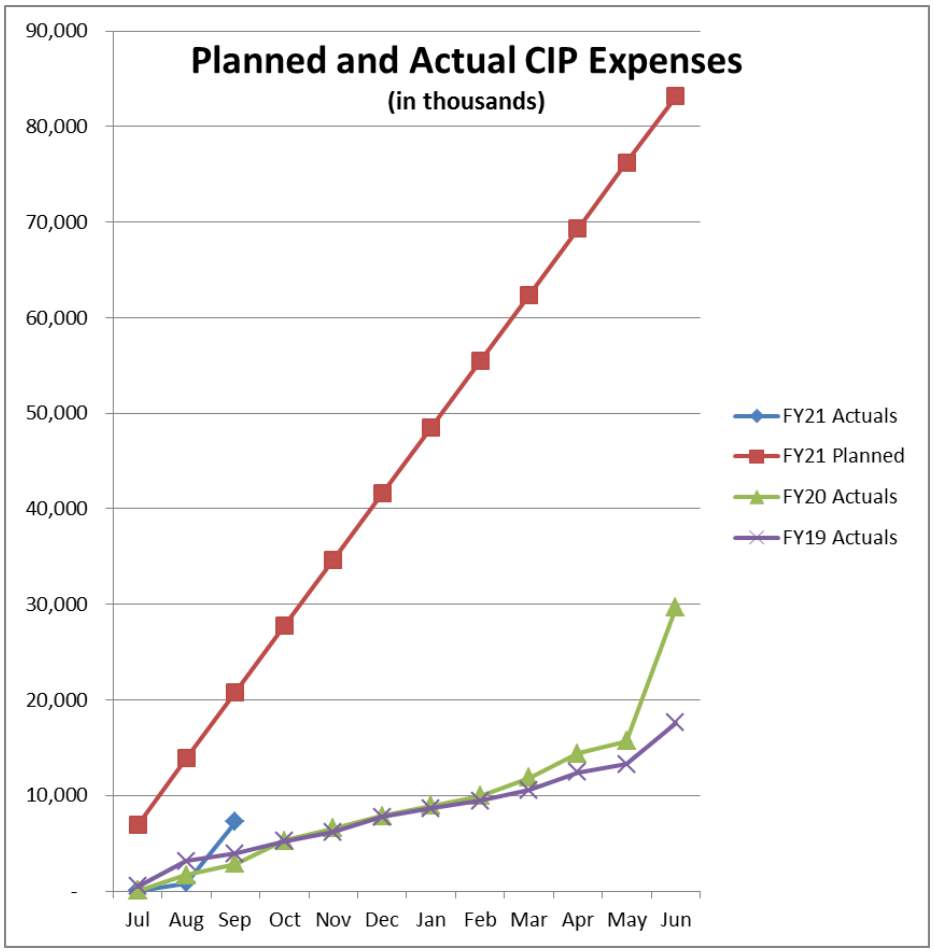
Operating expenses are $2.5 million or 30% below the anticipated spending for the first quarter. Much of the underspending is the result of the CZU Lightning Complex Fire which diverted staff from planned work. Since debt service payments are generally paid twice a year, the 1st Quarter Financial report reflects the fall payments on the Department's debt.

CIP Budget

In regards to the CIP side of the 1st Quarter FY21 Financial Report, the report format and type of information provided remains the same from the previous report. Several projects were removed from the report because they were completed in the prior fiscal year. These projects are the Bay Street Reservoir (replacing reservoir with two tanks and various site improvements), Graham Hill Water Treatment Plant Filter Rehab and Upgrades, Loch Lomond Facility Improvements, Spoils and Stockpile Handling, and Carbonera Tank Access Road. The Source Water Data Project was also removed because those expenses are being charged to an operating project now. Two new projects were added, Beltz Water Treatment Plant Filter 1 Rehabilitation and the Water Quality Lab Upgrades (emergency project related to facility flooding).

The amount of actual expenses for the 1st Quarter of FY21 is $7.2M which is $13.6M below planned expenses as shown in the figure below. It is expected that this gap will decrease during the fiscal year as experienced in prior fiscal years; the fiscal year-end process tends to result in reconciliation of outstanding invoices and revised invoices are posted to the June period rather than the period in which work is performed. The large jump in FY20 Actuals was primarily due to the mobilization costs from the Newell Creek Inlet/Outlet project which we will not see in

FY21. We will continue to analyze FY21 planned expenses for accuracy and will adjust if appropriate.



The Total Budget at Completion (BAC) amounts were changed from non-escalated dollars to escalated dollars using 3.3% as the escalation factor. The Pro Forma and rate analyses use escalated numbers and this report is being updated to use the same numbers. The following chart compares the BAC shown in the previous financial report to the current BAC and documents the amount of change per project due to escalation and other factors. Due to cumulative escalation, projects scheduled in the near future will have less of an increase compared to projects scheduled further out.

FISCAL IMPACT: None.

PROPOSED MOTION: Motion to accept the FY 2021 1st Quarter Financial Report.

ATTACHMENTS:
Attachment 1 - FY 2021 1st Quarter Financial Report
Attachment 2 - Budget at Completion Chart

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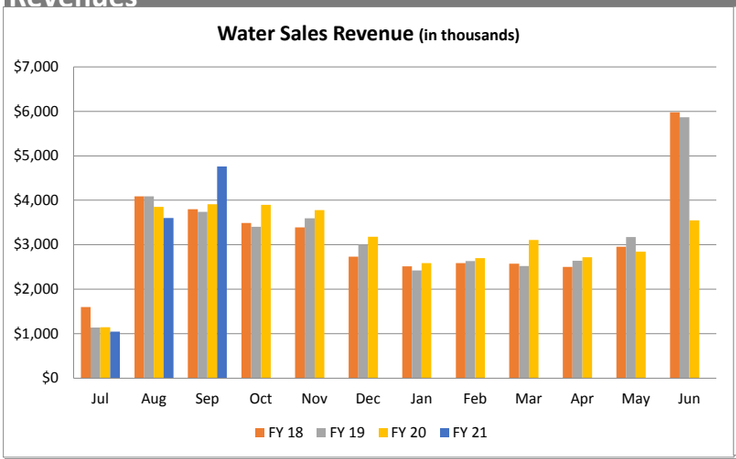
SANTA CRUZ WATER DEPARTMENT FINANCIAL REPORT

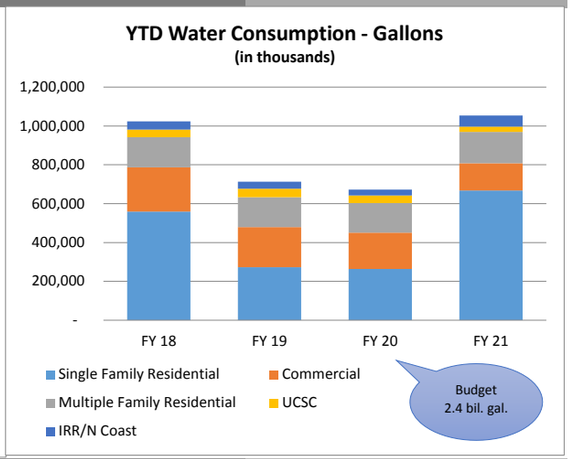
Fiscal Year 2020/21 through September 30, 2020
Unaudited Year End Information

Financial Summary

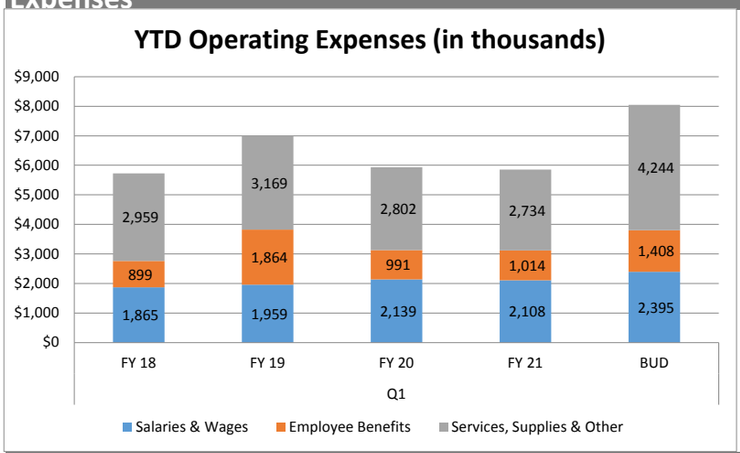
	FY 2021 Adjusted Budget	YTD Budget	Actual	Actual vs. YTD Budget Variance $ +/(-)	Actual vs. YTD Budget Variance % +/(-)
Operating Revenues					
Water Sales	43,969,758	10,992,440	9,047,839	(1,944,601)	(18%)
Other Charges for Services	1,364,861	341,215	370,254	29,039	9%
Other Revenues	1,020,278	454,733	56,385	(398,348)	(88%)
Grants	375,595	93,899	-	(93,899)	(100%)
Investment Earnings	227,510	56,878	1,230	(55,648)	(98%)
Total Operating Revenues	46,958,002	11,939,164	9,475,708	(2,463,456)	(21%)
Operating Expenses					
Salaries & Wages	10,591,891	2,647,973	2,108,226	(539,747)	(20%)
Employee Benefits	5,633,192	1,408,298	1,014,286	(394,012)	(28%)
Services, Supplies & Other	16,977,086	4,244,272	2,733,968	(1,510,304)	(36%)
Capital Outlay	281,235	70,309	13,081	(57,228)	(81%)
Debt Service - Principal & Interest	3,317,718	829,430	1,637,741	808,312	97%
Total Operating Expenses	33,483,404	8,370,851	5,869,561	(2,501,290)	(30%)
Net Operating Revenue (Loss)	13,474,598	3,568,313	3,606,147	37,834	1%
Debt Service Coverage (Target >= 1.50x)	4.06x	4.30x	2.20x		

Revenues





Expenses



Cash

Fund Balances	YTD Balance	Year End Target Balance
711 - Enterprise Operations	1,795,824	8,127,690
713 - Rate Stabilization	9,057,474	10,000,000
715 - System Development Charges	4,216,183	N/A
716 - 90 Day Operating Reserve	6,894,220	8,127,690
717 - Emergency Reserve	3,198,011	3,100,000
718 - Mount Herman June Beetle Endowment	145,022	144,000
719 - Equipment Replacement	715,862	700,000
Days' Cash (Includes only Funds 711 & 716)	135.1	177.2
Days' Cash Target	180.0	180.0

CIP Summary: 1st Qtr Fiscal Year 2021 Project Titles	Total Project Budget at Completion *(escalated dollars)*	Prior Expenditures Through 6/30/20	Current FY Actuals thru 9/30/20	Remaining Budget	Current Status
WATER SUPPLY RESILIENCY & CLIMATE ADAPTATION PROJECTS					
Water Supply Augmentation Strategy					
Beltz Wellfield Aquifer Storage and Recovery					
ASR Planning	2,038,495	2,623,131	15,300	(599,936)	Planning
ASR Mid County Existing Infrastructure	2,541,849	-	1,374	2,540,475	Planning
ASR Mid County New Wells	20,984,419	-	-	20,984,419	Not Initiated
Santa Margarita Aquifer Storage and Recovery and In Lieu Water Transfers and Exchanges					
ASR Santa Margarita Groundwater	19,572,856	-	-	19,572,856	Not Initiated
ASR New Pipelines	38,430,294	-	-	38,430,294	Not Initiated
In Lieu Transfers and Exchanges	-	-	-	-	Planning
Studies, Recycled Water, Climate Change, Aquifer Storage and Recovery					
Water Supply Augmentation	853,719	383,615	38,838	431,266	Planning
Recycled Water Feasibility Study	890,440	636,469	17,167	236,805	Planning
River Bank Filtratation Study	7,237,233	705,682	30,682	6,500,869	Planning
Subtotal Water Supply Augmentation Strategy	**92,549,305**	**4,348,897**	**103,360**	**88,097,047**	
Subtotal Water Supply Resiliency and Climate Adaptation Projects	**92,549,305**	**4,348,897**	**103,360**	**88,097,047**	
INFRASTRUCTURE RESILIENCY AND CLIMATE ADAPTATION					
Raw Water Storage Projects					
NCD I/O Replacement Project	108,173,686	18,331,907	5,494,682	84,347,098	Construction
Aerators at Loch Lomond	658,840	93,336	-	565,504	Design
Subtotal Raw Water Storage Projects	**108,832,526**	**18,425,243**	**5,494,682**	**84,912,601**	
Raw Water Diversion and Groundwater System Projects					
Laguna Creek Diversion Retrofit	3,152,548	677,750	78,517	2,396,281	Design
North Coast System Majors Diversion Rehab	5,261,308	163,187	-	5,098,121	On-hold
Tait Diversion Rehab/Replacement	6,514,353	205,004	3,081	6,306,268	PD/Feasibility
Coast Pump Station Rehab/Replacement	9,410,810	-	-	9,410,810	Planning
Beltz 10 and 11 Rehab & Development	392,604	186,922	892	204,791	Planning
Felton Diversion PS Assessment	4,194,412	167,685	-	4,026,727	Planning
Beltz WTP Filter Rehabilitation *NEW*	100,000	-	-	100,000	
Subtotal Raw Water Diversion and Groundwater System Projects	**29,026,036**	**1,400,548**	**82,489**	**27,542,999**	
Raw Water Transmission					
Coast Pump Station 20-inch RW Pipeline Replacement	6,633,602	2,658,858	783,740	3,191,005	Construction
Newell Creek Pipeline Rehab/Replacement	1,040,180	812,525	18,031	209,624	Environmental
Newell Creek Pipeline Felton/GHWTP	31,043,897	-	5,510	31,038,387	Environmental
Newell Creek Pipeline Felton/Loch Lomond	34,692,061	-	-	34,692,061	Not Initiated
Brackney Landslide Area Pipeline Risk Reduction	5,467,121	66,511	6,412	5,394,198	Planning
North Coast Pipeline Repair/Replacement - Planning	838,000	195,119	-	642,881	Planning
North Coast Pipeline Repair/Replacement - Ph 4	17,135,321	-	-	17,135,321	Not Initiated
North Coast Pipeline Repair/Replacement - Ph 5	17,745,746	-	-	17,745,746	Not Initiated
Subtotal Raw Water Transmission	**114,595,928**	**3,733,014**	**813,692**	**110,049,222**	
Surface Water Treatment					
GHWTP Tube Settler Replacement	1,662,288	1,309,865	-	352,424	Post Construction
GHWTP Flocculator Rehab/Replacement	1,849,164	278,611	30,687	1,539,866	Construction
GHWTP Concrete Tanks Replacement	50,716,935	5,161,044	59,382	45,496,509	Design
GHWTP Facilities Improvement Project	143,052,542	4,245,433	102,907	138,704,203	Environmental
Subtotal Surface Water Treatment	**197,280,930**	**10,994,953**	**192,976**	**186,093,001**	
Distribution System Storage, Water Main and Pressure Regulation, and Metering Projects					
University Tank No. 4 Rehab/Replacement	6,547,230	114,728	8,721	6,423,781	Planning
University Tank No. 5 Rehab/Replacement	3,958,564	4,061,397	4,036	(106,869)	Post Construction
Pressure Regulating Stations	192,189	171,697	-	20,492	Post Construction
Meter Replacement Project	13,068,961	913,729	248,348	11,906,885	Ongoing
Engineering and Distribution Main Replacement Projects	21,155,168	5,770,690	7,473	15,377,005	Ongoing
Distribution System Water Quality Improvements	75,000	17,538	165	57,297	Planning
Facility & Infrastructure Improvements	9,223,400	-	-	9,223,400	Ongoing
Subtotal Distribution Storage, Wmain Pressure Reg, and Metering	**54,220,512**	**11,049,778**	**268,743**	**42,901,991**	
Subtotal Infrastructure Resiliency and Climate Adaptation	**503,955,931**	**45,603,536**	**6,852,582**	**451,499,814**	
OTHER RISK MANAGEMENT AND RISK REDUCTION PROJECTS					
Site Safety and Security					
Security Camera & Building Access Upgrades	499,227	209,991	-	289,237	Ongoing
Programmable Logic Controllers	239,057	186,956	-	52,101	Ongoing
Newell Creek Access Rd Bridge	312,310	287,407	-	24,903	Post Constr
Water Quality Lab Upgrades *NEW*	542,700	-	-	542,700	Post Constr
Subtotal Site Safety and Security	**1,593,294**	**684,354**	**-**	**908,940**	
Staff Augmentation					
Water Program Administration [(1)]	27,046,895	-	268,725	26,778,170	Ongoing
Subtotal Staff Augmentation	**27,046,895**	**-**	**268,725**	**26,778,170**	
Contingency					
Management Reserve [(2)]	50,000,000	-	-		Ongoing
Subtotal Contingency	**50,000,000**	**-**	**-**	**-**	
Storage for Emergency Facility and System Repair Tools and Equipment					
Bay Street Reservoir Storage Building	150,000	-	-		Design
Union/Locust Admin Building Back Up Power Generator	50,000	-	-		Not Initiated
Subtotal Storage for Emergency and System Repair	**200,000**	-	-	-	
Subtotal Other Risk Management and Risk Reduction Projects	**78,840,189**	**684,354**	**268,725**	**27,687,111**	
GRAND TOTAL	**675,345,425**	**50,636,787**	**7,224,667**	**567,283,972**	

(1) Staff augmentation costs are transferred to specific projects during year-end process.

(2) Management Reserve budget will decrease rather than showing actual expenses.

Project Titles	Previous Budget at Completion	Current Project Budget at Completion	Change increase (descrease)	Reason
WATER SUPPLY RESILIENCY & CLIMATE ADAPTATION PROJECTS				
Water Supply Augmentation Strategy				
Beltz Wellfield Aquifer Storage and Recovery				
ASR Planning	2,036,877	2,038,495	1,618	Applied escalation through 2023
ASR Mid County Existing Infrastructure	2,425,000	2,541,849	116,849	Applied escalation through 2025
ASR Mid County New Wells	16,580,000	20,984,419	4,404,419	Applied escalation through 2027
Santa Margarita Aquifer Storage and Recovery and In Lieu Water Transfers and Exchanges				
ASR Santa Margarita Groundwater	15,715,000	19,572,856	3,857,856	Applied escalation through 2028
ASR New Pipelines	28,580,000	38,430,294	9,850,294	Applied escalation through 2028
In Lieu Transfers and Exchanges	-	-	-	
Studies, Recycled Water, Climate Change, Aquifer Storage and Recovery				
Water Supply Augmentation	848,978	853,719	4,741	Applied escalation through 2022
Recycled Water Feasibility Study	888,533	890,440	1,907	Applied escalation through 2022
River Bank Filtratation Study	5,596,244	7,237,233	1,640,989	Increased scope of work and applied escalation through 2028
Subtotal Water Supply Augmentation Strategy	**72,670,632**	**92,549,305**	**19,878,673**	
Subtotal Water Supply Resiliency and Climate Adaptation Projects	**72,670,632**	**92,549,305**	**19,878,673**	
INFRASTRUCTURE RESILIENCY AND CLIMATE ADAPTATION				
Raw Water Storage Projects				
NCD I/O Replacement Project [(1)]	108,424,414	108,173,686	(250,728)	Finalized the scope for Environmental Mitigations
Aerators at Loch Lomond	551,377	658,840	107,463	Bids for concrete work exceeded estimates and increased scope
Subtotal Raw Water Storage Projects	**108,975,790**	**108,832,526**	**(143,265)**	
Raw Water Diversion and Groundwater System Projects				
Laguna Creek Diversion Retrofit	3,129,353	3,152,548	23,195	Applied escalation through 2023
North Coast System Majors Diversion Rehab	4,130,853	5,261,308	1,130,455	Applied escalation beyond 2031
Tait Diversion Rehab/Replacement	5,212,500	6,514,353	1,301,853	Applied escalation through 2030
Coast Pump Station Rehab/Replacement	7,304,000	9,410,810	2,106,810	Applied escalation beyond 2031
Beltz 10 and 11 Rehab & Development	365,604	392,604	27,000	Applied escalation through 2022
Felton Diversion PS Assessment	3,444,000	4,194,412	750,412	Applied escalation through 2029
Beltz 12 Filter Rehabilitation *NEW*	-	100,000	100,000	Funds transferred from Union/Locust Generator
Subtotal Raw Water Diversion and Groundwater System Projects	**23,586,311**	**29,026,036**	**5,439,725**	
Raw Water Transmission				
Coast Pump Station 20-inch RW Pipeline Replacement	6,631,584	6,633,602	2,018	Applied escalation through 2022
Newell Creek Pipeline Rehab/Replacement	1,031,500	1,040,180	8,680	Applied escalation through 2023
Newell Creek Pipeline Felton/GHWTP	28,310,500	31,043,897	2,733,397	Applied escalation through 2025
Newell Creek Pipeline Felton/Loch Lomond	24,056,500	34,692,061	10,635,561	Applied escalation and corrected work assigned to Brackney in error
Brackney Landslide Area Pipeline Risk Reduction	5,076,000	5,467,121	391,121	Applied escalation through 2024
North Coast Pipeline Repair/Replacement - Planning	838,000	838,000	-	
North Coast Pipeline Repair/Replacement - Ph 4	14,578,000	17,135,321	2,557,321	Applied escalation through 2028
North Coast Pipeline Repair/Replacement - Ph 5	14,578,000	17,745,746	3,167,746	Applied escalation through 2029
Subtotal Raw Water Transmission	**95,100,084**	**114,595,928**	**19,495,844**	
Surface Water Treatment				
GHWTP Tube Settler Replacement	1,660,968	1,662,288	1,320	Applied escalation through 2022
GHWTP Flocculator Rehab/Replacement	1,847,000	1,849,164	2,164	Applied escalation through 2022
GHWTP Concrete Tanks Replacement	45,588,295	50,716,935	5,128,640	Applied escalation through 2025
GHWTP Facilities Improvement Project	96,865,077	143,052,542	46,187,465	Project scope increased after 10% design & escalation applied
Subtotal Surface Water Treatment	**145,961,341**	**197,280,930**	**51,319,589**	
Distribution System Storage, Water Main and Pressure Regulation, and Metering Projects				
University Tank No. 4 Rehab/Replacement	5,691,000	6,547,230	856,230	Schedule pushed out, increasing the escalation in future years
University Tank No. 5 Rehab/Replacement	3,958,468	3,958,564	96	
Pressure Regulating Stations	257,338	192,189	(65,149)	Bulk of work is complete and budget can be reduced
Meter Replacement Project	11,030,817	13,068,961	2,038,144	Applied escalation through 2023
Engineering and Distribution Main Replacement Projects	16,810,000	21,155,168	4,345,168	Applied escalation through 2038
Distribution System Water Quality Improvements	75,000	75,000	-	
Facility & Infrastructure Improvements	6,800,000	9,223,400	2,423,400	Applied escalation beyond 2031
Subtotal Distribution Storage, Wmain Pressure Reg, and Metering	**44,622,623**	**54,220,512**	**9,597,889**	
Subtotal Infrastructure Resiliency and Climate Adaptation	**527,221,939**	**503,955,931**	**85,709,782**	
OTHER RISK MANAGEMENT AND RISK REDUCTION PROJECTS				
Site Safety and Security				
Security Camera & Building Access Upgrades	474,430	499,227	24,798	Applied escalation through 2022
Programmable Logic Controllers	239,057	239,057	-	
Newell Creek Access Rd Bridge	312,310	312,310	-	
Water Quality Lab Upgrades *NEW*	-	542,700	542,700	New appropriation approved by Council
Subtotal Site Safety and Security	**1,025,797**	**1,593,294**	**567,498**	
Staff Augmentation				
Water Program Administration	25,000,000	27,046,895	2,046,895	Applied escalation through 2029
Subtotal Staff Augmentation	**25,000,000**	**27,046,895**	**2,046,895**	
Contingency				
Management Reserve	50,000,000	50,000,000	-	
Subtotal Contingency	**50,000,000**	**50,000,000**	**-**	
Storage for Emergency Facility and System Repair Tools and Equipment				
Bay Street Reservoir Storage Building	150,000	150,000	-	
Union/Locust Admin Building Back Up Power Generator	150,000	50,000	(100,000)	Budget transferred to Beltz 12 Filter Rehab
Subtotal Storage for Emergency and System Repair	**300,000**	**200,000**	**(100,000)**	
Subtotal Other Risk Management and Risk Reduction Projects	**76,325,797**	**78,840,189**	**2,514,393**	
GRAND TOTAL	**821,559,631**	**675,345,425**	**108,102,848**	

[(1)] NCD I/O Replacement Project cost were shown in escalated dollars in previous reports

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WATER COMMISSION
INFORMATION REPORT

DATE: 12/1/2020

AGENDA OF: December 7, 2020

TO: Water Commission

FROM: Rosemary Menard, Water Director

SUBJECT: Informational Presentation on the Affordability of Santa Cruz's Current Water and Wastewater Rates

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RECOMMENDATION: That the Water Commission receive a presentation, accept the report from M.Cubed on the affordability of Santa Cruz's current water and wastewater rates, and provide feedback to staff.

BACKGROUND: Over the last decade, the question of the affordability of water rates has become more prevalent in national and state discussions about social and environmental justice. This is the case because the availability of safe and affordable water for domestic use is an essential need that all people have. The ongoing COVID-19 pandemic has put further emphasis on this fundamental need, and both the federal government and the state of California have taken steps during the pandemic to ensure that water service isn't terminated for those who can't afford to pay the bill.

As part of the work done in 2016 to update the Water Department's rates, an analysis of the affordability of water rates for Santa Cruz's water service customers was completed. The 2016 rate work proposed a set of rate increases over a period of five years and the 2016 analysis looked at affordability at the beginning and end of the rate increase period. Not surprisingly, the analysis showed that, with planned rate increases in effect, the number of residential customers that would find the rates to be unaffordable would grow substantially over time.

At the time of the 2016 analysis, the definition of affordability was just beginning to go through an evolution, with new ways of thinking about it beginning to emerge. A long-standing federal EPA affordability metric was that water service was considered affordable if it cost up to 2% of the median household income. Various researchers began to look at alternate metrics such as number of hours of paid work per month required to pay for average water use. In addition, questions began to arise about how to assess the affordability of water for residents of multi-family buildings where water is typically paid for as part of the monthly rent rather than as a separate charge. Over the last five years, none of these issues have really been resolved but they have become more focused and the subject of greater attention by federal and state legislators

and policy-makers. For example, in 2015 the California legislature passed and the Governor signed AB 401, a bill directing the state to evaluate opportunities for creating and funding a low-income water rate assistance program.[1] And in 2019, the legislature passed and the Governor signed SB 200 which established the Safe and Affordable Drinking Water Fund specifically designed to deal with water issues in communities where safe and affordable drinking water isn't available.[2]

With the question of affordability continuing to be an important consideration in the rate-making process, staff included an updated analysis of the affordability of current and future water and sewer rates in the scope of work for the contract with M.Cubed for the update of Santa Cruz's long-term demand forecast. That report, prepared by David Mitchell and Elizabeth Stryjewski, is included as Attachment 1 and David Mitchell will provide a presentation for the Water Commission at its December 7, 2020 meeting and respond to questions from the Commission.

DISCUSSION: The M.Cubed report provides a good summary of the current state of the literature related to affordability metrics and develops and applies a metric specific to the Santa Cruz situation so as to best reflect the high cost of housing here. The analysis has been conducted for each census block in the City's water service area and is focused on the affordability of essential water use for both single and multi-family residential customers. The affordability of water and sewer service has been evaluated, with City customers paying for sewer services through monthly utility bills and outside City customers paying for sewer services as part of property taxes.

Once a new schedule of water rates has been developed, the analysis will be updated to assess how affordability may change as a result of the proposed rate increases. Those results will be presented to Water Commissioners when they are available.

FISCAL IMPACT: None

PROPOSED MOTION: Motion to accept the report from M.Cubed on the affordability of Santa Cruz's current water and wastewater rates.

ATTACHMENTS:
Attachment 1 - October 26, 2020 Draft Water/Sewer Service Affordability Analysis

[1] The AB 401 final report is available on the State Water Board's website at https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/assistance/

[2] A recent report from the California Legislative Analyst's Office on the status of implementing SB 200 can be found at https://lao.ca.gov/Publications/Report/4294

POLICY ANALYSIS FOR THE PUBLIC AND PRIVATE SECTORS
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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

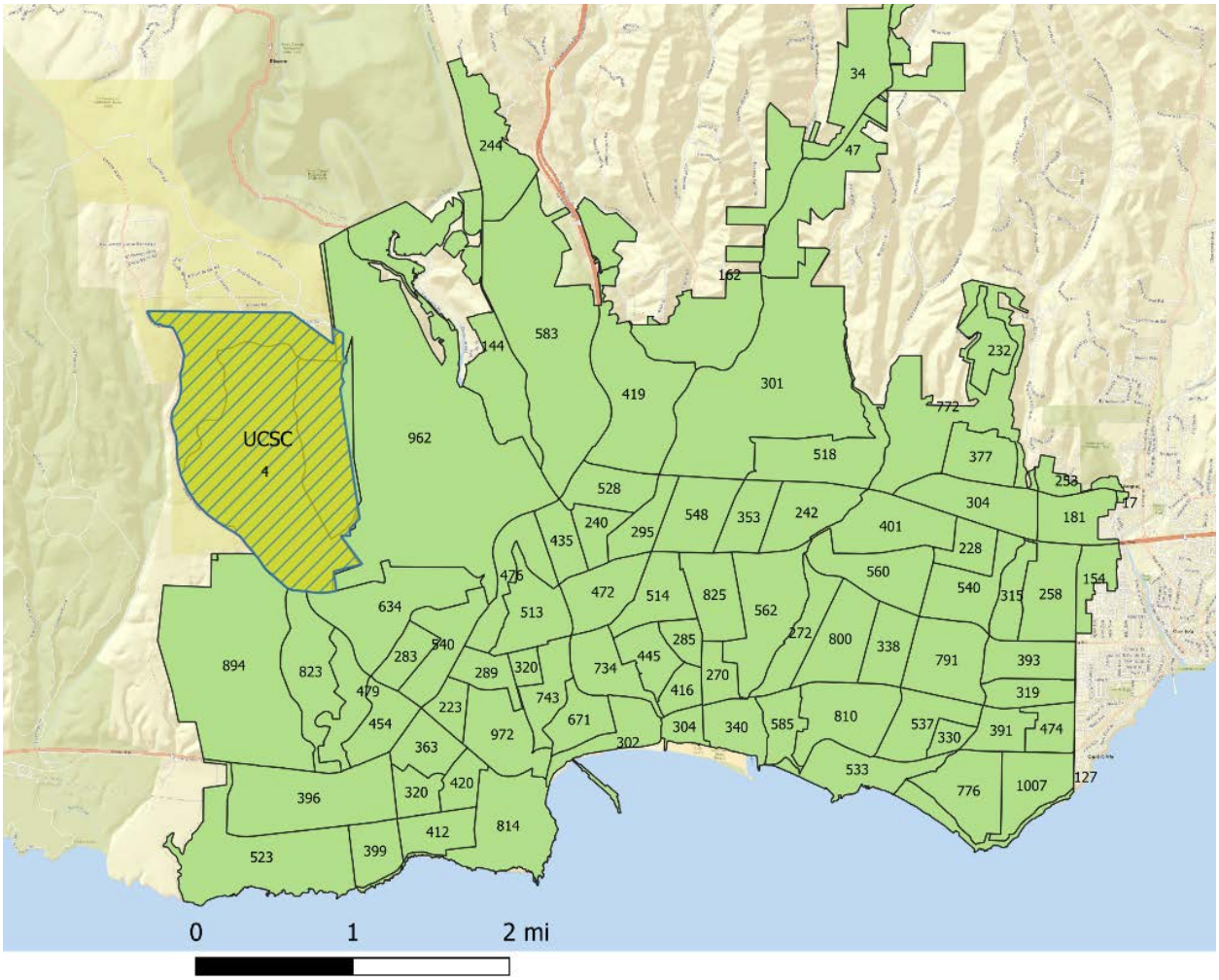
Our analysis does not rely directly on any single metric discussed in the previous section. Instead, we developed a composite metric that attempts to balance the advantages and disadvantages of the different approaches. The metric we use most closely aligns with the WARI metric in that it relies on geographically 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.

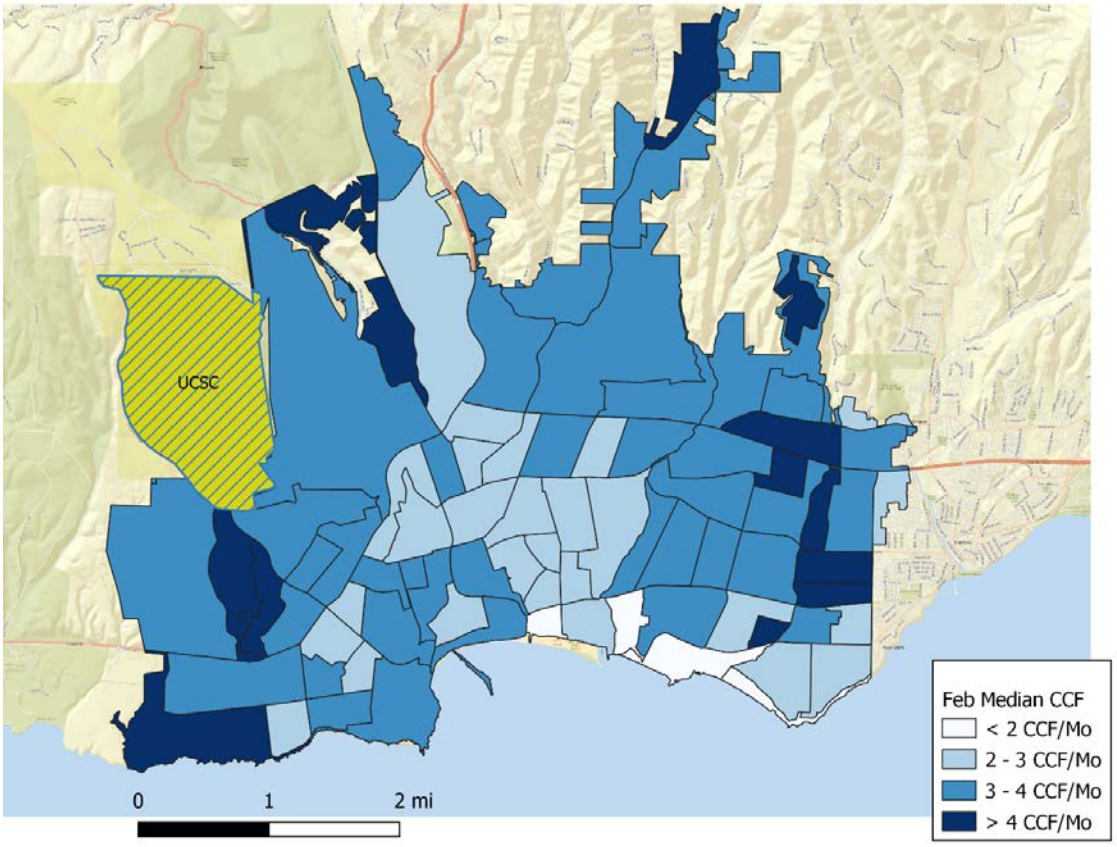
Essential Indoor Use (EIU)

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)

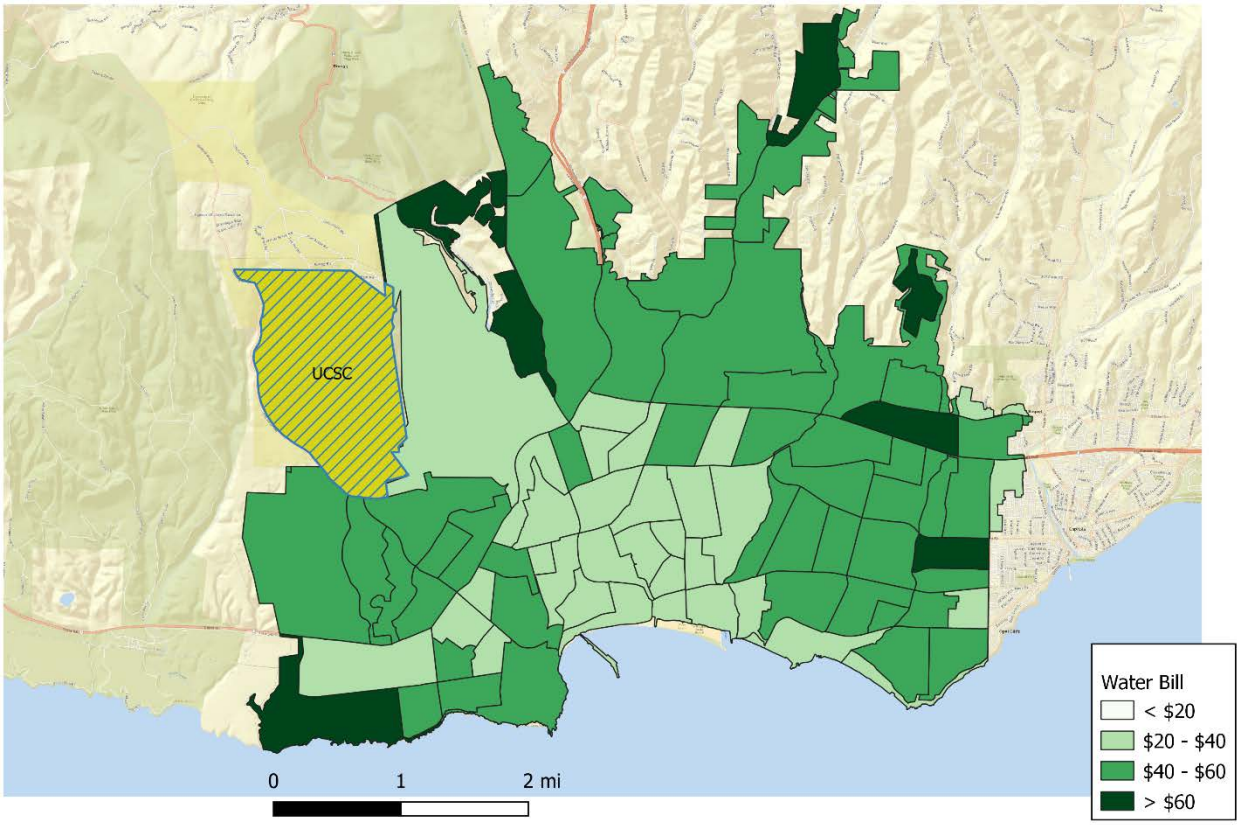
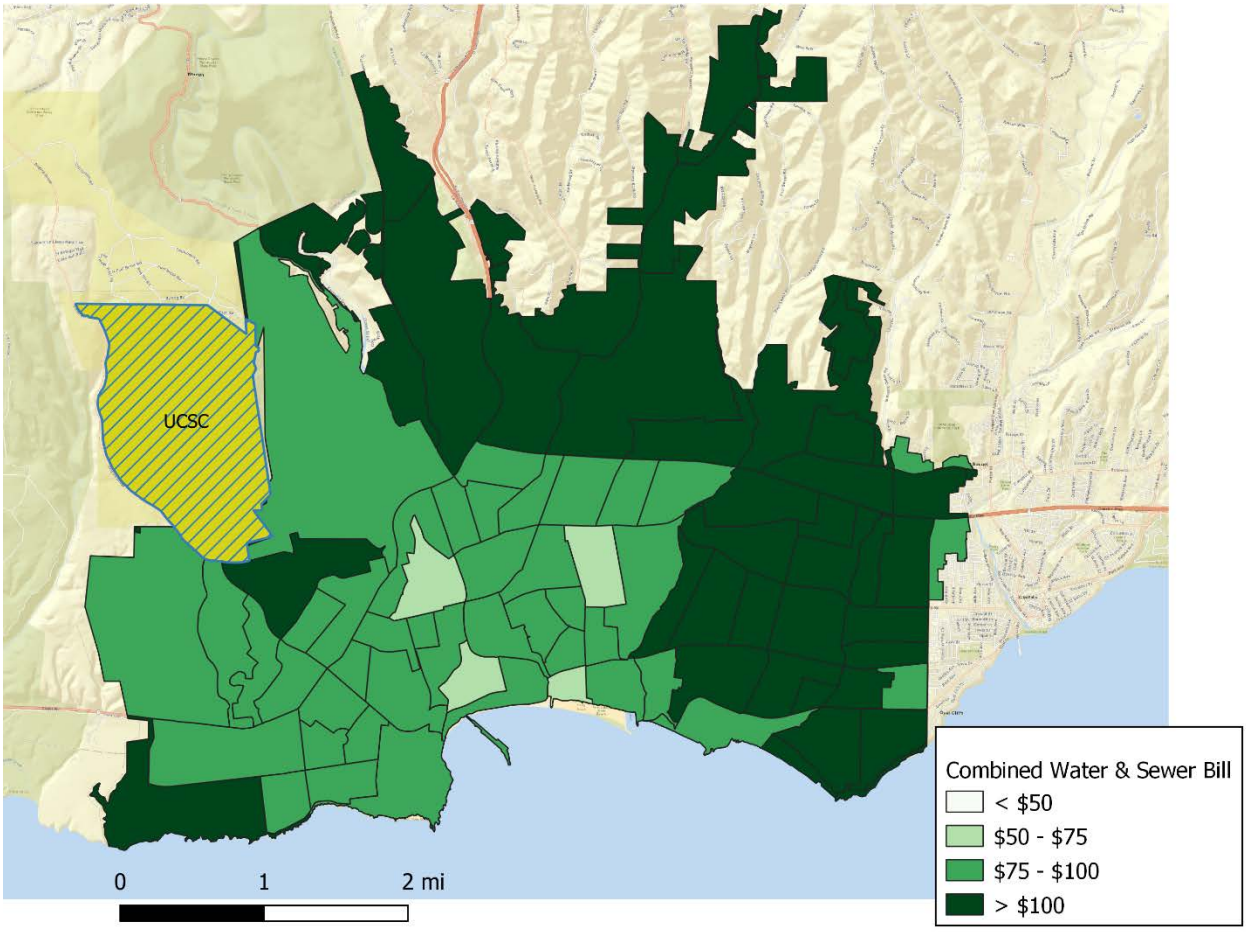


Table 4 and Figure 4 show the distribution of combined water and sewer bills for EIU by census block group. Approximately 60% of households served by the Water Department are located in census block groups where the combined water and sewer bill for EIU is $100/month or less.

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

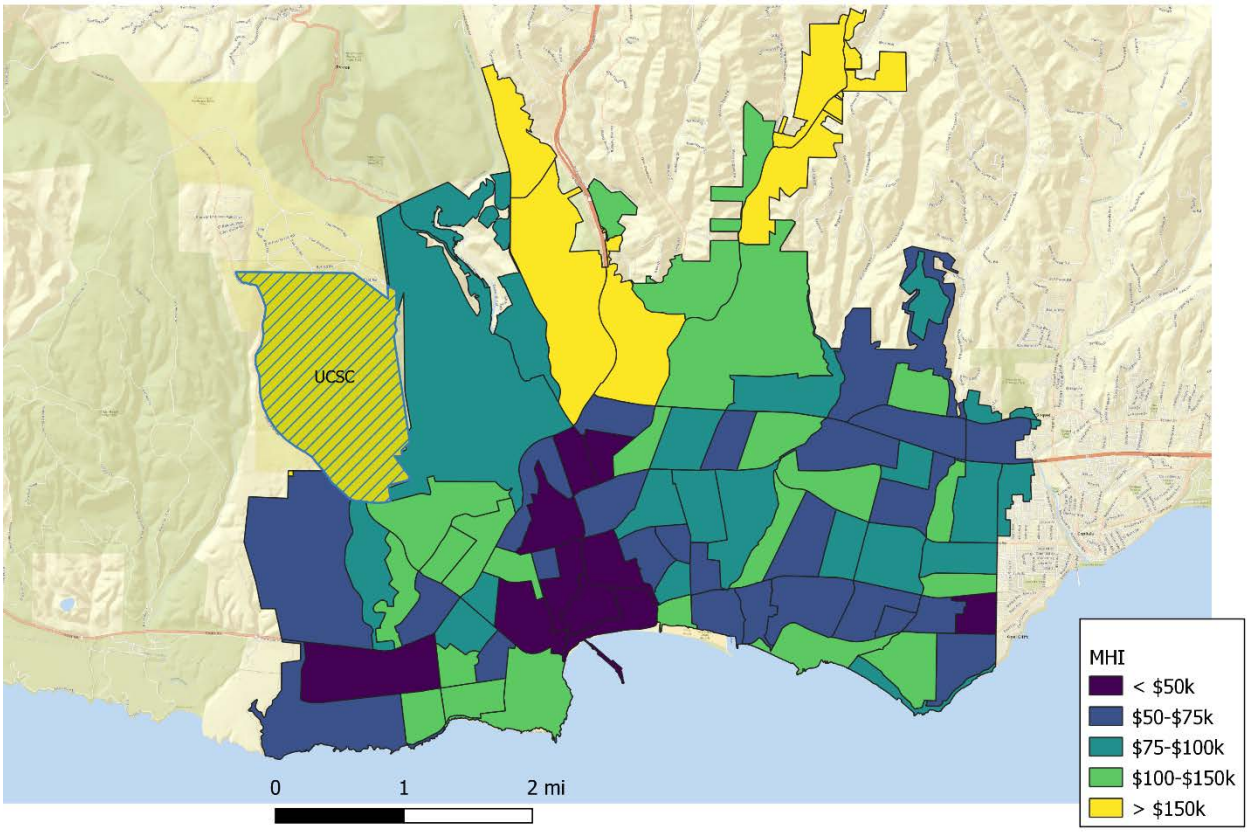
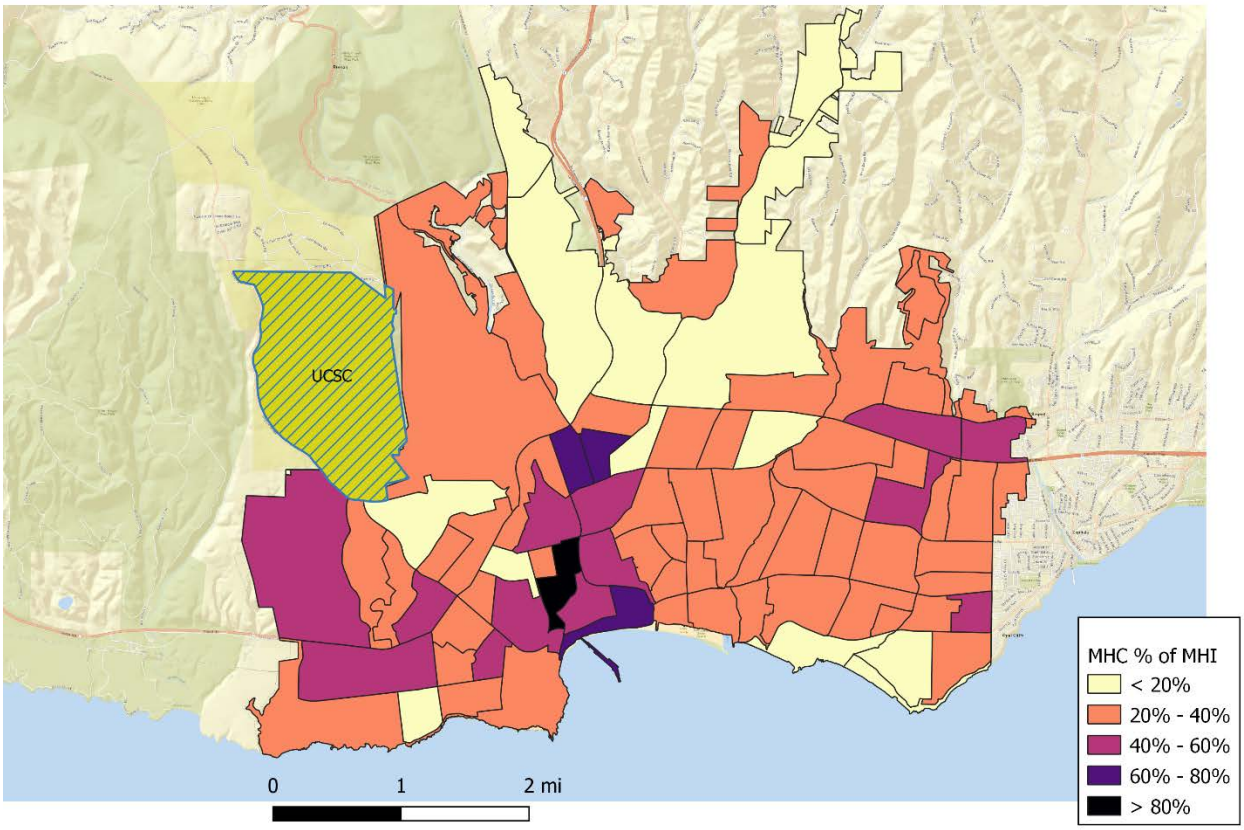


Table 6 and Figure 6 show the distribution of households by median housing cost (MHC) relative to median household income (MHI). Approximately 24% of households served by the Water Department are located in census block groups where MHC exceeds 40% of MHI. Households in these census block groups may 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



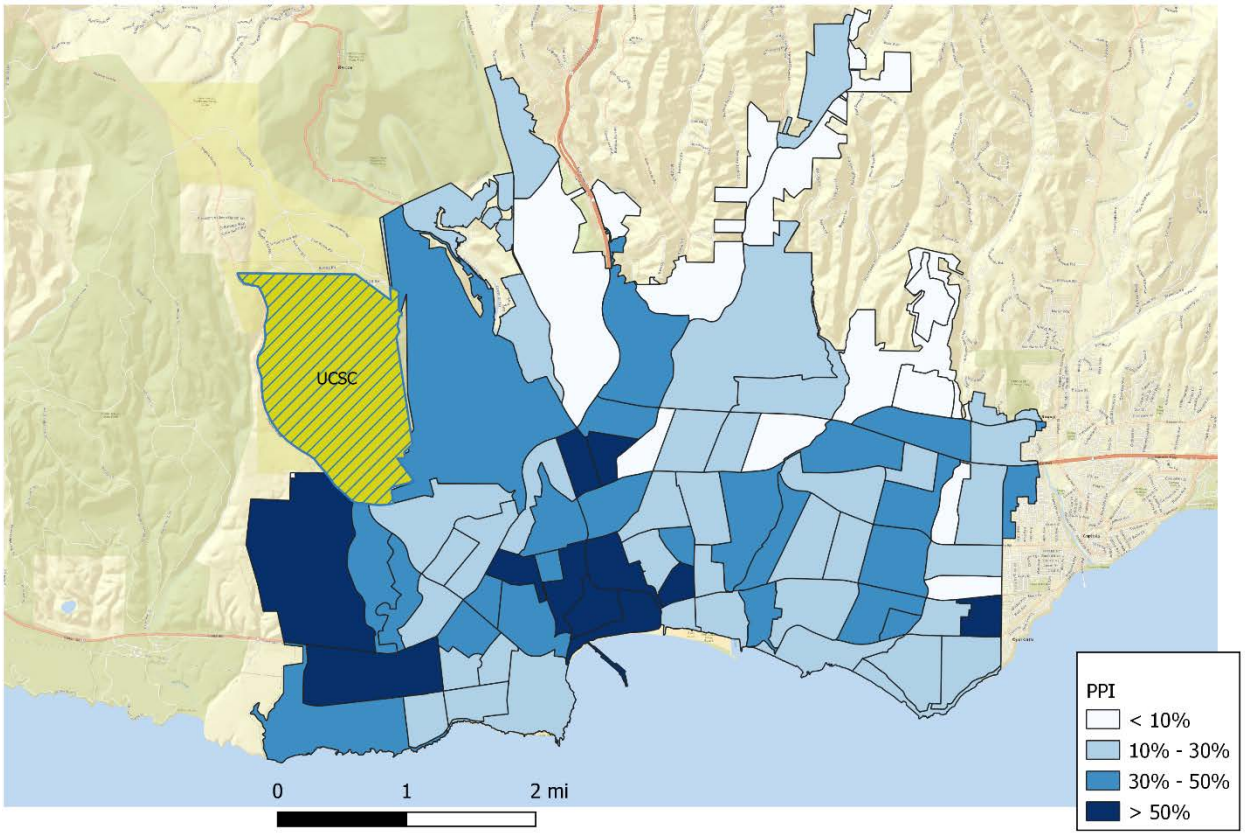
Poverty Prevalence

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

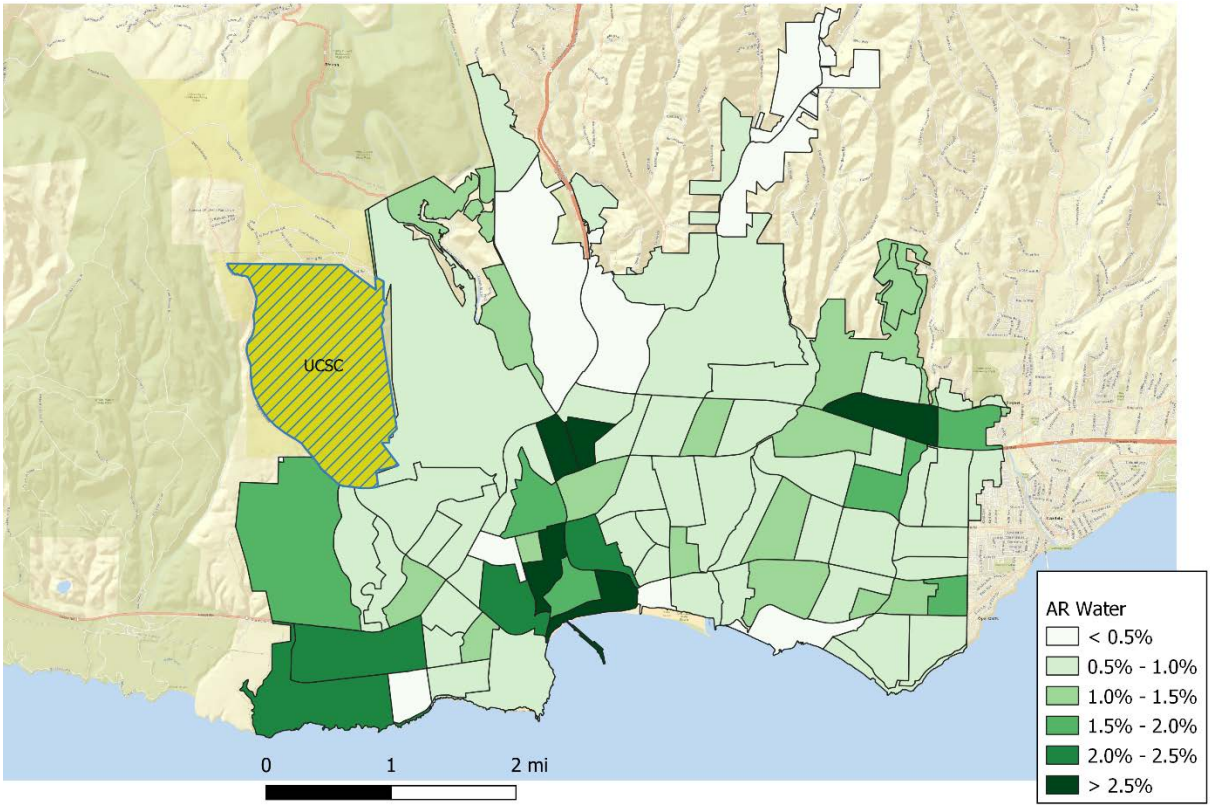
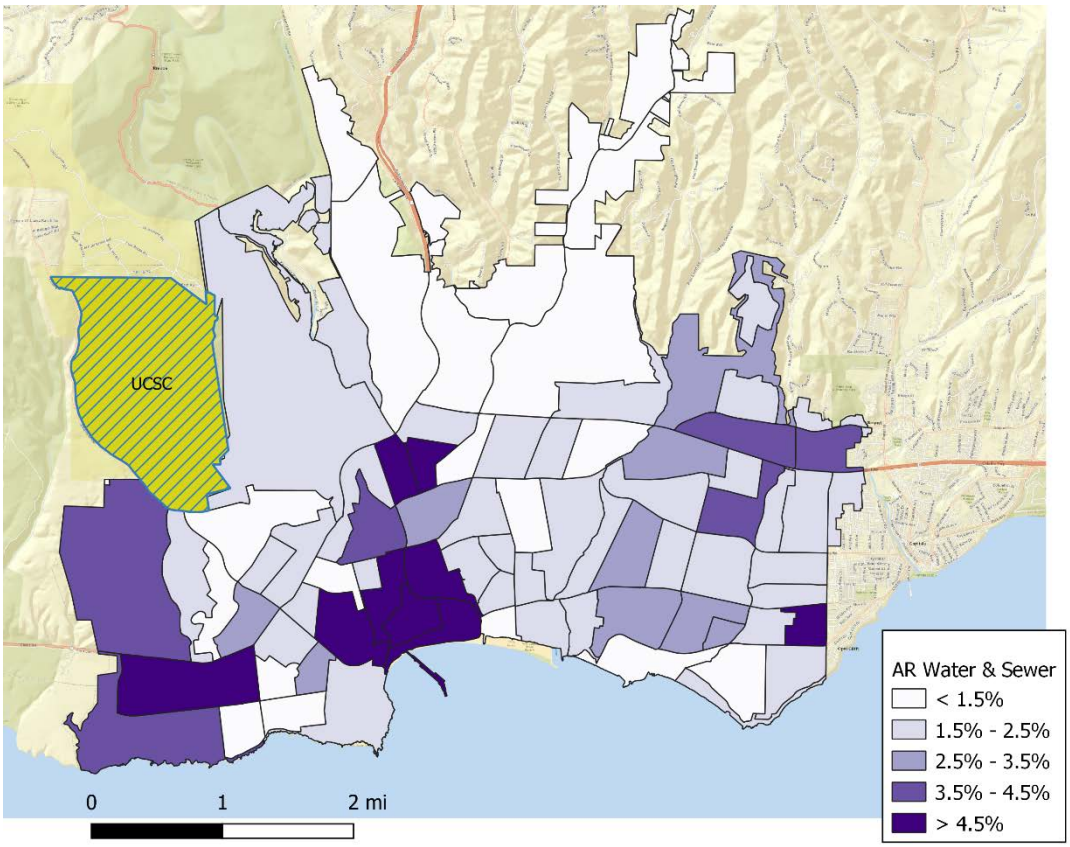


Table 9 and Figure 9 show the affordability ratios for combined water and sewer service. The average for the service area is 2.9%. Approximately 14% of households are located in census block groups with a combined water and sewer service affordability ratio greater than 4.5%. Recall that 4.5% of MHI 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

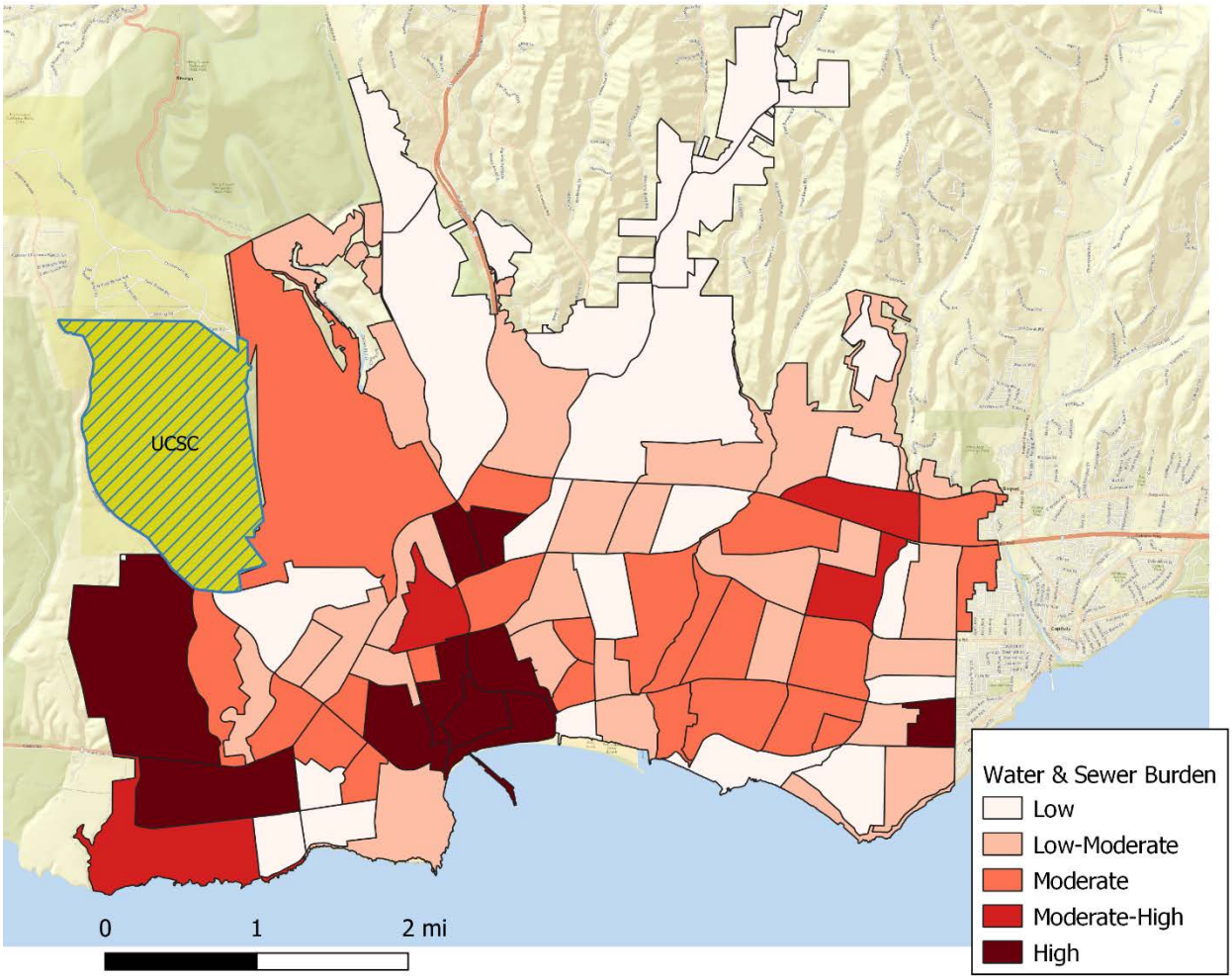
Table 11. Number of Households by Water & Sewer AR and PPI Level

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: 12/1/2020

AGENDA OF:	December 7, 2020
TO:	Water Commission
FROM:	Rosemary Menard, Water Director
SUBJECT:	Recommendations on System Development Charges, Elevation Surcharge, and Eliminating the Outside City Surcharge

RECOMMENDATION: That the Water Commission approve Recommendations to the City Council on:

1. Updated System Development Charges,
2. Updated Elevation Surcharge, and
3. Elimination of the Outside City Surcharge.

BACKGROUND: Throughout calendar year 2020, the Water Commission has received presentations about early work being conducted as part of the update to Water System Development Charges and the Cost of Service Analysis. Most recently, at its November 2, 2020 Water Commission meeting, Raftelis and Water Department staff presented recommendations on proposed updates to Water System Development Charges, Elevation Surcharges, and an updated analysis on a potential inside-outside surcharge.

At its December 7, 2020 meeting, Water Department staff is recommending that the Commission take action to recommend to the City Council adoption of updated Water System Development Charges, Updated Elevation Surcharge and Elimination of the Outside City Surcharge.

DISCUSSION: Modifications of the Water System Development Charge is not an action covered by Proposition 218. As a result, modification of System Development Charges can proceed independently from the Proposition 218 process that is planned for the rate-related issues. While they will ultimately need to be incorporated into the planned Proposition 218 process, the Elevation Surcharge and Outside City Surcharge items are ready for Water Commission action now because they inform further rate development work, as in the case of the inside-outside surcharge, or they will ultimately be applied as a separate charge to customers in the elevated pumped zones.

Attachment 1 is the November 18, 2020 Draft Report for the Water System Development Charge Study. This report presents background information on the economic and legal framework for System Development Charges, the various methodologies that can be used to develop System

Development Charges, and the analysis and recommendations for updating the existing System Development Charges. The recommended approach to setting System Development Charges is to base them on meter size for all applications and eliminating the use of the number of dwelling units in multi-family buildings.

Attachment 2 is a brief memo and map describing the updated approach to establishing and applying elevation pumping surcharges. The approach establishes three pumping zones and charges customers a surcharge of $0.19 for each time water needs to be pumped to serve them. The approach used equitably shares the benefits of the Department's various solar power generating facilities across all customers receiving pumped water.

Attachment 3 is an October 26, 2020 memo from Raftelis describing the analysis completed to look at the inside-outside surcharge. It does not include a recommendation to eliminate the surcharge but, as Water Commissioners will recall, the Water Director indicated that she would be recommending elimination of the inside-outside surcharge to the City Council when the matter comes before the Council in early 2021. The analysis supports this recommendation based on the understanding that development densities vary considerably across the entire water service area and, as such, cannot be used to differentiate cost of service between inside and outside city customer groups.

FISCAL IMPACT: No immediate fiscal impact, but each recommendation will have future identifiable fiscal impacts that are being incorporated into the Water Department's current and ongoing financial planning work.

PROPOSED MOTION: Motion to approve Recommendations to the City Council on:

1. Updated System Development Charges,
2. Updated Elevation Surcharge, and
3. Elimination of the Outside City Surcharge.

ATTACHMENTS:

Attachment 1 - City of Santa Cruz Water System Development Charge Study Draft Report November 18, 2020

Attachment 2 - Elevation Surcharge Memo and Map

Attachment 3 - Inside-Outside Customer Surcharge Memo October 26, 2020

CITY OF SANTA CRUZ

Water System Development Charge Study

Draft Report / November 18, 2020

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RAFTELIS

November 18, 2020

Rosemary Menard
Water Director
City of Santa Cruz
212 Locus Street, Suite A
Santa Cruz, CA 95060

Subject: Water System Development Charge

Dear Rosemary Menard,

Raftelis Financial Consultants, Inc. is pleased to provide this Water System Development Charge Report (Report) to the City of Santa Cruz (City). This report details the various methodologies used to compute development charges and summarizes the key findings and recommendations related to the development of the City's Water System Development Charge.

It has been a pleasure working with you, and we thank you and the City staff for the support provided during this study.

Sincerely,
Raftelis Financial Consultants, Inc.

Sanjay Gaur
Vice President

Nancy Phan
Senior Consultant

Jonathan Jordan
Associate Consultant

445 S Figueroa Street, Suite 1925
Los Angeles, CA 90071
www.raftelis.com

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1. Executive Summary

Raftelis was retained by the City of Santa Cruz (City) to update the Water System Development Charge (SDC) study. This report provides a detailed summary of our analysis in which we determined the updated System Development Charge in accordance with Government Code Section 66013. This report serves as formal technical documentation supporting modifications to the System Development Charges for the City.

Currently, the City's Fiscal Year (FY) 2020/21 System Development Fee is $12,133 per Single Family residence or one equivalent meter unit (EMU). Based on the existing approach, an EMU represents the demand placed on the water system by a Single Family residence. Raftelis recommends that the City charge its SDCs based on meter size for all customer classes. The City currently charges Multi-Family Residential customers based on number of units. The SDCs developed in this report reflect this recommended change.

The analysis contained in this report uses the Equity Buy-In Method and justifies modifying the SDC to $11,159 per EMU. **Table 1-1** displays the current and proposed SDCs for all meter sizes. For the purposes of the study, one EMU represents the American Water Works Association (AWWA) safe operating capacity for a ⅝" x ¾" meter. The SDC for larger meters was determined by multiplying the charge for a ⅝" x ¾" meter by the equivalent capacity meter ratio associated with each meter size.

Table 1-1: Current and Proposed SDC by Meter Size

Meter Size	Current SDC	Proposed SDC
5/8 inch	$12,133	$11,159
3/4 inch	$18,199	$16,738
1 inch	$30,331	$27,896
1-1/2 inch	$60,661	$55,792
2 inch	$97,057	$89,267
3 inch	$212,311	$195,271
4 inch	$382,161	$351,487
6 inch	$970,565	$725,290
8 inch	$1,698,488	$1,562,163
10 inch	$2,547,731	$2,343,245
Multi-Family (per unit)	$8,493	Based on meter size

1.1. Overview

The City of Santa Cruz is located along the central coast of California along the northern shore of Monterey Bay and approximately 35 miles southwest of San Jose. The City's Water Department provides service to a population of nearly 100,000 covering over 20 square miles, including the City of Santa Cruz, adjoining unincorporated areas of Santa Cruz County, a small part of the City of Capitola, and coastal agricultural lands to the north. As part of the City's review of rates, fees, and charges, the SDCs are being updated to ensure new system users or existing users requiring increased system capacity recover their fair share of the costs associated with the water facilities required to serve them.

SDCs, also commonly referred to as connection fees, capacity fees, and impact fees, are one-time fees, collected as a condition of establishing a new connection to the City's water system or the expansion of an already-existing connection. The purpose of these fees is to pay for the development's share of the costs of new and existing water facilities. These fees are designed to be proportional to the demand placed on the system by the new or expanded

connection. The recommended SDC for the City do not exceed the estimated reasonable costs of providing the facilities for which they are collected and are of proportional benefit to the property being charged. This report documents the data, methodology, and results of the SDC study.

The primary objective of establishing a full cost-recovery SDC is to provide an equitable means by which new system users or existing customers requiring additional system capacity contribute their fair share towards the costs associated with the water facilities necessary to serve them.

1.2. Economic and Legal Framework

For publicly owned water systems, most of the assets are typically paid for by the contributions of existing customers through rates, charges, and taxes. In service areas that incorporate new customers, the infrastructure developed by previous customers is generally extended towards the service of new customers. Existing customers' investment in the existing system capacity allows newly connecting customers to take advantage of unused surplus capacity. To further financial equity among new and existing customers, new connectors will typically buy-in to the existing and pre-funded facilities based on the percentage of remaining available system capacity, effectively putting them on par with existing customers. In other words, the new users are buying into the existing system through a payment for the portion of facilities that have already been constructed in advance of new development.

1.2.1. Economic Framework

The basic economic philosophy behind SDCs is that the costs of providing water service should be paid for by those that are served by the utility. In order to fairly distribute the value of the system, the charge should reflect a reasonable estimate of the cost of providing capacity to new users and not unduly burden existing users through a comparable rate increase. Accordingly, many utilities make this philosophy one of their primary guiding principles when developing their SDC structure.

The philosophy that service should be paid for by those that receive utility from the system is often referred to as "growth-should-pay-for-growth." For water utilities, the principal is summarized in the AWWA Manual M26, Water Rates and Related Charges:

> "The purpose of designing customer-contributed-capital system charges is to prevent or reduce the inequity to existing customers that results when these customers must pay the increase in water rates that are needed to pay for added plant costs for new customers. Contributed capital reduces the need for new outside sources of capital, which ordinarily has been serviced from the revenue stream. Under a system of contributed capital, many water utilities are able to finance required facilities by use of a 'growth-pays-for-growth' policy."

1.2.2. Legal Framework[1]

In establishing SDCs, it is important to understand and comply with local laws and regulations governing the establishment, calculation, and implementation of SDCs. The following sections summarize the regulations applicable to the development of SDC for the City.

1.2.2.1. California Government Code Requirements

SDCs must be established based on a reasonable relationship to the needs and benefits brought about by the development or expansion. Courts have long used a standard of reasonableness to evaluate the legality of

[1] Raftelis does not practice law nor does it provide legal advice. The above discussion means to provide a general review of apparent state institutional constraints and is labeled "legal framework" for literary convenience only. The City should consult with its counsel for clarification and/or specific review of any of the above or other matters.

development charges. The basic statutory standards governing SDCs are embodied by California Government Code Sections 66013, 66016, 66022, and 66023. Government Code Section 66013, in particular, contains requirements specific to determining utility development charges:

> "Notwithstanding any other provision of law, when a local agency imposes fees for water connections or sewer connections, or imposes capacity charges, those fees or charges shall not exceed the estimated reasonable cost of providing the service for which the fee or charge is imposed, unless a question regarding the amount the fee or charge in excess of the estimated reasonable cost of providing the services or materials is submitted to, and approved by, a popular vote of two-thirds of those electors voting on the issue."

Section 66013 also includes the following general requirements:

- Local agencies must follow a process set forth in the law, making certain determinations regarding the purpose and use of the fee; they must establish a nexus or relationship between a development project and the public improvement being financed with the fee.
- SDC revenues must be segregated from the general fund in order to avoid commingling of SDCs and the General Fund.

1.2.2.2. City of Santa Cruz Code Requirements

In addition to the requirements under the California Government Code, as a charter city, Santa Cruz adopted City Code, Section 16.04.041 – Connection of New Water Services, in 1993 and revised the Code in 2015. Generally, the City Code requires that SDCs be based on the cost of providing service and that SDCs can include both existing assets, available to service growth, as well as future capital improvements required to service growth. The City Code states as follows:

"16.04.041 SYSTEM DEVELOPMENT CHARGE.

(a) Purpose. To mitigate the water supply impacts caused by new development in the city of Santa Cruz water service area, certain public water system improvements must be or have been constructed in order to accommodate system expansion. A System Development Charge shall be assessed to pay the proportional share of the costs of new and existing water facilities necessary to meet the demand resulting from new or enlarged water services.

(b) Charges. A System Development Charge is payable upon the issuance of any permit, or similar grant of authority, for any of the following activities: installation of a new service connection, the addition of a new or additional residential dwelling unit onto an existing service, the upsizing of an existing service connection, or any other increased demand on the water system. The System Development Charge shall be reviewed to determine whether the charge amounts are reasonably related to the impacts created by new or additional demand and whether the listing of system expansion improvements to be financed by system development charge revenues is accurate. Such review shall occur no less than every five years and shall result in a report containing the following:

(1) The specific amount of the charge, including its development methodology;

(2) A list of the specific improvements to be financed by the charge, including the estimated cost of such improvements; and

(3) A description of the correlation between the charge and new development and the benefits from the improvements enabled by the charge. The System Development Charge shall be as adopted by resolution of the City Council and shall be adjusted annually to keep pace with inflation.

(c) Use of Charge Revenues. System Development Charge revenues shall be placed in a separate and special account and such revenues, along with any interest earnings on that account, shall be used exclusively for the following purposes:

(1) To pay for the city's future construction of system expansion and improvements to be financed by System Development Charge revenues;
(2) To reimburse developers who have installed system development financed water facilities which are larger than needed for the certain development and are subject to the terms of a reimbursement agreement; or
(3) To pay for water conservation programs approved by the city council which have the net effect of increasing the amount of water supply available for allocation to new or additional demand."

2. Methodologies

There are two primary steps in calculating SDCs: first, determining the cost of capital related to either new service connections or expansions that increase density or require additional service capacity and second, allocating those costs equitably to various types of connections. There are several available methodologies for calculating SDCs. The various approaches have evolved largely around the basis of changing public policy, legal requirements, and the unique and special circumstances of every local agency. However, there are four general approaches that are widely accepted and appropriate for SDCs. They are equity buy-in, capacity buy-in, incremental cost, and hybrid methods.

2.1. Equity Buy-In Approach

Equity buy-in, also known as the system buy-in approach, rests on the premise that new customers are entitled to service at the same price as existing customers. However, existing customers have already developed the facilities that will serve new customers, including the costs associated with financing those services. Under this approach, new customers pay only an amount equal to the net investment already made by existing users. This net equity investment, or value of the system, is then divided by the current demand of the system – the total number of EMUs – to determine the buy-in cost per EMU.

For example, if the existing system has 100 units of average usage and the new connector uses an equivalent unit, then the new customer would pay 1/100 of the total value of the existing system. By contributing this SDC, the new connector has bought into the existing system. The user has effectively acquired a financial position on par with existing customers and will face future capital challenges on an equal financial footing with those customers. This approach is suited for agencies that currently have capacity in their system and are essentially close to build-out. **Figure 2-1** shows the framework for calculating the equity buy-in SDC.

Figure 2-1: Equity Buy-In Approach

As shown in **Figure 2-1**, under this approach, the value of the system is increased by the balance of the reserves. Reserves are included because they represent the health of the utility and, more specifically, add value to the system as they may be used to maintain the system at the current level of service. Conversely, a utility with no reserves or a negative fund balance would reduce the value of the system since there is no assurance that the current level of service can be maintained.

Debt is also accounted for under the equity buy-in approach, as it is an obligation that is secured by the value of the system. When debt is issued to finance capital improvements, the obligation is typically paid overtime by the existing water customers through water rates. To avoid double charging, the debt obligation is subtracted to determine the net value of the existing system.

2.1.1. Asset Valuation Approaches

As stated earlier, the first step is to determine the asset value of the capital improvements required to furnish services to new users. However, under the equity buy-in approach, the facilities have already been constructed, therefore the goal is to determine the value of the existing system/facilities. To estimate the asset value of the existing facilities required to furnish services to new users, various methods are employed. The principal methods commonly used to value a utility's existing assets are original cost and replacement cost.

Original Cost (OC) – The principal advantages of the original cost method lie in its relative simplicity and stability since the recorded costs of tangible property are held constant. The major criticism levied against OC valuation pertains to the disregard of changes in the value of money, which are attributable to inflation and other factors. As evidenced by history, prices tend to increase rather than to remain constant. Because the value of money varies inversely with changes in price, monetary values in most recent years have exhibited a definite decline; a fact not recognized by the original cost approach. This situation causes further problems when it is realized that most utility systems are developed over time on a piecemeal basis as demanded by service area growth. Consequently, each property addition was paid for with dollars of different purchasing power. When these outlays are added together to obtain a plant value, the result can be misleading.

Replacement Cost (RC) – Changes in the value of the dollar over time, at least as considered by the impacts of inflation, can be recognized by RC asset valuation. The RC represents the cost of duplicating the existing utility facilities (or duplicating its function) at current prices. Unlike the OC approach, the RC method recognizes price level changes that may have occurred since plant construction. The most accurate replacement cost valuation would involve a physical inventory and appraisal of plant components in terms of their RCs at the time of valuation. However, with OC records available, a reasonable approximation of RC plant value can most easily be ascertained by trending historical OCs. This approach employs the use of cost indices to express actual capital costs experienced by the utility in terms of current dollars. An obvious advantage of the RC approach is that it takes into consideration the changes in the value of money over time.

Original Cost Less Depreciation (OCLD) or Replacement Cost Less Depreciation (RCLD) – Considerations of the current value of utility facilities may also be materially affected by the effects of age and depreciation. Depreciation takes into account the anticipated losses in plant value caused by wear and tear, decay, inadequacy, and obsolescence. To provide appropriate recognition of the effects of depreciation on existing utility facilities, both the original cost and reproduction cost valuation measures can also be expressed on an OCLD and RCLD basis. These measures are identical to the aforementioned valuation methods, with the exception that accumulated depreciation is computed for each asset account based upon its age or condition and deducted from the respective total OC or RC to determine the OCLD or RCLD measures of plant value.

2.2. Capacity Buy-In Approach

The capacity buy-in approach is based on the same premise as that for the equity buy-in approach – that new customers are entitled to service at the same rates as existing customers. The difference between the two approaches is that for the capacity buy-in approach, for each major asset, the value is divided by its capacity. This approach has two major challenges. First, to determine the capacity of each major asset is problematic, as the system is designed for peak use, and customer behavior fluctuates based on economics and water conservation. Second, it does not address the financial equity that the current user has contributed to reserves. For instance, all else equal, a larger capital reserve balance would be a positive benefit for a new user since it would produce lower rates in the future. If this were not taken into account, current users would be subsidizing future user rates. **Figure 2-2** shows the framework for calculating the capacity buy-in SDC.

Figure 2-2: Capacity Buy-In Approach

2.3. Incremental Cost Approach

The incremental cost approach is based on the premise that new development (new users) should pay for the additional capacity and expansions necessary to serve the new development. This method is typically used where there is little or no capacity available to accommodate growth and expansion is needed to service the new development. Under the incremental method, growth-related capital improvements are allocated to new development based on their estimated usage or capacity requirements, irrespective of the value of past investments made by existing customers.

For instance, if it costs X dollars ($X) to provide 100 additional equivalent dwelling units of capacity for average usage and a new connector uses one of those equivalent dwelling units, then the new user would pay $X/100 to connect to the system. In other words, new customers pay the incremental cost of capacity. As with the equity buy-in approach, new connectors will effectively acquire a financial position that is on par with existing customers. The use of this method is generally considered to be most appropriate when a significant portion of the capacity required to serve new customers must be provided by the construction of new facilities. **Figure 2-3** shows the framework for calculating the SDC based on the incremental cost approach.

Figure 2-3: Incremental Cost Approach

2.4. Hybrid Approach

The hybrid approach is typically used where some capacity is available to serve new growth, but additional expansion is still necessary to accommodate new development. Under the hybrid approach, the SDC is based on the summation of the existing capacity and any necessary expansions.

In utilizing this methodology, it is important that system capacity costs are not double counted when combining the costs of the existing system with future costs from the capital improvement program (CIP). CIP costs associated with repair and replacement of the existing system should not be included in the calculation unless specific existing facilities which will be replaced through the CIP can be isolated and removed from the existing asset inventory and cost basis. In this case, the rehabilitative costs of the CIP essentially replace the cost of the relevant existing assets in the existing cost basis. Capital improvements that expand system capacity to serve future customers may be included

proportionally to the percentage of the cost specifically required for expansion of the system. **Figure 2-4** summarizes the framework for calculating the hybrid SDC.

Figure 2-4: Hybrid Approach

2.5. Proposed Method: Equity Buy-In Approach

The City of Santa Cruz is nearly fully developed (built-out) and will continue to incorporate a few new customers into the current system. New customers will largely be served by the existing infrastructure, which was purchased and maintained by existing customers. In addition, over the next 11 years, there are no major capital improvement projects that are growth related. Recognizing these factors and taking into consideration the considerable economic investment by existing customers in the capital development of the system, an equity buy-in method was determined to be the most reasonable approach.

3. Proposed System Development Charges

3.1. Value of the System

The first step under the equity buy-in method is determining the value of the existing system. As mentioned above, there are several methods for determining the current value. For the City's updated SDC, Raftelis utilized RC while accounting for the City's 11-year repair and replacement (R&R) CIP, current reserves, and outstanding debt obligations.

3.1.1. Replacement Cost Asset Valuation

Raftelis considered several factors such as the age and condition of the system and the detail and availability of asset records to determine which method would best reflect the value of the system. As with most water systems, the City's water system was constructed over the course of many years. A review of the accounting records indicated that past R&R costs were not consistently accounted for within asset listings. Therefore, a significant portion of the assets have been fully depreciated and show a zero carrying value despite having been well-maintained, being fully operational, and providing significant value to the system.

Due to these factors, the RC method was used to determine the value of the water system. To accomplish this, the City provided fixed asset records on the original cost of the system and replacement costs for land, pipeline, meter, and hydrant assets. Replacement costs for the remaining assets were estimated by adjusting OC to reflect what might be expected if a similar facility were constructed today. This is achieved by escalating the original construction costs by a construction cost index. Engineering News-Record's average Construction Cost Index (ENR CCI) is commonly used for this purpose. It reflects the average costs of a particular basket of construction goods over time. Raftelis selected the ENR CCI, which is reasonable reflection of the cost trends over an extended period of time. Raftelis used a CCI value of 12,367 for 2020 to estimate the replacement costs. **Table 3-1** shows a summary of the City's water system at the original cost, escalated into 2020 dollars (RC) using the ENR CCI for San Francisco[2].

[2] **Appendix A** presents the ENR CCI - San Francisco and **Appendix B** presents the detailed calculation of the RC value of the water system.

Table 3-1: City of Santa Cruz Water System Asset Value

Asset Function	Original Cost	Replacement Cost
Raw Water Pumping	$6,925,008	$14,177,889
Raw Water Storage	$7,134,595	$60,488,999
Raw Water Transmission	$326,255	$139,080,436
Treated Water Elevation Pumping	$2,682,904	$10,218,062
Treated Water Transmission	$17,423,994	$213,126,144
Treated Water (Distribution) Storage	$26,206,745	$35,774,426
Treated Water Distribution	$269,850	$286,437,373
Treatment	$34,108,230	$136,424,658
Customer Service	$122,822	$152,832
Meters	$161,242	$5,589,586
Fire Protection	$0	$4,548,820
Land	$5,501,009	$6,592,551
General	$12,429,280	$16,704,996
Soquel Creek Intertie Facilities	$31,436	$33,807
Total	**$113,323,369**	**$929,350,579**

3.1.2. Less 11-Year Capital Improvement Plan

To better reflect the current value of the system, the City's 11-year CIP, totaling $518,135,870, was deducted from the RC. By reducing the replacement cost by the 11-year CIP, the City acknowledges the system needs repairs and accounts for the use of the system by existing customers. Additionally, capital improvements are typically financed by those receiving benefit from the assets, in other words, the ratepayers or water customers, and therefore, should not be recovered through SDCs. A summary of the City's 11-year CIP is detailed in **Appendix C**.

3.1.3. Plus Water Reserves Balance

Current reserves were established and paid for by existing customers through rates. Reserves are typically used to help pay for necessary capital improvements as well as any operating shortfalls or unforeseen expenditures. Adequate reserves can help mitigate the impacts of expenditure fluctuations on water customers. Both existing and future customers will benefit from the reserves. Therefore, upon connection, new users should contribute their fair share in order to establish equity in the reserves. As of June 30, 2019, the balance of the water reserves totaled $32,092,022[3]**.** The balance of the reserves was added to the current value of the assets.

3.1.4. Less Outstanding Debt Obligations

Lastly, new users will pay their share of any outstanding debt through water rates after joining the system. Therefore, the value of the system should be reduced by the amount of the outstanding principal, which was $32,987,891 as of June 30, 2019[4].

[3] Reserve Balances: The Reserve Balance amount, which includes water utility cash and investments, was derived from the City of Santa Cruz 2019 Comprehensive Annual Financial Report (CAFR).
[4] Debt Obligations: Debt Obligations include outstanding principal for both the 2014 Water Revenue Refunding Bonds ($9,015,000) and the 2016 I-Bank Water Infrastructure Loan ($23,972,891).

3.1.5. Value Of The Existing System

For the City's updated SDC, Raftelis utilized replacement cost while accounting for current reserves, the City's 11-year R&R CIP, and outstanding debt obligations. The 2020 Net Asset Value of the water system of $410,318,840. The calculation of the value of the existing system is summarized in **Table 3-2**.

Table 3-2: Value of Existing System

Net Asset Value	Current Study
Total Assets (Replacement Cost)	$929,350,579
Reserve Balance	$32,092,022
Less 11 Years of Capital Improvement Plan	($518,135,870)
Less Remaining Principal Balance	($32,987,891)
Total - Net Asset Value	**$410,318,840**

3.2. Current Demand

The second step in calculating the SDC is to determine the current demand or capacity of the system. Dividing the value of the system by the capacity provides a unit cost for the development charge. For water systems, capacity is usually expressed in meter equivalents rather than the number of service connections. The benefit of using meter equivalents is that it relates the relative capacity of service connections with meters of various sizes, i.e., accounts for the larger meters generating more demand.

Raftelis utilized customer account data provided by the City to determine the number of meters by meter size. Next, the AWWA standards for maximum rated safe operating flow in gallons per minute (gpm) were used to determine the equivalent meter ratios. The typical Single Family residence or base meter for the City of Santa Cruz is a ⅝" x ¾" meter. As shown in **Appendix D**, the safe operating capacity of a ⅝" x ¾" meter is 20 gpm. For each size of meter, there is a corresponding maximum safe operating capacity, which provides the basis for calculating the meter equivalency ratios (AWWA Meter Ratio). For example, the safe operating capacity for a 1 ½" meter is 100 gpm. Comparing the 1 ½" meter and the ⅝" x ¾" meter on a capacity basis, a 1 ½" meter is equivalent to five (5) ⅝" x ¾" meters. This was determined by dividing the 1 ½" meter capacity of 100 gpm by the ⅝" x ¾" meter capacity of 20 gpm. Therefore, the base meter receives an equivalent meter ratio of 1, whereas the 1 ½" meter receives an equivalent meter ratio of 5. Note, the meter ratios should reflect each meter's capacity in relation to the ⅝" x ¾" meter capacity. Finally, the number of meters (by size) was multiplied by the respective equivalent meter ratio to obtain the equivalent meters.

Table 3-3 summarizes the data used to determine the total equivalent meters of 36,773, which is reflective of the current demand of the system.

Table 3-3: Equivalent Meters

Meter Size	Total Meters	Capacity Ratio	Equivalent Meters
5/8 inch	22,258	1.00	22,258
3/4 inch	543	1.50	815
1 inch	1,513	2.50	3,783
1-1/2 inch	479	5.00	2,395
2 inch	430	8.00	3,440
3 inch	56	17.50	980
4 inch	25	31.50	788
6 inch	13	65.00	845
8 inch	6	140.00	840
10 inch	3	210.00	630
Total	**25,326**		**36,773**

3.3. Equity Buy-In Charge ($/EMU)

The final step in determining the development charge is to divide the total current value of the water system from **Section 3.1.5** by the total EMUs from **Section 3.2**. In 2020 dollars, the total net value of the water system is $410,318,840. The value of the system is then divided by current demand expressed in total EMUs (36,773) to determine the per EMU cost of $11,159[5]. **Figure 3-1** summarizes the calculation of the cost per EMU.

Figure 3-1: SDC Calculation per EMU

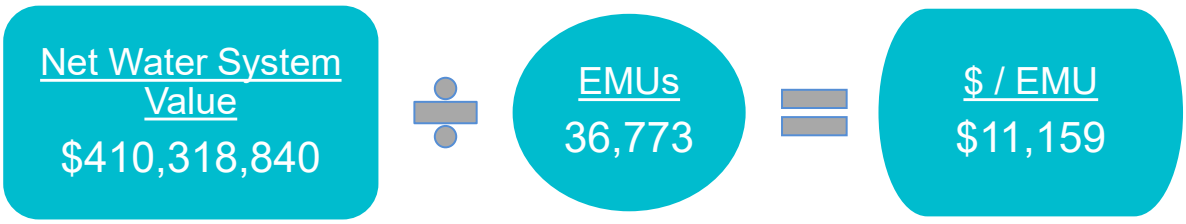

Table 3-4 shows the current and proposed SDCs for all meter sizes. Meter size is representative of water peaking demands on which the water system is designed and is commonly used to calculate development charges. The proposed SDC for each meter size was determined by multiplying the AWWA Meter Ratio (**Table 3-3**) by the charge per EMU of $11,159.

[5] The cost per EMU of $11,158.31 was rounded up to $11,159.

Table 3-4: Current and Proposed SDC by Meter Size

Meter Size	Current SDC	Proposed SDC	Difference ($)
5/8 inch	$12,133	$11,159	($974)
3/4 inch	$18,199	$16,738	($1,461)
1 inch	$30,331	$27,896	($2,435)
1-1/2 inch	$60,661	$55,792	($4,869)
2 inch	$97,057	$89,267	($7,790)
3 inch	$212,311	$195,271	($17,040)
4 inch	$382,161	$351,487	($30,674)
6 inch	$970,565	$725,290	($245,275)
8 inch	$1,698,488	$1,562,163	($136,325)
10 inch	$2,547,731	$2,343,245	($204,486)

3.4. System Development Charge Program Administration

Raftelis recommends adopting the proposed fee of $11,159[6] per EMU to be implemented in January 2021. In conjunction with adopting an updated SDC schedule, Raftelis also recommends the City adjust the SDC annually to keep pace with inflation. The City should also conduct a comprehensive review of its SDC every three to five years to ensure appropriate funding of capital projects and equity among customers.

[6] The cost per EMU of $11,158.31 was rounded up to $11,159.

APPENDICES

APPENDIX A: CONSTRUCTION COST INDEX

Table A - 1: Engineering News Record Construction Cost Index – 20 Cities

Year	CCI
Minimum	251
1920	251
1921	202
1922	174
1923	214
1924	215
1925	207
1926	208
1927	206
1928	207
1929	207
1930	203
1931	181
1932	157
1933	170
1934	198
1935	196
1936	206
1937	235
1938	236
1939	236
1940	242
1941	258
1942	276
1943	290
1944	299
1945	308
1946	346
1947	413
1948	461
1949	477
1950	510
1951	543
1952	569

Year	CCI
1953	600
1954	628
1955	660
1956	692
1957	724
1958	759
1959	797
1960	824
1961	847
1962	872
1963	901
1964	936
1965	971
1966	1,019
1967	1,074
1968	1,155
1969	1,269
1970	1,381
1971	1,581
1972	1,753
1973	1,895
1974	2,020
1975	2,212
1976	2,401
1977	2,576
1978	3,412
1979	3,806
1980	4,372
1981	4,592
1982	4,993
1983	5,123
1984	5,049
1985	5,055
1986	5,508

Year	CCI
1987	5,732
1988	5,734
1989	5,933
1990	6,056
1991	6,222
1992	6,295
1993	6,478
1994	6,530
1995	6,558
1996	6,630
1997	6,731
1998	6,846
1999	6,817
2000	7,448
2001	7,399
2002	7,644
2003	7,789
2004	8,228
2005	8,309
2006	8,618
2007	9,096
2008	9,363
2009	9,738
2010	9,896
2011	10,173
2012	10,337
2013	10,510
2014	10,901
2015	11,163
2016	11,500
2017	11,815
2018	12,054
2019	12,367

APPENDIX B: Replacement Cost Value

Table B - 1: Asset Listing and Replacement Cost Calculation

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
Beltz Treatment Plant Reclaim Tank		Treatment	4/1/2014	30	$179,763		1.13	$203,943
BELTZ WELL #8 & 9	006100	Treatment	1/1/1999	50	$536,266		1.81	$972,917
IRON REMOVAL BUILDING - JOISTED MASONRY	005199	Treatment	1/1/1986	50	$49,700		2.25	$111,583
LAND - APN # 030-181-70	009817	Land	2/10/2012	0	$856,871	$0	1.00	$0
LAND - APN # 032-021-31	005214	Land	1/1/1986	0	$25,278	$24,092	1.00	$24,092
LAND - APN # 032-032-22	005215	Land	6/28/1967	0	$1,934	$17,936	1.00	$17,936
LAND - APN # 032-075-06	005216	Land	6/28/1967	0	$1,508	$21,098	1.00	$21,098
LAND - APN # 032-075-14	005217	Land	6/28/1967	0	$1,508	$21,098	1.00	$21,098
LAND - APN # 999-999-16		Land				$500,499	1.00	$500,499
ACCESS ROAD - BELTZ WATER TREATMENT	007686	Treatment	12/2/2010	20	$91,561		1.25	$114,421
BELTZ PLANT FILTER REHAB	005131	Treatment	6/30/2002	15	$57,910		1.62	$93,687
BELTZ TREATMENT PLANT MOTOR CONTROL CABINET	009191	Treatment	6/30/2015	10	$16,522		1.11	$18,305
BELTZ WELL #12 and Water Treatment Plant	009819	Treatment	7/1/2015	50	$3,943,732		1.11	$4,369,179
Beltz Well 10		Treatment	3/11/2009	20	$265,201		1.27	$336,807
BELTZ WELL 9 GENERATOR	007877	Treatment	9/16/2011	10	$25,105		1.22	$30,520
LAND - APN # 028-291-21		Land	6/28/1967			$21,098	1.00	$21,098
LAND - APN # 031-152-09	005213	Land	6/28/1967	0	$284	$3,603	1.00	$3,603
LAND - APN # 101-051-05	005293	Land	1/1/1971	0	$1,000	$2,461	1.00	$2,461
LAND - APN # 101-112-08	005294	Land	1/1/1971	0	$1,000	$2,461	1.00	$2,461
LAND - APN # 101-172-07	005295	Land	8/16/1954	0	$450	$1,142	1.00	$1,142
LAND - APN # 999-999-05		Land				$134,303	1.00	$134,303
BAY ST. RESERVOIR AERATOR PURCHASE	008557	Treated Water (Distribution) Storage	4/29/2014	7	$40,977		1.13	$46,489
BAY STREET RES - DRAIN	005339	Treated Water (Distribution) Storage	1/1/2002	50	$10,847		1.62	$17,549
BAY STREET RES IMPROVEMENTS - C 700027	008660	Treated Water (Distribution) Storage	3/11/2014	50	$2,608,692		1.13	$2,959,597
BAY STREET RES IMPROVEMENTS - C 700313	008659	Treated Water (Distribution) Storage	3/11/2014	50	$10,434,767		1.13	$11,838,388
BAY STREET RES IMPROVEMENTS - C700027	009282	Treated Water (Distribution) Storage	1/1/2015	50	$1,813,438		1.11	$2,009,071

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
BAY STREET RES IMPROVEMENTS - C700313	009283	Treated Water (Distribution) Storage	1/1/2015	50	$8,770,573		1.11	$9,716,738
BAY STREET RES IMPROVEMENTS 2016 - C700027	009795	Treated Water (Distribution) Storage	7/1/2015	50	$64,262		1.11	$71,195
BAY STREET RES IMPROVEMENTS 2016 -C700313	009794	Treated Water (Distribution) Storage	7/1/2015	50	$258,308		1.11	$286,175
BAY STREET RESERVOIR IMPROVEMENTS 2018	010801	Treated Water (Distribution) Storage	6/30/2018	50	$674,423		1.03	$691,932
BAY STREET RESERVOIR RECONSTRUCTION 2017	010287	Treated Water (Distribution) Storage	6/30/2017	50	$41,859		1.05	$43,815
BAY STREET RESERVOIR SYSTEM TRANSMISSION	005130	Treated Water Transmission	12/11/2007	50	$16,980,297		1.36	$23,087,869
BAY STREET RESERVOIR TRANSMISSION MAIN	007278	Treated Water Transmission	7/2/2008	50	$13,982		1.32	$18,468
BAY STREET TRANSMISSION MAIN	007277	Treated Water Transmission	7/2/2008	50	$55,929		1.32	$73,873
PHOTOVOLTAIC SYSTEM	011335	General	6/30/2019	50	$821,140		1.00	$821,140
Pump Station - Carbonera		Treated Water Elevation Pumping			$110,246		49.27	$5,431,990
WATER TANK - CARBONERA	006083	Treated Water (Distribution) Storage	1/1/1979	30	$186,000		3.25	$604,363
CARBONERA & THURBER GENERATOR	007878	Treated Water Elevation Pumping	8/8/2011	10	$55,050		1.22	$66,923
CARBONERA & THURBER GENERATOR	007879	Treated Water Elevation Pumping	8/8/2011	10	$55,050		1.22	$66,923
LAND - APN # 068-171-23	005237	Land	1/1/1986	0	$35,000	$7,846	1.00	$7,846
PUMP STATION - COAST	005321	Raw Water Pumping	1/1/1997	30	$52,554		1.84	$96,559
PUMP - DELAVEAGA-PACO MODEL # 16-60957-140101-2743	008725	General	10/29/2014	10	$6,574		1.13	$7,458
WATER TANK - DE LAVEAGA 1	005335	Treated Water (Distribution) Storage	1/1/1980	50	$128,000		2.83	$362,079
WATER TANK - DE LAVEAGA 2	005336	Treated Water (Distribution) Storage	1/1/1980	50	$128,000		2.83	$362,079
WATER TANK - DELAVEAGA 1	006093	Treated Water (Distribution) Storage	1/1/1970	30	$105,000		8.96	$940,298
WATER TANK - DELAVEAGA 2	006094	Treated Water (Distribution) Storage	1/1/1970	30	$105,000		8.96	$940,298
LAND - APN # 066-091-03	005232	Land	9/22/1960	0	$3,000	$7,472	1.00	$7,472
PUMP STATION - FELTON BOOSTER - RENOVATI	005323	Raw Water Pumping	1/1/1999	30	$10,000		1.81	$18,142
PUMP STATION - FELTON BOOSTER STATION AD	006142	Raw Water Pumping	7/1/2006	50	$265,087		1.44	$380,409
PUMP STATION - FELTON BOOSTER STATION RE	006143	Raw Water Pumping	6/27/2006	30	$5,190,913		1.44	$7,449,133

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
FELTON DAM CONTROL PANEL UPGRADE	006166	Raw Water Storage	7/25/2007	5	$15,275		1.36	$20,769
FELTON DIVERSION BLADDER DAM	011334	Raw Water Storage	6/30/2019	50	$347,090		1.00	$347,090
FELTON DIVERSION DAM	005154	Raw Water Storage	1/1/1975	50	$523,870		5.59	$2,928,925
FELTON DIVERSION PIPE	005167	Raw Water Transmission	1/1/1999	50	$160,955		1.81	$292,012
LAND - APN # 065-131-31	005230	Land	1/1/1976	0	$34,500	$26,606	1.00	$26,606
LAND - APN # 065-152-02	005231	Land	3/22/1971	0	$900	$2,461	1.00	$2,461
Pump Station - Felton Diversion		Raw Water Pumping	1/1/1975		$917,231		5.59	$5,128,182
2 SEDIMENTATION TANKS, PLUS OTHER - RENO	005120	Treatment	1/1/1965	45	$4,040,000		12.74	$51,455,516
AMMS ADVANCED MAINTENANCE MGMT SYSTEM	006158	Treatment	11/22/2002	5	$14,234		1.62	$23,028
ANALYZER - MICRO 2000	006170	Treatment	6/12/2008	7	$7,655		1.32	$10,111
AS/DV AUTOMATED SAMPLER	007410	Treatment	11/12/2009	10	$6,400		1.27	$8,128
CAPTOR TANK SYSTEM - 6500 GALLON	006163	Treatment	4/30/2008	15	$22,532		1.32	$29,761
CAPTOR TANK SYSTEM - 6500 GALLON	006164	Treatment	4/30/2008	15	$22,532		1.32	$29,761
CAPTOR TANK SYSTEM - 6500 GALLON	006165	Treatment	4/30/2008	15	$22,532		1.32	$29,761
CARBON CONTACT MIXER #6	007206	Treatment	9/25/2008	10	$17,848		1.32	$23,575
CARBON MIXER DRIVE	006187	Treatment	1/26/2003	15	$122,600		1.59	$194,666
CHEMICAL FEED PUMP	007456	Treatment	12/1/2009	10	$8,505		1.27	$10,801
CHEMICAL FEED SYSTEM - WASHWATER CLARIFI	005135	Treatment	6/30/2002	8	$9,273		1.62	$15,002
CHLORINE ANALYZER	011231	Treatment	10/24/2018	10	$5,581		1.03	$5,726
CHLORINE ANALYZER	007457	Treatment	12/1/2009	10	$4,710		1.27	$5,982
CHLORINE ANALYZER - MICRO 2000	006188	Treatment	1/9/2007	7	$8,145		1.36	$11,075
CHLORINE SECONDARY CONTAINMENT	005137	Treatment	1/1/1998	50	$32,276		1.81	$58,309
COMPUTER SERVER - POWEREDGE 2800 FOR SCA	006171	Treatment	9/20/2005	5	$5,059		1.49	$7,530
DIONEX ION CHROMATOGRAPH	005157	Treatment	1/1/1994	10	$20,000		1.89	$37,876
EQUIPMENT - HIGH RATE SETTLER	005162	Treatment	1/1/1999	15	$675,880		1.81	$1,226,211
EQUIPMENT - SCADA COMPUTER SYSTEM UPGRAD	006189	Treatment	7/1/2003	15	$514,549		1.59	$817,008
EQUIPMENT - TREATMENT PLANT CONTROL EQUI	005166	Treatment	1/1/1998	15	$171,934		1.81	$310,614

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
FEED PUMP AND CONTROLLER	006180	Treatment	10/18/2005	10	$14,890		1.49	$22,163
FEED PUMP AND CONTROLLER	006181	Treatment	8/26/2002	10	$5,569		1.62	$9,010
FILTER GALLERY RENOVATION - RESTORE STEE	006191	Treatment	7/1/2003	15	$64,153		1.59	$101,864
FILTER VALVE CONTROLLER	005168	Treatment	1/1/1999	15	$21,904		1.81	$39,739
FILTER VALVE EFFLUENT CONTROLLERS	005169	Treatment	1/1/2002	15	$27,408		1.62	$44,341
FINISHED WATER PUMP	007402	Treatment	4/19/2010	10	$6,322		1.25	$7,900
GHWTP - BULIDING RENOVATIONS	006198	Treatment	7/2/2007	20	$40,815		1.36	$55,496
GHWTP Filter Rehab & Upgrades	009251	Treatment	1/1/2015	10	$3,723,028		1.11	$4,124,667
GHWTP FIRE ALARM SYSTEM	007684	General	2/22/2011	10	$71,062		1.22	$86,389
HIGH RATE SETTLER	005198	Treatment	1/1/1999	50	$714,434		1.81	$1,296,157
HYPOCHLORITE DILUTION PANEL AND FEED SYS	007463	Treatment	12/1/2009	20	$49,600		1.27	$62,992
HYPOCHLORITE FEED SYSTEM	007459	Treatment	12/1/2009	20	$11,677		1.27	$14,829
HYPOCHLORITE GENERATION SYSTEM	006199	Treatment	7/1/2006	7	$44,088		1.44	$63,267
HYPOCHLORITE GENERATOR CELL	007460	Treatment	12/1/2009	20	$9,955		1.27	$12,643
HYPOCHLORITE GENERATOR SYSTEM	007461	Treatment	12/1/2009	20	$117,739		1.27	$149,529
LAND - APN # 060-141-05	005221	Land	4/15/1960	0	$61,500	$0	1.00	$0
PHOTOVOLTAIC SOLAR SYSTEM	007454	General	9/21/2009	50	$1,351,032		1.27	$1,715,818
RECLAIM TANK MIXER	005330	Treatment	1/1/2002	15	$61,462		1.62	$99,433
REMOTE TELEMETRY SYSTEM	008178	Treatment	7/1/2012	25	$1,336,140		1.20	$1,598,498
SAN LORENZO RIVER PUMP	005342	Raw Water Pumping	1/1/2002	50	$44,659		1.62	$72,249
SCADA VIRTUAL STORAGE APPLIANCE,	009161	Treatment	6/30/2015	5	$35,559		1.11	$39,395
SEDIMENTATION BASIN LADDERS	005385	Treatment	1/1/2002	50	$10,610		1.62	$17,164
SERVER - SCADA VIRTUAL SERVER HOST	009002	Treatment	4/28/2015	5	$7,220		1.11	$7,999
SLUDGE COLLECTION SYSTEM REPLACEMENT	006197	Treatment	3/3/2004	15	$234,233		1.50	$352,049
SOFTWARE - SCADA SYSTEM UPGRADE	006173	Treatment	2/25/2005	5	$52,600		1.49	$78,294
SYSTEMS ANALYZER - THM-100 FOR GRAHAM HILL	009032	Treatment	5/11/2015	7	$37,470		1.11	$41,512
TANK - BULK SODIUM HYPOCHLORITE STORAGE 2016	009791	Treatment	3/24/2016	10	$43,834		1.08	$47,140
TANK - BULK SODIUM HYPOCHLORITE STORAGE 2017	009800	Treatment	6/30/2017	10	$18,787		1.05	$19,665

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
TOC ANALYZER & AUTOSAMPLER	010280	Treatment	2/1/2017	10	$27,974		1.05	$29,281
TREATMENT PLANT BASIN RAILINGS	005397	Treatment	1/1/2002	50	$14,000		1.62	$22,649
TREATMENT PLANT CONTROL EQUIPMENT UPGRAD	005398	Treatment	1/1/1999	10	$547,445		1.81	$993,199
TREATMENT PLANT OPTIMIZATION	005399	Treatment	1/1/2002	30	$22,838		1.62	$36,948
WATER PLANT	006080	Treatment	1/1/1970	50	$372,000		8.96	$3,331,341
WATER TREATMENT PLANT - FIRE RESISTIVE/	006095	Treatment	1/1/1960	50	$3,186,000		15.01	$47,817,665
WATER TREATMENT PLANT - MASONRY NONCOMB	006096	Treatment	1/1/1990	50	$49,700		2.04	$101,501
WATER TREATMENT PLANT - ELECTRICAL IMPROVEMENTS	007948	Treatment	7/27/2011	50	$5,675,172		1.22	$6,899,203
LAND - APN # 067-601-01	005235	Land	8/11/1967	0	$10,836	$17,583	1.00	$17,583
PUMP STATION - KITE HILL (Pasatiempo 2)	006193	Treated Water Elevation Pumping	1/1/1980	55	$57,483		2.83	$162,605
WATER TANK - PASATIEMPO 2 (KITE HILL)	006085	Treated Water (Distribution) Storage	1/1/1980	30	$191,000		2.83	$540,290
LAND - APN # 059-011-12	005218	Land	1/1/1994	0	$500	$135	1.00	$135
LAND - APN # 080-201-05	005249	Land	3/3/1955	0	$2,942	$31,212	1.00	$31,212
LAND - APN # 080-201-07	005250	Land	3/3/1955	0	$1,762	$51,258	1.00	$51,258
LAND - APN # 080-201-32	005251	Land	3/3/1955	0	$15,298	$110,779	1.00	$110,779
LAND - APN # 080-241-18	005252	Land	1/1/1984	0	$150	$276,245	1.00	$276,245
EQUIPMENT - LAGUNA CREEK DAM	005163	Raw Water Storage	1/1/2000	30	$16,005		1.66	$26,576
LAGUNA CREEK DAM	005155	Raw Water Storage	1/1/1920	60	$5,852		49.27	$288,337
LAGUNA CREEK DAM - COVER	005206	Raw Water Storage	1/1/2002	20	$30,000		1.62	$48,534
LAGUNA DAM: 14" MAG FLOW TUBE SENSOR	006176	Raw Water Storage	6/6/2003	15	$5,568		1.59	$8,841
LAGUNA FLUME COVER	005207	Raw Water Storage	1/1/2002	50	$22,750		1.62	$36,805
RETAINING WALL - LAGUNA ACCESS ROAD	007264	Raw Water Storage	3/18/2009	20	$105,591		1.27	$134,101
CONTROL BUILDING LONE STAR QUARRY - JOIS	005149	Raw Water Storage	1/1/1990	50	$16,700		2.04	$34,106
LAND - APN # 063-251-02	005229	Land	1/1/1984	0	$0	$0	1.00	$0
Liddell Spring Diversion Springbox		Raw Water Storage	1/1/1913		$29,224		49.27	$1,439,911
BOAT - BOSTON WHALER 2006	006226	General	11/16/2006	7	$23,934		1.44	$34,346
BUILDING - MODULAR	006186	General	11/15/2006	15	$25,304		1.44	$36,312
CANOPY - FRAME/COMBUSTIBLE - 1 FLOOR(S	005134	General	1/1/1980	50	$11,000		2.83	$31,116

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
CUSTOM BOAT - FIESTA	010750	General	8/1/2018	7	$73,670		1.03	$75,583
DOCK - LAUNCH RAMP - REPLACEMENT - 80'X1	006229	General	6/24/2004	20	$30,167		1.50	$45,340
GLEN BRAE RESTROOM - JOISTED MASONRY -	005196	General	1/1/1970	50	$20,100		8.96	$180,000
GLEN CORY RESTROOM - JOISTED MASONRY -	005197	General	1/1/1970	50	$23,000		8.96	$205,970
LAND - APN # 075-081-18	005244	Land	4/23/1964	0	$535	$83	1.00	$83
LAND - APN # 075-081-20	005245	Land	4/23/1964	0	$265	$83	1.00	$83
LAND - APN # 075-081-21	005246	Land	4/23/1964	0	$270	$83	1.00	$83
LAND - APN # 075-083-11	005247	Land	4/23/1964	0	$265	$83	1.00	$83
LAND - APN # 076-251-40	011341	Land	6/30/2019	0	$1,000,000	$1,000,000	1.00	$1,000,000
LOCH LOMOND HEADQUARTERS - FRAME/COMBUSTIBLE	005328	General	1/1/1970	50	$26,800		8.96	$240,000
LOWER LOCH RESTROOM - JOISTED MASONRY -	005300	General	1/1/1980	50	$23,600		2.83	$66,758
MAINTENANCE/STORAGE SHADE STRUCTURES - S	006230	General	6/25/2004	25	$46,890		1.50	$70,475
OUTBOARD MOTOR - HONDA 50 HP LONGSHAFT	006228	General	6/9/2006	5	$5,764		1.44	$8,272
OUTBOARD MOTOR 50 HP	005309	General	1/1/1999	15	$6,250		1.81	$11,339
PARK STORE - FRAME/COMBUSTIBLE - 1 FLO	005310	General	1/1/1990	50	$37,400		2.04	$76,381
PATROL BOAT LICENSE # CF 3561 XC	005311	General	1/1/1994	8	$13,000		1.89	$24,619
RANGER RESIDENCE - FRAME/COMBUSTIBLE -	005329	General	1/1/1980	50	$110,000		2.83	$311,162
RENTAL DOCK - LOCH LOMOND	007466	General	7/1/2009	20	$91,204		1.27	$115,830
RESIDENCE - 10237 NEWELL CREEK RD	011342	General	6/30/2019	30	$849,355		1.00	$849,355
UPPER LOCH RESTROOM - JOISTED MASONRY -	005448	General	1/1/1970	50	$20,100		8.96	$180,000
MAJORS CREEK DIVERSION DAM	005301	Raw Water Storage	1/1/1930	99	$9,100		60.92	$554,390
LAND - APN # 059-161-03	005219	Land	1/1/1984	0	$0	$2,461	1.00	$2,461
LAND - APN # 059-161-04	005220	Land	1/1/1984	0	$0	$2,461	1.00	$2,461
LAND - APN # 062-161-02	005228	Land	1/1/1984	0	$0	$1,745	1.00	$1,745
LAND - APN # 999-999-11		Land				$102,325	1.00	$102,325
STEEL BUILDING	006144	General	2/23/2007	15	$61,008		1.36	$82,952
WATER METER REPAIR SHOP	005452	General	1/1/1998	50	$14,184		1.81	$25,625
WATER METER REPAIR SHOP - 2001 RENOVATIO	005453	General	1/1/2001	50	$39,852		1.67	$66,611

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
Pump Station - Morrissey		Treated Water Elevation Pumping	1/1/1980		$58,756		2.83	$166,206
LAND - APN # 066-091-05	005233	Land	1/1/1977	0	$104	$8,284	1.00	$8,284
Loch Lomond Slide Gates	008172	Raw Water Storage	8/14/2012	50	$1,833,121		1.20	$2,193,065
NEWELL CREEK AERATOR	005307	Raw Water Storage	1/1/1997	15	$233,184		1.84	$428,434
NEWELL CREEK DAM	005308	Raw Water Storage	1/1/1993	99	$125,000		1.91	$238,639
NEWELL CREEK DAM - HYDRAULIC CONTROLS FOR SLIDE GATES	006178	Raw Water Storage	6/27/2006	20	$64,486		1.44	$92,540
Newell Creek Dam - PIEZOMETER 1 1/2 " DIAMETER	007447	Raw Water Storage	7/1/2009	50	$32,121		1.27	$40,794
Newell Creek Dam - PIEZOMETER 1 1/2 " DIAMETER	007448	Raw Water Storage	7/1/2009	50	$32,121		1.27	$40,794
Newell Creek Dam - PIEZOMETER 1 1/2 " DIAMETER	007450	Raw Water Storage	7/1/2009	50	$32,121		1.27	$40,794
Newell Creek Dam - PIEZOMETER 1 1/2 " DIAMETER	007449	Raw Water Storage	7/1/2009	50	$32,121		1.27	$40,794
Newell Creek Dam - PIEZOMETER 1 1/2 " DIAMETER	007445	Raw Water Storage	7/1/2009	50	$32,121		1.27	$40,794
Newell Creek Dam - PIEZOMETER 1 1/2 " DIAMETER	007446	Raw Water Storage	7/1/2009	50	$32,121		1.27	$40,794
Newell Creek Dam - PIEZOMETER 1 1/2 " DIAMETER	007451	Raw Water Storage	7/1/2009	50	$32,121		1.27	$40,794
Newell Creek Dam - PIEZOMETER 3/4" DIAMETER	007452	Raw Water Storage	7/1/2009	50	$32,121		1.27	$40,794
RESERVOIR - LOCH LOMOND	005156	Raw Water Storage	1/1/1960	60	$3,318,306		15.01	$49,803,410
RESERVOIR - LOCH LOMOND	005333	Raw Water Storage	1/1/1980	50	$128,000		2.83	$362,079
BRACKNEY SLIDE PIPELINE IMPROVEMENTS	005133	Raw Water Transmission	1/1/2002	50	$165,300		1.62	$267,421
LAND - APN # 076-251-24	005248	Land	1/1/1984	0	$408,865	$398,451	1.00	$398,451
LAND - APN # 089-101-03	005253	Land	1/1/1982	0	$87,000	$36,311	1.00	$36,311
LAND - APN # 089-101-52	005254	Land	1/1/1976	0	$16,400	$23,319	1.00	$23,319
LAND - APN # 089-101-53	005255	Land	1/1/1977	0	$16,400	$36,048	1.00	$36,048
LAND - APN # 089-101-54	005256	Land	1/1/1979	0	$16,400	$23,301	1.00	$23,301
LAND - APN # 089-101-87		Land	7/25/1972			$51,479	1.00	$51,479
LAND - APN # 089-101-88	005257	Land	1/1/1970	0	$114,800	$164,853	1.00	$164,853
LAND - APN # 089-401-40	005258	Land	1/1/1985	0	$70,000	$124,970	1.00	$124,970
LAND - APN # 090-091-01	005259	Land	1/1/1984	0	$522,446	$719,841	1.00	$719,841
LAND - APN # 090-151-05	005260	Land	1/1/1996	0	$40,000	$0	1.00	$0
LAND - APN # 091-092-05	005261	Land	6/12/1959	0	$28,335	$36,927	1.00	$36,927

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
LAND - APN # 091-092-06	005262	Land	1/1/1984	0	$127,620	$175,837	1.00	$175,837
LAND - APN # 092-011-01	005263	Land	1/1/1984	0	$30,813	$68,051	1.00	$68,051
LAND - APN # 092-011-32	005264	Land	6/12/1959	0	$46,665	$113,857	1.00	$113,857
LAND - APN # 092-021-02	005265	Land	2/8/1968	0	$2,364	$12,022	1.00	$12,022
LAND - APN # 092-035-03	005266	Land	3/19/1978	0	$2,021	$21,980	1.00	$21,980
LAND - APN # 092-035-05	005267	Land	1/1/1978	0	$120	$1,941	1.00	$1,941
LAND - APN # 092-071-07	005268	Land	3/5/1969	0	$1,860	$10,462	1.00	$10,462
LAND - APN # 092-084-07	005269	Land	12/1/1960	0	$1,590	$15,209	1.00	$15,209
LAND - APN # 092-111-02	005270	Land	8/22/1969	0	$3,025	$9,582	1.00	$9,582
LAND - APN # 092-111-04	005271	Land	12/4/1981	0	$165	$177	1.00	$177
LAND - APN # 092-111-05	005272	Land	3/9/1978	0	$60	$83	1.00	$83
LAND - APN # 092-121-04	005273	Land	5/3/1967	0	$2,950	$31,562	1.00	$31,562
LAND - APN # 092-121-06	005274	Land	1/1/1978	0	$60	$879	1.00	$879
LAND - APN # 092-181-10	005275	Land	3/9/1978	0	$4,140	$14,419	1.00	$14,419
LAND - APN # 092-191-16	005276	Land	1/1/1978	0	$120	$922	1.00	$922
LAND - APN # 092-191-30	005277	Land	1/1/1978	0	$100	$879	1.00	$879
LAND - APN # 092-191-32	005278	Land	12/1/1960	0	$1,140	$20,484	1.00	$20,484
LAND - APN # 092-291-04	005279	Land	1/1/1976	0	$234	$1,321	1.00	$1,321
LAND - APN # 092-291-05	005280	Land	1/1/1976	0	$38	$439	1.00	$439
LAND - APN # 092-291-06	005281	Land	9/3/1976	0	$26,480	$59,344	1.00	$59,344
LAND - APN # 092-311-01	005282	Land	5/25/1959	0	$4,070	$55,478	1.00	$55,478
GRAVITY TRUNK MAIN VALVE	011340	Treated Water Transmission	6/30/2019	50	$253,000		1.00	$253,000
O'Neill Ranch Intertie		Soquel Creek	4/1/2016	20	$31,436		1.08	$33,807
LAND - APN # 072-173-08	005240	Land	12/8/1960	0	$4,000	$3,252	1.00	$3,252
LAND - APN # 999-999-12		Land				$26,694	1.00	$26,694
LAND - APN # 999-999-13		Land				$11,443	1.00	$11,443
WATER TANK - PASATIEMPO 1	006084	Treated Water (Distribution) Storage	1/1/1970	30	$53,000		8.96	$474,627
REGGIARDO DAM	005331	Raw Water Storage	1/1/1950	99	$48,500		24.25	$1,176,092
LAND - APN # 061-331-11	005225	Land	1/1/1969	0	$209	$263	1.00	$263
LAND - APN # 061-392-07	005226	Land	1/1/1969	0	$130	$83	1.00	$83
LAND - APN # 067-261-57	005234	Land	1/1/1988	0	$17,460	$9,867	1.00	$9,867
LAND - APN # 999-999-23		Land				$33,093	1.00	$33,093
LAND - APN # 999-999-24		Land				$33,092	1.00	$33,092
Pump Station - Rolling Woods		Treated Water Elevation Pumping	1/1/1972		$24,925		7.05	$175,842

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
WATER TANK - ROLLINGWOODS	006086	Treated Water (Distribution) Storage	1/1/1972	30	$49,500		7.05	$349,215
LAND - APN # 102-071-60	005296	Land	1/1/1979	0	$2,444	$2,637	1.00	$2,637
LAND - APN # 102-071-64	005297	Land	1/1/1979	0	$2,125	$2,637	1.00	$2,637
LAND - APN # 999-999-21		Land				$45,959	1.00	$45,959
LAND - APN # 999-999-22		Land				$30,050	1.00	$30,050
WATER TANK - SANTA CRUZ GARDENS 1	006087	Treated Water (Distribution) Storage	1/1/1979	30	$77,500		3.25	$251,818
WATER TANK - SANTA CRUZ GARDENS 2	006088	Treated Water (Distribution) Storage	1/1/1979	30	$77,500		3.25	$251,818
LAND - APN # 060-421-01	005224	Land	1/1/1982	0	$1,098,160	$57,975	1.00	$57,975
PUMP STATION - SAN LORENZO RIVER	005324	Raw Water Pumping	1/1/2001	30	$166,600		1.67	$278,463
SAN LORENZO RIVER DIVERSION & PUMP STATION	005340	Raw Water Pumping	1/1/1978	99	$170,000		3.62	$616,147
SAN LORENZO RIVER INTAKE IMPROVEMENT	005341	Raw Water Pumping	1/1/1998	50	$5,540		1.81	$10,008
PUMP - FLOWAY ASSEMBLY - SLR SPARE	006175	Raw Water Pumping	12/9/2004	5	$14,208		1.50	$21,354
Pump Station - Springtree		Treated Water Elevation Pumping	1/1/1982		$208,310		2.48	$515,932
LAND - APN # 060-192-06	005222	Land	12/26/1957	0	$400	$8,265	1.00	$8,265
LAND - APN # 060-192-21	009818	Land	4/6/2016	0	$26,429		1.00	$26,429
Tait Well 4		Treatment	1/1/1989	50	$160,240		2.08	$334,040
TAIT WELLS 1B & 3B	010818	Treatment	9/13/2017	50	$1,755,690		1.05	$1,837,711
PUMP STATION - THURBER LANE	005320	Treated Water Elevation Pumping	1/1/1965	50	$11,700		12.74	$149,017
LAND - APN # 102-372-10	005299	Land	1/1/1972	0	$5,781	$13,926	1.00	$13,926
LAND - APN # 999-999-06		Land				$19,611	1.00	$19,611
LAND - APN # 999-999-07		Land				$19,611	1.00	$19,611
UNION/LOCUST BUILDING REMODEL	011338	General	6/30/2019	30	$863,315		1.00	$863,315
LAND - APN # 001-022-39	005209	Land	1/1/1964	0	$10,000	$0	1.00	$0
UNIVERSITY FACILITY IMPROVEMENTS	005446	Treated Water Elevation Pumping	1/1/2002	30	$1,119,348		1.62	$1,810,873
LAND - APN # 001-011-08	005208	Land	1/1/1958	0	$1,500	$0	1.00	$0
U - 2 METER VAULT	006119	Treated Water Elevation Pumping	7/1/2003	50	$12,335		1.59	$19,586
WATER TANK - UNIVERSITY 2	006089	Treated Water (Distribution) Storage	1/1/1970	30	$105,000		8.96	$940,298

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
UNIVERSITY PUMP Stations 2, 4, and 6	005447	Treated Water Elevation Pumping	1/1/2001	30	$824,572		1.67	$1,378,229
U-4 METER VAULT	005444	Treated Water Elevation Pumping	1/1/2002	50	$5,700		1.62	$9,221
WATER TANK - UNIVERSITY 4	006090	Treated Water (Distribution) Storage	1/1/1975	30	$82,500		5.59	$461,252
WATER TANK - UNIVERSITY 5	006091	Treated Water (Distribution) Storage	1/1/1970	30	$177,000		8.96	$1,585,073
LAND - APN # 062-081-16	005227	Land	1/1/1984	0	$0	$22,244	1.00	$22,244
WATER QUALITY LAB - FRAME/COMBUSTIBLE -	006081	Treatment	1/1/1988	50	$240,000		2.16	$517,591
WATER QUALITY LAB REMODEL	007939	Treatment	12/5/2012	50	$1,646,819		1.20	$1,970,181
LAND - APN # 074-011-31	005241	Land	8/13/1975	0	$151,913	$195,269	1.00	$195,269
LAND - APN # 074-012-07	005242	Land	2/11/1969	0	$95,350	$213,249	1.00	$213,249
LAND - APN # 074-041-05	005243	Land	2/11/1969	0	$4,770	$31,299	1.00	$31,299
LAND - APN # 093-011-24	005283	Land	4/27/1967	0	$10,050	$15,209	1.00	$15,209
LAND - APN # 093-011-29	005284	Land	5/27/1970	0	$3,000	$7,298	1.00	$7,298
LAND - APN # 093-011-56	005285	Land	12/26/1969	0	$6,810	$12,748	1.00	$12,748
LAND - APN # 093-041-01	005287	Land	6/7/1968	0	$11,500	$15,559	1.00	$15,559
LAND - APN # 093-041-09	005288	Land	10/27/1969	0	$14,250	$22,859	1.00	$22,859
LAND - APN # 093-051-32	005289	Land	4/15/1969	0	$24,000	$36,927	1.00	$36,927
LAND - APN # 093-051-47	005290	Land	8/21/1972	0	$139,910	$265,034	1.00	$265,034
LAND - APN # 093-051-48	005291	Land	2/21/1969	0	$118,561	$199,930	1.00	$199,930
LAND - APN # 093-051-49	005292	Land	8/9/1974	0	$24,000	$52,754	1.00	$52,754
LAND - APN # 093-051-47		Land	8/21/1972			$265,034	1.00	$265,034
LAND - APN # 093-051-48		Land	2/21/1969			$199,930	1.00	$199,930
LAND - APN # 093-051-49		Land	8/9/1974			$52,754	1.00	$52,754
2011 FORD ESCAPE HYBRID: 6 CYL; 4X4	007802	General	3/8/2012	7	$27,811		1.20	$33,272
2011 FORD F450: REGULAR CAB; A/C;	007792	General	3/8/2012	7	$54,939		1.20	$65,726
2013 F150 4X4 SC SB #414	008540	General	10/4/2013	7	$25,478		1.18	$29,980
2013 FORD F150 4X4 SUPERCAB, V6, SHORT	008265	General	11/6/2013	7	$32,216		1.18	$37,908
2013 FORD F150, REG CAB, V6, SHORT BED	008430	General	4/3/2014	7	$11,997		1.13	$13,611
2013 FORD F150, REG CAB, V6, SHORT BED	008433	General	4/3/2014	7	$11,997		1.13	$13,611
2013 FORD F150, REG CAB, V6, SHORT BED	008569	General	3/31/2014	7	$11,997		1.13	$13,611

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
2013 FORD F150, REG CAB, V6, SHORT BED	008570	General	3/31/2014	7	$11,997		1.13	$13,611
2013 TOYOTA TACOMA: DOUBLE-CAB, 4X4,	008188	General	9/12/2013	7	$35,799		1.18	$42,125
2014 FORD ESCAPE; 2.0 L ECOBOOST, AUTO	008203	General	9/16/2013	7	$25,377		1.18	$29,861
2014 FORD F250 SUPERCAB TRUCK EQUIPPED	008366	General	1/23/2014	7	$19,516		1.13	$22,141
2014 FORD F250 SUPERCAB TRUCK EQUIPPED	008369	General	1/23/2014	7	$19,516		1.13	$22,141
2014 FORD F250 SUPERCAB TRUCK EQUIPPED	008567	General	11/6/2013	7	$19,516		1.18	$22,964
2014 FORD F250 SUPERCAB TRUCK EQUIPPED	008568	General	11/6/2013	7	$19,516		1.18	$22,964
2014 FORD F250: 4X54, SUPER CAB, 6.7L	008333	General	12/17/2013	7	$35,842		1.18	$42,175
2014 FORD F350 SUPERDUTY TRUCK; 4X2, W/	008378	General	2/5/2014	7	$37,190		1.13	$42,193
2014 FORD F550 3-4 YARD DUMP BODY; TARP	008363	General	1/23/2014	7	$54,910		1.13	$62,296
2017 TOYOTA TACOMA PICK UP	010420	General	1/23/2018	7	$36,640		1.03	$37,591
2018 FORD F150 PICK UP	010482	General	3/1/2018	7	$25,189		1.03	$25,843
AIR COMPRESSOR - DOOSAN P185WDZ TOWABLE	008994	General	4/7/2015	7	$20,515		1.11	$22,728
AIR STRIPPER EZ-36.6SS	008556	General	3/4/2014	10	$86,740		1.13	$98,408
ALIGNMENT TOOL - LINELAZER SET	006169	General	9/19/2006	7	$5,667		1.44	$8,132
ASPHALT PAVING	005122	General	1/1/1990	20	$35,900		2.04	$73,317
ASPHALT PAVING	005123	General	1/1/1988	20	$23,700		2.16	$51,112
ASPHALT PAVING	005121	General	1/1/1990	20	$12,300		2.04	$25,120
ATOMIC ABSORPTION SPECTROMETER	006201	Treatment	1/2/2003	10	$80,633		1.59	$128,030
ATTACHMENT - BOBCAT BREAKER	010639	General	6/14/2018	10	$9,974		1.03	$10,233
ATV - 2018 HONDA TRX	010466	General	2/21/2018	7	$8,499		1.03	$8,720
AUTO FEED THREADING MACHINE	005125	Treatment	1/1/1991	15	$5,000		1.99	$9,938
BACKHOE - 2012 CASE 580SN BACKHOE LOADER	008042	General	1/17/2013	7	$99,833		1.18	$117,472
BACKHOE - 2016 580SN	009965	General	1/19/2017	10	$116,934		1.05	$122,397
BASE STATION REPEATER - 2	005126	Meters	1/19/2007	7	$1,005		1.36	$1,366
BASE STATION REPEATER - 3	005127	Meters	1/19/2007	7	$1,005		1.36	$1,366
BASE STATION REPEATER - 4	005128	Meters	1/19/2007	7	$450		1.36	$612

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
BASE STATION REPEATER -1	005129	Meters	1/19/2007	7	$2,244		1.36	$3,051
CHIPPER- 6" DISC-STYLE CHIPPER	005136	General	6/30/2002	8	$12,521		1.62	$20,256
CLORAMINE CONVERSION	005139	Treatment	1/1/1998	30	$80,967		1.81	$146,274
COLOR LASERJET PRINTER	006108	General	3/17/2003	5	$5,454		1.59	$8,660
COMPRESSOR - AIR ROTARY SKREW	007371	General	2/5/2010	8	$16,534		1.25	$20,662
COMPRESSOR - AIR ROTARY SKREW	007383	General	2/5/2010	8	$16,534		1.25	$20,662
COMPRESSOR - LL AIR COMPRESSOR	006177	General	6/30/2006	8	$12,215		1.44	$17,529
COMPRESSOR 106	005141	General	1/1/1984	8	$9,825		2.45	$24,065
COMPUTER SERVER	005143	General	1/1/2002	5	$2,494		1.62	$4,034
COMPUTER SWITCH - CISCO 9300	011212	General	6/30/2019	5	$7,898		1.00	$7,898
COMPUTER-TOWER SERVER-DELL 2600	006172	General	11/30/2003	5	$5,819		1.59	$9,239
CONDUIT BENDER	009565	General	3/30/2016	10	$11,848		1.08	$12,742
CONTAINMENT WALL - SODIUM HYPOCLORITE B	007458	Treatment	12/1/2009	10	$12,400		1.27	$15,748
CONTROL BUILDING - JOISTED MASONRY - 1	005148	General	1/1/1980	50	$10,500		2.83	$29,702
CONVERT UNIVERSITY PUMP STATIONS TO SODI	005150	Treated Water Elevation Pumping	1/1/2000	15	$38,425		1.66	$63,804
COPIER	005151	General	1/1/1998	5	$13,207		1.81	$23,859
COPIER	005152	General	1/1/1997	5	$8,445		1.84	$15,516
COPIER	005153	General	1/1/1997	5	$6,245		1.84	$11,474
COPIER DIGITAL IMAGING SYSTEM	006109	General	10/3/2007	5	$8,894		1.36	$12,093
COPIER - KONICA MINOLTA BIZHUB C454 COLOR MFP	007950	General	9/4/2012	5	$5,638		1.20	$6,745
COPIER - SAVIN 9040B DIGITAL IMAGING SYS	007205	General	10/23/2008	5	$7,506		1.32	$9,915
CORP YARD MATERIAL BUNKER YARD	008545	General	10/29/2013	30	$210,387		1.18	$247,561
CRW SOFTWARE IMPROVEMENT	008396	Customer Service	8/15/2014	5	$24,800		1.13	$28,136
DEBRIS BLOWER - TOW BEHIND - 2551E	006227	General	4/15/2005	5	$5,279		1.49	$7,858
DESK - RAPID EXTRACTION	009293	Customer Service	10/1/2015	10	$29,157		1.11	$32,303
DIGITAL DOSING PUMP	010723	Treatment	6/30/2018	10	$6,121		1.03	$6,280
DIGITAL DOSING PUMP	010745	Treatment	6/30/2018	10	$6,121		1.03	$6,280
DRILL PRESS - BAILEIGH DP - 1500VS	007685	General	5/26/2011	5	$5,987		1.22	$7,278

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
DUMP BED - CRYSTEEL 3 TO 4 YD	007598	General	5/12/2011	7	$10,601		1.22	$12,887
DUMP TRUCK - FORD 2017	010177	General	6/30/2017	10	$100,493		1.05	$105,187
DUST COLLECTOR - AAF	007255	General	6/8/2009	10	$18,480		1.27	$23,470
EDEN SOFTWARE - PY/HR MODULE	006103	General	10/31/2003	5	$69,419		1.59	$110,225
EDEN SYSTEMS	007455	General	6/21/2010	5	$295,981		1.25	$369,880
ELECTRIC CART - TAYLOR GREEN	007387	General	2/26/2010	7	$18,358		1.25	$22,941
ELECTRICAL RECORDER - FLUKE P/N 1730/US/WWG	008985	General	4/2/2015	5	$9,996		1.11	$11,074
ELECTRODELESS POWER SUPPLY	005159	General	1/1/1997	15	$5,390		1.84	$9,903
ELEVATOR HYDRAULIC PUMP	005160	Treatment	1/1/1998	15	$9,415		1.81	$17,009
EQUIPMENT - GENERATORS	005161	General	1/1/2002	15	$336,533		1.62	$544,441
EQUIPMENT - REMOTE FACILITIES CONTROL UP	005164	General	1/1/2001	15	$255,000		1.67	$426,219
EQUIPMENT - TANK LEVEL INDICATORS	007465	General	12/1/2009	10	$8,308		1.27	$10,552
EQUIPMENT - TRANSFER SWITCH	006190	General	3/25/2005	5	$15,195		1.49	$22,618
EQUIPMENT: WATER METER TEST BENCH	005454	Meters	1/1/1992	10	$7,000		1.96	$13,753
EQUIPMENT-CHLORINE FEED-S10KA	006179	Treatment	1/27/2004	8	$7,449		1.50	$11,195
EXCAVATOR (BOBCAT)	007932	General	4/30/2012	8	$48,429		1.20	$57,938
EXPLORER - 2016 FORD F150	009457	General	1/13/2016	10	$27,595		1.08	$29,677
EXPLORER - 2019 FORD EXPLORER	010942	General	12/18/2018	8	$32,776		1.03	$33,626
FORKLIFT - 2014 NISSAN : 6K PROPANE	008893	General	2/12/2015	7	$32,143		1.11	$35,611
FORKLIFT - 2016 HYSTER	009987	General	2/21/2017	10	$29,543		1.05	$30,924
FORKLIFT - PNEUMATIC	006159	General	3/18/2003	10	$27,604		1.59	$43,831
FOURTREX RANCHER 4X4	005191	General	6/30/2002	8	$6,038		1.62	$9,769
GATEWAY SENUS FLEXNET TOWER	007682	Meters	4/14/2011	10	$29,975		1.22	$36,440
GC AUTOSAMPLER/CONCENTRATOR	007984	Treatment	10/1/2012	7	$29,309		1.20	$35,064
GENERATOR	006182	General	6/30/2003	15	$231,138		1.59	$367,003
GENERATOR	007254	General	6/25/2009	10	$18,022		1.27	$22,888
GENERATOR - 10KW	006183	General	8/7/2003	8	$5,185		1.59	$8,233
GENERATOR - 151 KW	005192	General	1/1/1999	8	$32,287		1.81	$58,576
GENERATOR - 25 KVA PORTABLE	007311	General	8/20/2009	8	$15,330		1.27	$19,469
GENERATOR - 250RD	006184	General	7/15/2003	8	$48,525		1.59	$77,049
GENERATOR - DOOSAN TRAILER	009331	General	10/27/2015	10	$85,004		1.11	$94,175

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
GENERATOR - GS12-LP	006185	General	3/30/2004	8	$9,628		1.50	$14,471
GENERATOR - KOHLER 24 RCL, 120/240 VAC, 3 PHASE	009023	General	5/5/2015	10	$19,160		1.11	$21,227
GENERATOR - KOHLER 24 VOLT	010436	General	2/7/2018	10	$6,543		1.03	$6,712
GENERATOR - KOHLER 8.5 RES-8.5KW	007503	General	12/13/2010	5	$6,824		1.25	$8,528
GENERATOR - KOHLER 8.5 KW	007625	General	7/7/2011	5	$8,592		1.22	$10,445
GENERATOR - MODEL 3500	006167	General	6/20/2007	7	$18,376		1.36	$24,986
GENERATOR - OLYMPIAN STANDBY	006168	General	2/15/2007	7	$12,530		1.36	$17,037
GENERATOR SET - KOHLER	009677	General	6/7/2016	10	$12,404		1.08	$13,339
GEOEXPLORER XH 2008	007204	General	10/7/2008	5	$5,566		1.32	$7,352
HARDWARE UPGRADE TO OUR NETWORK	008397	General	3/4/2014	10	$15,315		1.13	$17,376
HEAVY EQUIPMENT - 2017 CAT ROLLER	010382	General	12/14/2017	7	$57,691		1.05	$60,386
HEAVY EQUIPMENT - CASE BACHOE	007209	General	10/17/2008	10	$81,670		1.32	$107,873
HF SCIENTIFIC TSCM- P/N 19549 MICRO 200	008481	General	5/13/2014	10	$6,138		1.13	$6,964
HOIST - WIRE ROPE - 3 TON ELECTRIC W/10'	006192	General	6/25/2004	8	$10,705		1.50	$16,089
HYDEC PRESSURE REDUCING STATION	007253	Treated Water (Distribution) Storage	1/14/2009	20	$23,599		1.27	$29,971
HYDRAULIC HAMMER	010746	General	6/30/2018	10	$12,644		1.03	$12,972
ION CHROMATOGRAPHY INTEGRION INSTRUMENT	010585	Treatment	5/3/2018	10	$48,944		1.03	$50,214
ION CHROMATOGRAPHY SYSTEM, DIONEX ICS200	006202	General	12/22/2004	5	$33,952		1.50	$51,029
ITEM #061-1027: AUTO CRANE 3203 PRX-FM	008525	General	6/30/2014	10	$14,600		1.13	$16,564
KONICA MINOLTA BIZHUB C364 COLOR MFP W/	008167	General	9/9/2013	10	$5,598		1.18	$6,588
LAB DISHWASHER / FLASK SCRUBBER	007847	Treatment	8/8/2011	7	$7,324		1.22	$8,904
LABORATORY CHARGE ANALYZER	009976	Treatment	2/9/2017	10	$13,559		1.05	$14,193
LABORATORY MICROSCOPE FOR DIGITAL CAMERA SYSTEM	008550	General	7/30/2013	10	$14,802		1.18	$17,417
LAND - APN # 002-014-27	005210	Land	1/1/1993	0	$0	$0	1.00	$0
LAND - APN # 067-521-33	005236	Land	1/1/1983	0	$0	$0	1.00	$0
LAND - APN # 093-011-63	005286	Land	11/20/1973	0	$94,316	$10,143	1.00	$10,143

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LANDA HOT WATER PRESSURE WASHER #	008460	General	5/22/2014	10	$14,836		1.13	$16,831
LEVEL CONTROL SYSTEM	007464	General	12/1/2009	10	$14,045		1.27	$17,837
LOADER - BACKHOE IC580 SM	006206	General	2/28/2006	8	$64,409		1.44	$92,429
METAL STORAGE BUILDING 30 FT. LONG X 15	007999	General	11/20/2012	10	$13,632		1.20	$16,309
METER - FIRE SERVICE	006219	Meters	1/28/2005	7	$7,249		1.49	$10,789
METER TESTER	005302	Meters	1/1/1994	10	$5,730		1.89	$10,851
METERING PUMP SKID SYSTEM	005303	Treated Water Elevation Pumping	6/30/2002	8	$13,454		1.62	$21,765
METERING PUMP-VERTICAL TURBINE	005304	Treated Water Elevation Pumping	6/30/2002	8	$5,702		1.62	$9,225
MIXER	006194	Treatment	2/24/2003	10	$8,814		1.59	$13,995
MONITOR - STREAMING CURRENT	010839	General	10/16/2018	5	$12,055		1.03	$12,368
MOTOR - 150 HP FOR SLR SPARE PUMP	006174	General	10/22/2004	5	$5,753		1.50	$8,647
MOUNTED BREAKER	005305	General	1/1/2001	10	$9,196		1.67	$15,371
NANOPURE WATER SYSTEM	006203	Treatment	9/29/2006	7	$5,152		1.44	$7,393
NETSERVER-SCWTQC	005306	General	1/1/1998	5	$5,026		1.81	$9,080
NETWORK SWITCH & MODULE	009750	General	10/27/2015	10	$12,327		1.11	$13,657
OBS 3A TURBIDITY METER	006157	General	12/17/2002	15	$5,159		1.62	$8,346
PAVEMENT BREAKER	005312	General	1/1/1988	15	$71,888		2.16	$155,036
PAVEMENT BREAKER	005313	General	1/1/2001	15	$10,908		1.67	$18,232
PAVEMENT BREAKER - BACKHOE	005314	General	6/30/2002	15	$8,800		1.62	$14,237
PHOENIX 8000 UV-PERSULFATE TOC ANALYZER	006204	Treatment	1/22/2003	10	$28,655		1.59	$45,499
PIPE THREADING MACHINE	005315	General	1/1/2002	15	$10,099		1.62	$16,338
PIPES - 10" DUCTILE IRON	011328	Treated Water Distribution	6/30/2019	50	$61,602		1.00	$61,602
PIPES - 6" PVC	011336	Treated Water Distribution	6/30/2019	50	$170,078		1.00	$170,078
PIPES - 8" PVC	011337	Treated Water Distribution	6/30/2019	50	$38,170		1.00	$38,170
PLC ANALOG CARDS	007462	General	12/1/2009	10	$5,306		1.27	$6,738
PORTABLE A/C TESTER MACHINE - AVTRON 2600	010669	General	6/26/2018	10	$7,968		1.03	$8,175
PRINTER	006145	General	3/10/2003	5	$6,842		1.59	$10,864
PRODUCTION METERS	005316	Treatment	1/1/2002	15	$14,500		1.62	$23,458
PROGRAMMABLE CONTROLLER	005317	Treatment	1/1/2000	5	$20,858		1.66	$34,634

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
PROLIANT COMPUTER FOR NT SERVER	005318	General	1/1/1999	5	$6,638		1.81	$12,043
PTO CHIPPER	007933	General	6/27/2012	8	$7,706		1.20	$9,219
PUMP - SAN LORENZO	007940	Raw Water Pumping	7/1/2011	50	$88,217		1.22	$107,243
PUMP - GOULD SPLIT CASE-3410 2x3-11	006195	Treated Water Elevation Pumping	6/29/2005	5	$8,989		1.49	$13,380
PUMPHOUSE - FRAME/COMBUSTIBLE - 1 FLOO	005325	Treated Water Elevation Pumping	1/1/1986	50	$14,800		2.25	$33,228
PUMPHOUSE - JOISTED MASONRY - 1 FLOOR(	005326	Treated Water Elevation Pumping	1/1/1992	50	$36,500		1.96	$71,710
PUMPHOUSE - JOISTED MASONRY - 1 FLOOR(	005327	Treated Water Elevation Pumping	1/1/1980	50	$14,000		2.83	$39,602
PUMPS - FLOWAY	006196	Treated Water Elevation Pumping	2/24/2003	10	$7,559		1.59	$12,002
RADIO TOWER	009743	Meters	7/1/2015	10	$39,096		1.11	$43,313
RECLAIMATION TANK	008665	Treatment	4/1/2014	30	$206,789		1.13	$234,605
REEL WITH HOSE - REEL-EX, HAPPY HOSE	006116	General	6/25/2004	8	$5,472		1.50	$8,224
REGIONAL NETWORK INTERFACE - FLEX TOWER	007683	Meters	4/14/2011	10	$24,090		1.22	$29,286
REMITTANCE PROCESSING SYSTEM	007876	Customer Service	2/22/2012	5	$52,669		1.20	$63,011
RENOVATIONS - WATER DISTRIBUTION LOCKER ROOM	006220	General	1/24/2006	15	$203,591		1.44	$292,160
RESIDUAL CHLORINE ANALYZER	011157	Treatment	5/30/2019	10	$5,177		1.00	$5,177
RETAINING WALL - SOLIDER PILE	007693	General	7/1/2010	20	$318,142		1.25	$397,573
SCANNER - FUJITSU FI 5750C	006110	General	12/12/2006	7	$8,522		1.44	$12,229
SEDAN - 2006 FORD FOCUS	006152	General	10/26/2005	8	$13,865		1.49	$20,637
SEDAN - 2008 FORD ESCAPE HYBRID	006222	General	1/3/2008	7	$26,483		1.32	$34,980
SEDAN - 2018 PRIUS II	010572	General	4/23/2018	7	$25,984		1.03	$26,659
SEDAN-GENERAL PURPOSE	006153	General	5/5/2004	7	$10,000		1.50	$15,030
SENSUS FLEXNET TOWER GATEWAY BASE	007774	Meters	1/12/2012	10	$43,400		1.20	$51,922
SERVER - DELL PE 2950	007208	General	8/22/2008	5	$5,550		1.32	$7,331
SERVER STORAGE AC	008552	General	6/3/2014	10	$6,580		1.13	$7,465
SERVICE BODY-TRUCK-SB-108-79-49-33-VO	006207	General	1/23/2004	8	$6,218		1.50	$9,346
SOFTWARE - SERVER/DATABASE MANAGEMENT	010681	General	8/14/2017	5	$31,400		1.05	$32,867
SOFTWARE - CASH RECEIPTING	006105	General	10/1/2002	5	$43,788		1.62	$70,841

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
SOFTWARE - CASH RECEIPTS - ONE STEP	006225	General	2/15/2005	5	$7,125		1.49	$10,606
SOFTWARE - CASH RECEIPTS - ONE STEP	006151	General	1/31/2005	5	$6,599		1.49	$9,823
SOFTWARE - EDEN AR/BP/FA MODULE	006106	General	1/1/2003	5	$14,024		1.59	$22,267
SOFTWARE - EDEN GL/AP,EDEN MENUS,PA MODU	006107	General	7/1/2002	5	$41,640		1.62	$67,365
SOFTWARE - INFO WATER SUITE 5.0	006115	General	3/10/2008	5	$16,000		1.32	$21,134
SOFTWARE - TOKAY BACKFLOW APPLICATION	008181	General	12/18/2014	5	$5,820		1.13	$6,603
SOFTWARE-CASH RECEIPTS-ONE STEP	006146	General	7/21/2003	5	$7,675		1.59	$12,186
SOFTWARE-LIMS N5170110	006200	Treatment	9/11/2003	5	$47,363		1.59	$75,203
SPECTROPHOTOMETER	008549	Treatment	5/13/2014	10	$6,650		1.13	$7,545
SPECTROPHOTOMETER-AQUAMATE UV-VIS 9423AQ	006205	Treatment	6/11/2004	8	$5,486		1.50	$8,246
SPEEDI-SEALER FOLDING MACHINE	005386	Customer Service	1/1/1999	10	$16,195		1.81	$29,382
SQUARE D MODEL 4 MCC BUCKET	008580	General	4/17/2014	10	$8,250		1.13	$9,359
SRI GAS CHROMATOGRAPH	005387	Treatment	1/1/2000	10	$9,500		1.66	$15,774
STERILIZER	007848	General	10/25/2011	7	$9,740		1.22	$11,841
STORAGE CONTAINER	010828	General	10/18/2018	10	$12,065		1.03	$12,378
SUV - 2006 ESCAPE HYBRID	006160	General	11/28/2005	8	$29,621		1.49	$44,090
SWITCH - CISCO WS-C3850-48F-E NETWORK SWITCH	008930	General	3/10/2015	5	$11,632		1.11	$12,887
TOC ANALYZER	007401	General	6/25/2010	5	$24,260		1.25	$30,317
TOOL SET - MASTER SET	010171	General	6/30/2017	10	$10,033		1.05	$10,502
TOOLS-REUSABLE 4" HOSE	007368	General	6/18/2010	8	$34,133		1.25	$42,655
TRACTOR - HEAVY RIG	005391	General	1/1/1998	8	$51,960		1.81	$93,870
TRACTOR - LIGHT	005392	General	1/1/2002	8	$24,371		1.62	$39,427
TRACTOR - TORO DINGO WALK BEHIND	010391	General	12/13/2017	7	$38,711		1.05	$40,519
TRACVAC RETRIEVABLE SYSTEM	005393	General	1/1/1997	15	$15,373		1.84	$28,245
TRAILER - ECONOLINE	007210	General	9/5/2008	7	$12,342		1.32	$16,302
TRAILER - ECONOLINE	007211	General	9/5/2008	7	$12,342		1.32	$16,302
TRAILER - END DUMP, RANCO	006209	General	11/19/2004	5	$34,685		1.50	$52,131
TRAILER - FLATBED	005395	General	1/1/1998	8	$7,877		1.81	$14,230
TRAILER - MOUNTED	010449	General	2/12/2018	10	$89,707		1.03	$92,036
TRAILER- 2018 FORD ECONOLINE	010537	General	4/5/2018	7	$16,202		1.03	$16,623

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
TRUCK - FORD F150 XL 4X2 - 2011	007618	General	6/8/2011	7	$15,894		1.22	$19,322
TRUCK - FORD F550 XL CAB & CHASSIS	007548	General	3/31/2011	7	$29,086		1.22	$35,359
TRUCK - FORD RANGER XL 4 X 2 2011	007534	General	1/25/2011	7	$13,756		1.22	$16,724
TRUCK - 2002 FORD RANGER XL/BED LINER	006111	General	9/25/2002	8	$15,156		1.62	$24,520
TRUCK - 2003 1/2 TON FORD F150 4X4 6 1/2	006223	General	12/31/2002	8	$17,108		1.62	$27,677
TRUCK - 2003 FORD F350 C&C/SERV BODY	006210	General	11/25/2002	8	$27,773		1.62	$44,932
TRUCK - 2003 FORD RANGER 4X4/BED LINER	006112	General	1/16/2003	8	$18,772		1.59	$29,806
TRUCK - 2003 FORD RANGER W/ EXT CAB/TRAI	006156	General	1/16/2003	8	$18,483		1.59	$29,347
TRUCK - 2005 FORD F150 4X4	006211	General	11/3/2004	8	$19,027		1.50	$28,597
TRUCK - 2005 FORD RANGER 4X4 WITH CAB &	006113	General	12/26/2004	8	$19,308		1.50	$29,019
TRUCK - 2007 FORD F150 4 X 4	006149	General	12/22/2006	7	$19,576		1.44	$28,092
TRUCK - 2007 FORD F350	006213	General	12/29/2006	7	$26,277		1.44	$37,709
TRUCK - 2008 FORD F350	006214	General	1/11/2008	7	$26,654		1.32	$35,205
TRUCK - 2009 F450 HOOKLIFT	007239	General	1/21/2009	8	$61,956		1.27	$78,685
TRUCK - 2012 PETERBILT 3 AXLE DUMP	008017	General	12/18/2012	7	$149,475		1.20	$178,825
TRUCK - 2013 FORD 4X4, V8, AUTOMATIC	008097	General	4/5/2013	7	$41,090		1.18	$48,350
TRUCK - 2013 FORD F150 PICK-UP	008512	General	7/1/2014	7	$24,120		1.13	$27,364
TRUCK - 2013 FORD F150 REGULAR CAB	008039	General	1/17/2013	7	$18,545		1.18	$21,822
TRUCK - 2016 FORD F150	009527	General	3/10/2016	10	$32,808		1.08	$35,283
TRUCK - 2016 TOYOTA TACOMA	009426	General	12/22/2015	10	$29,985		1.11	$33,219
TRUCK - 2017 VAC-CON HYDRO-EXCAVATOR	010289	General	9/20/2017	7	$399,751		1.05	$418,426
TRUCK - 2018 FORD F150	010507	General	3/21/2018	7	$27,869		1.03	$28,592
TRUCK - 2018 FORD F250	010546	General	4/24/2018	7	$51,177		1.03	$52,506
TRUCK - 2019 FORD F-350	011066	General	3/19/2019	8	$53,002		1.00	$53,002
TRUCK - DUMP	005405	General	1/1/2001	8	$57,153		1.67	$95,528
TRUCK - FORD 2003 1/2 TON 4X4	006162	General	12/31/2002	8	$17,108		1.62	$27,677
TRUCK - FORD F150	010475	General	3/6/2018	7	$31,763		1.03	$32,588
TRUCK - FORD F150	010486	General	2/28/2018	7	$25,157		1.03	$25,810

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
TRUCK - FORD F150	006215	General	10/29/2007	7	$23,162		1.36	$31,493
TRUCK - FORD F150	006155	General	11/1/2007	7	$19,718		1.36	$26,810
TRUCK - FORD F150	006150	General	11/1/2007	7	$14,877		1.36	$20,227
TRUCK - FORD F350 4X2 S/C CC; V8; AUTO TRANS	008897	General	2/12/2015	7	$38,560		1.11	$42,720
TRUCK - FORD F350 4X2 S/C CC; V8; AUTO TRANS	008872	General	1/29/2015	7	$38,558		1.11	$42,718
TRUCK - FORD F350 C&C/SERV BODY	006216	General	11/25/2002	8	$27,773		1.62	$44,932
TRUCK - FORD RANGER SUPERCAB	006114	General	12/22/2006	7	$12,018		1.44	$17,246
TRUCK - FORD RANGER XL : 4X2 REGULAR CAB	007602	General	5/10/2011	7	$13,323		1.22	$16,196
TRUCK - PICKUP F150	006224	General	12/8/2003	8	$18,594		1.59	$29,524
TRUCK - PICKUP STANDARD	005427	General	1/1/2002	8	$28,006		1.62	$45,307
TRUCK - PICKUP STANDARD	005432	General	1/1/2002	8	$25,287		1.62	$40,910
TRUCK - PICKUP STANDARD	005430	General	1/1/2000	8	$23,109		1.66	$38,372
TRUCK - PICKUP STANDARD	005428	General	1/1/1999	8	$20,605		1.81	$37,382
TRUCK - PICKUP STANDARD	005433	General	1/1/2002	8	$18,337		1.62	$29,665
TRUCK - PICKUP STANDARD	005425	General	1/1/1994	8	$9,928		1.89	$18,802
TRUCK - UTILITY	005437	General	1/1/2000	8	$30,000		1.66	$49,814
TRUCK - UTILITY	005440	General	1/1/2000	8	$25,240		1.66	$41,910
TRUCK - UTILITY	005439	General	1/1/2001	8	$20,211		1.67	$33,782
TRUCK - UTILITY	005438	General	1/1/1996	8	$18,306		1.87	$34,149
TRUCK - VAN	005443	General	1/1/2000	8	$18,627		1.66	$30,930
TRUCK-DUMP-5/6 YARD	006217	General	12/29/2003	8	$63,949		1.59	$101,539
VAC-CON HYDOR-EXCAVATION UNIT MOUNTED	008186	General	9/12/2013	10	$326,991		1.18	$384,767
VACUUM - LEAF	005449	General	1/1/1996	15	$10,633		1.87	$19,835
VALUE MAINTENANCE TRAILER	007240	General	4/30/2009	8	$56,278		1.27	$71,473
VEHICLE - 2008 FORD F550	007212	General	10/8/2008	7	$40,375		1.32	$53,329
VEHICLE - 2009 TOYOTA PRIUS	007207	General	11/6/2008	7	$25,911		1.32	$34,224
VEHICLE TRANSCEIVER UNIT	005450	General	1/1/2002	10	$23,705		1.62	$38,350
WATER SERVICES	006082	General	6/30/2002	50	$466,053		1.62	$753,977
WATER VALVES - WATER & BAY	011339	Treated Water Transmission	6/30/2019	50	$120,786		1.00	$120,786
WELL	006097	Treatment	1/1/1990	50	$24,000		2.04	$49,014
WELL	006098	Treatment	1/1/1990	50	$24,000		2.04	$49,014
WELL	006099	Treatment	1/1/1990	50	$24,000		2.04	$49,014

Asset Description	Asset Number	Asset Function	Acquisition Date	Useful Life	Original Cost	Replacement Cost (from staff)	ENR CCI	Replacement Cost
WONDERWARE HISTORIAN (DATABASE) SERVER	008357	General	1/9/2014	10	$20,397		1.13	$23,141
Treated Water Pipelines	008179	Treated Water Distribution	1/1/2020			$286,167,522	1.00	$286,167,522
Treated Water Pipelines	008179	Treated Water Transmission	1/1/2020			$189,572,148	1.00	$189,572,148
Raw Water Pipelines		Raw Water Transmission	1/1/2020			$138,521,004	1.00	$138,521,004
30TH AVE-1	008179	Treatment	1/1/2012		$104,442		1.20	$124,949
30TH AVE-2/3	008179	Treatment	1/1/2012		$60,800		1.20	$72,738
AUTO PLAZA DEEP, MEDIUM, SHALLOW	007690	Treatment	1/1/2009		$104,209		1.27	$132,346
BELTZ #2	006101	Treatment	1/1/2004		$73,113		1.50	$109,888
BELTZ #4		Treatment	1/1/1985		$3,624		2.45	$8,867
BELTZ #6	006101	Treatment	1/1/2004		$73,113		1.50	$109,888
BELTZ #7A/B	008179	Treatment	1/1/2012		$46,119		1.20	$55,175
COFFEE LN PK DEEP/SHALLOW	007691	Treatment	1/1/2009		$104,209		1.27	$132,346
CORCORAN LAGOON DEEP/MED/SHAL	006101	Treatment	1/1/2004		$73,113		1.50	$109,888
CORY STREET MW-1/2/3	007692	Treatment	1/1/2009		$104,209		1.27	$132,346
CORY STREET MW-4	008664	Treatment	1/1/2013		$80,900		1.18	$95,194
MORAN LAKE DEEP/MED/SHAL	006101	Treatment	1/1/2004		$73,113		1.50	$109,888
PLEASURE POINT DEEP/MED/SHAL		Treatment	1/1/1988		$46,675		2.16	$100,661
SANTA MARGARITA TW	006101	Treatment	1/1/2004		$73,113		1.50	$109,888
SCHWAN LAKE	006101	Treatment	1/1/2004		$73,113		1.50	$109,888
SOQUEL POINT 4	008179	Treatment	1/1/2012		$61,741		1.20	$73,864
SOQUEL POINT 5		Treatment	1/1/2020		$433,209		1.00	$433,209
SOQUEL POINT DEEP/MED/SHAL	006101	Treatment	1/1/2004		$73,113		1.50	$109,888
THURBER DEEP/SHALLOW	006101	Treatment	1/1/2004		$73,113		1.50	$109,888
Ocean St Ext	007689	Treatment	1/1/2009		$28,434		1.27	$36,111
COAST PUMP STATION MONITORING WELL		Treatment	1/1/2020		$20,210		1.00	$20,210
Tait Well 4		Treatment	1/1/2020		$10,750		1.00	$10,750
SC Memorial		Treatment	1/1/2020		$65,790		1.00	$65,790
SC Metro Corp Yard		Treatment	1/1/2020		$50,417		1.00	$50,417
BELTZ #8 MW		Treatment	1/1/2020		$174,022		1.00	$174,022
Meters		Meters	1/1/2020			$5,386,838	1.00	$5,386,838
Hydrants		Fire Protection	1/1/2020			$4,548,820	1.00	$4,548,820

APPENDIX C: CAPITAL IMPROVEMENT PROJECTS

Table C - 1: 11-Years Totals of Capital Improvement Projects

11 Years of Capital Improvement Plan	Total Cost
Laguna Creek Diversion Retrofit Project	$3,892,216
North Coast System Majors Diversion Rehab	$5,315,073
Tait Diversion Rehab/Replacement Project	$6,883,315
Coast Pump Station Rehab/Replacement	$10,003,056
Felton Diversion and Pump Station Assessment	$4,408,918
Newell Creek Dam Inlet/Outlet Replacement Project	$97,253,408
North Coast System Repair and Replacement Project	$908,974
N. Coast Repair Ph4 Des and Const	$18,314,673
N. Coast Repair Ph5 Des and Const	$19,107,730
Newell Creek Pipeline Rehab/Replacement	$847,352
Newell Creek Pipeline Felton/Graham Hill	$32,531,837
Newell Creek Pipeline Felton/Loch Lomond	$30,531,336
Newell Creek Pipeline Brackney	$5,662,273
Coast Pump Station 20-inch Raw Water Pipeline Replacement	$6,425,488
Water Supply Augmentation	$769,331
Recycled Water Feasibility Study	$370,413
ASR Planning	$1,479,905
ASR Mid County Existing Infrastructure	$2,691,817
ASR Mid County New Wells	$19,990,371
ASR Santa Margarita Groundwater	$19,468,297
ASR New Pipelines	$36,075,193
Graham Hill WTP Tube Settlers Replacement	$1,063,500
Graham Hill WTP Flocculator Rehab/Replacement	$1,692,996
Graham Hill WTP Concrete Tanks Project	$35,198,607
Graham Hill WTP Facility Improvement Plan	$117,093,984
Distribution System Water Quality - $$ in FIP	$77,475
River Bank Filtration Study	$6,716,582
University Tank No. 4 Rehab/Replacement	$6,573,657
University Tank No. 5 Replacement	$1,512,000
HDR Program Management Contract	$25,276,095
Total 11-Year CIP	**$518,135,870**

APPENDIX D: AWWA METER RATIO

Table D - 2: AWWA Standards for Maximum Rated Safe Operating Flow and Capacity Ratio

Meter Size	Meter Capacity	AWWA Ratio
5/8 inch	20	1.00
3/4 inch	30	1.50
1 inch	50	2.50
1-1/2 inch	100	5.00
2 inch	160	8.00
3 inch	350	17.50
4 inch	630	31.50
6 inch	1,300	65.00
8 inch	2,800	140.00
10 inch	4,200	210.00

MEMORANDUM

DATE: 11/30/2020

TO: Rosemary Menard, Water Director

FROM: Malissa Kaping, Management Analyst

SUBJECT: Elevation surcharge analysis

This memo documents the recent elevation surcharge analysis conducted by staff as an element of the 2020-2021 Cost of Service Report. A new approach was taken in calculating the surcharge based on feedback received from customers in regards to perceived fairness. The current surcharge of $0.51/ccf (as of July 1, 2019) is charged to all customers who must have water pumped out of the gravity zone. The current approach applies the cost to pump water equally among customers in elevated zones regardless of the amount of times the water is pumped. The new recommended approach accounts for the number of times water is pumped by separating customers into 3 different lift zones.

Customers in elevated zones receive water lifted up through one, two, or three pump stations and are separated into Lift Zone #1 if the water is pumped once, Lift Zone #2 if the water is pumped twice and in Lift Zone #3 if the water is pumped three times. Figure 1 shows the Lift Zones and associated pump stations. The recommended approach would be to charge customers per lift.

To calculate the cost per lift, we used the average cost of electricity to pump the water. By averaging the cost per kilowatt across all pump stations, it smooths time of use variations and applies the benefit of solar to all elevated customers. The total pumping cost divided by total units pumped determined that the overall cost per unit pumped was $0.19/ccf per lift. This means that customers in Lift Zone #1 would pay $0.19/ccf, those in Lift Zone #2 would pay $0.38/ccf, and those in Lift Zone #3 would pay $0.57/ccf. Figure 2 was provided to the Water Commission in a presentation made at the November 2020 meeting and shows the data calculation and which pump stations provide the first, second, and third lifts.

This recommended approach is based on known data from the meters at the pump stations and the electricity bills. It was discussed that this calculation does not account for general maintenance of the pump stations and it was determined that such costs are already included in the water rates. The costs associated with maintenance are not currently tracked at the asset level and therefore, costs for maintaining the pump stations cannot be easily separated from other maintenance costs. This is not the same with electricity costs; electricity usage at the pump stations can easily be separated and not included in other electricity costs.

Our Customer Service Manager, Kyle Petersen, confirmed that this simple new approach in calculating the elevation surcharge will be easier for staff to explain and can be implemented in our financial software system.

Figure 1:

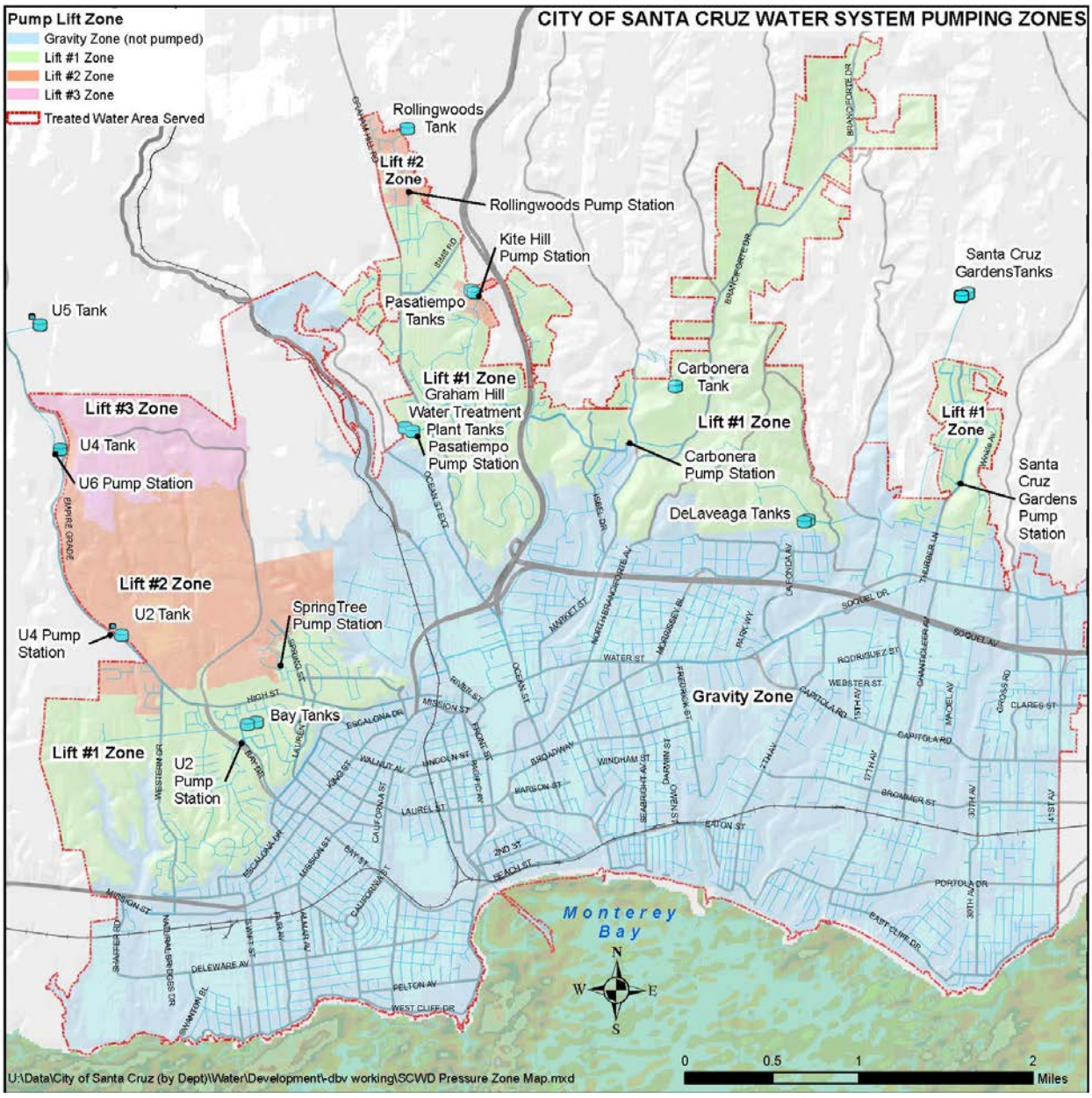

Figure 2:

First lift pump stations
- Carbonera
- Pasatiempo
- SC Gardens
- University #2

Second lift pump stations
- Kite Hill
- Rolling Woods
- Springtree
- University #4

Third lift pump station
- University #6

Total Units* Pumped	Total Pumping Cost **	Cost per unit pumped
1,095,936	$ 205,769.73	$ 0.19

* 1 Unit =748 gallons

** Includes benefit of solar to all

RAFTELIS

Attachment 3

Memorandum

Inside Outside Surcharge Analysis
October 26, 2020

The City of Santa Cruz (City) is currently in the process of updating the water utility's cost of service and rates. The City engaged Raftelis to assist with this task and to analyze the surcharge incurred by water utility users Outside of the city limits. The City's water utility services customers both Inside and Outside city limits; Outside city customers currently pay a surcharge of 14.5% for their service.

To determine the appropriate surcharge for Outside City customers, Raftelis examined the ratio of asset requirement by equivalent meter size for Inside and Outside City customers. If the ratio between Inside and Outside is the same, then a surcharge would not be warranted. If the Outside city has a higher ratio, then this indicates that Outside customers require a higher level of service and thus justifies a surcharge. Given the time value of money, assets are taken as replacement cost (RC) value. Equivalent meter units (EMUs) take into consideration that larger meter sizes can demand more capacity in the City's water system and normalize for this factor.

The Water Department performed a detailed analysis of the utility's treated water system and shared assets to determine the appropriate surcharge to apply to Outside city customers. **Table 1** summarizes the analysis results and the specific asset allocations that serve Inside, Outside, and all customers. Five asset classes contain assets that service Inside or Outside City customers directly. The allocation basis was provided by Water Department staff and are based on the following rationale:

1. Treated Water Elevation Pumping – percentage of pump station capacity
2. Treated Water Transmission – percentage of transmission mains
3. Treated Water (Distribution) Storage – percentage of storage tank capacity
4. Treated Water Distribution – percentage of distribution mains
5. Fire Protection – count of fire hydrants

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Table 1: Inside and Outside Asset Allocation Percentages

Capital Assets	Replacement Cost	Inside	Outside	Shared
Raw Water Pumping	$13,819,123			100%
Raw Water Storage	$58,958,350			100%
Raw Water Transmission	$139,066,280			100%
Treated Water Elevation Pumping	$9,959,498	58%	24%	18%
Treated Water Transmission	$212,530,120	28%	22%	50%
Treated Water (Distribution) Storage	$34,869,169	16%	18%	66%
Treated Water Distribution	$286,430,544	55%	43%	2%
Treatment	$132,972,487			100%
Customer Service	$148,964			100%
Meters	$5,584,456			100%
Fire Protection	$4,548,820	62%	38%	0%
Land	$6,592,551			100%
General	$16,315,234			100%
Total - Capital Assets	**$921,795,596**			

Table 2 summarizes the allocation of the asset values. Raftelis used the specific allocations provided by the Water Department from **Table 1** to allocate the RC value of the utility's assets to the three categories: Inside, Outside, and Shared.

For example, 28% of Treated Water Transmission assets serve only Inside customers, 22% serve only Outside customers, and 50% serve both Inside and Outside customers. The total RC of Treated Water Transmission assets ($212,530,120) is allocated to Inside ($59,508,433), Outside ($46,756,626), and Shared ($106,265,060) based on those percentage allocations.

Table 2: Capital Asset Inside, Outside, and Shared Allocation

Capital Assets	Inside	Outside	Shared
Raw Water Pumping	$0	$0	$13,819,123
Raw Water Storage	$0	$0	$58,958,350
Raw Water Transmission	$0	$0	$139,066,280
Treated Water Elevation Pumping	$5,776,509	$2,390,280	$1,792,710
Treated Water Transmission	$59,508,433	$46,756,626	$106,265,060
Treated Water (Distribution) Storage	$5,579,067	$6,276,450	$23,013,651
Treated Water Distribution	$157,536,799	$123,165,134	$5,728,611
Treatment	$0	$0	$132,972,487
Customer Service	$0	$0	$148,964
Meters	$0	$0	$5,584,456
Fire Protection	$2,808,712	$1,740,108	$0
Land	$0	$0	$6,592,551
General	$0	$0	$16,315,234
Total - Capital Assets	**$231,209,521**	**$180,328,598**	**$510,257,477**

Raftelis further allocated Shared assets to Inside and Outside customers based on their proportionate share of capacity in the system. For this analysis, EMUs are used to represent the capacity demanded the system for each meter size. Larger meters can demand more capacity and can exert

more peaking characteristics compared to smaller meters. To create parity across the various meter sizes and between Inside and Outside City customers, all meter sizes are assigned a factor relative to a 5/8" meter size based on the potential flow through each meter size, as established by the American Water Works Association's (AWWA) hydraulic capacity ratios.

The resulting percentage of total EMUs is shown in **Table 3**. The ratios shown represent the ratio of potential flow through each meter size relative to the flow through a 5/8" meter. Multiplying the number of meters by the AWWA Ratio results in EMUs for each meter size, which is then used to allocate the proportion of Shared assets between Inside and Outside City customers.

Table 3: Inside and Outside EMU's

		Inside City		Outside City	
Meter Size	**AWWA Ratio**	**Number of Meters**	**Equivalent Meters**	**Number of Meters**	**Equivalent Meters**
5/8 inch	1.00	14,596	14,596	7,662	7,662
3/4 inch	1.50	390	585	153	230
1 inch	2.50	857	2,143	656	1,640
1-1/2 inch	5.00	311	1,555	168	840
2 inch	8.00	272	2,176	158	1,264
3 inch	17.50	42	735	14	245
4 inch	31.50	16	504	9	284
6 inch	65.00	8	520	5	325
8 inch	140.00	3	420	3	420
10 inch	210.00	3	630	0	0
Total - Meters		**16,498**	**23,864**	**8,828**	**12,909**
Percent of Total Equivalent Meters			*64.9%*		*35.1%*

Table 4 further allocates the Shared assets RC value ($510,257,477) from **Table 2** to Inside and Outside customers based on the proportion of total EMUs between Inside and Outside City customers shown in **Table 3**. Shared assets are split 64.9% to Inside and 35.1% to Outside Customers.

Table 4: Shared Capital Asset Allocation

Capital Assets	Inside	Outside	Total
Raw Water Pumping	$8,967,915	$4,851,208	$13,819,123
Raw Water Storage	$38,260,999	$20,697,351	$58,958,350
Raw Water Transmission	$90,247,010	$48,819,270	$139,066,280
Treated Water Elevation Pumping	$6,939,887	$3,019,611	$9,959,498
Treated Water Transmission	$128,469,104	$84,061,016	$212,530,120
Treated Water (Distribution) Storage	$20,513,767	$14,355,401	$34,869,169
Treated Water Distribution	$161,254,379	$125,176,165	$286,430,544
Treatment	$86,292,445	$46,680,042	$132,972,487
Customer Service	$96,670	$52,294	$148,964
Meters	$3,624,031	$1,960,425	$5,584,456
Fire Protection	$2,808,712	$1,740,108	$4,548,820
Land	$4,278,233	$2,314,317	$6,592,551
General	$10,587,765	$5,727,469	$16,315,234
Total - Capital Assets	**$562,340,919**	**$359,454,678**	**$921,795,596**

Table 5 summarizes the derivation of the unit cost of assets per EMU. The total RC asset value allocated to Inside and Outside City customers (from **Table 4**) is divided by the number of EMUs for each service area (from **Table 3**) indicate the assets necessary to serve the average customer.

This analysis justifies applying a surcharge of 18.2% to Outside City customers for asset-related costs. The surcharge percentage is determined by comparing the cost of assets per EMU for Outside and Inside City customers using the following formula:

Outside City surcharge on assets = (Outside Assets/EMU – Inside Assets/EMU) / (Inside Assets/EMU) = ($27,845 - $23,565) / ($23,565) = 18.2%

Table 5: Assets $/EMU

Location	Total Assets	Equivalent Meters	Unit Cost
Inside City	$562,340,919	23,864	$23,565
Outside City	$359,454,678	12,909	$27,845
Total	**$921,795,596**	**36,773**	**$25,068**
Surcharge Percentage for Outside City Customers (on Assets)			**18.2%**

However, the surcharge percentage would be applied to only asset or capital-related costs. **Table 6** shows the revenue requirement for the cost of service analysis. Capital costs currently represent 20.8% of the City's water rate revenue requirement.

Table 6: Capital Revenue Requirement

Revenue Requirement - FY 2021	Operating	Capital	Total
Revenue Requirements			
Operating Expenses	$32,962,300		$32,962,300
Debt Service		$3,315,081	$3,315,081
Capital Expenditures (PAYGO)		$5,821,151	$5,821,151
Total - Revenue Requirements	**$32,962,300**	**$9,136,232**	**$42,098,532**
Offsets and Adjustments			
Other Income	($1,000,000)		($1,000,000)
Investment Income	($250,000)		($250,000)
Adjustment for Cash Balance	$3,118,218		$3,118,218
Total - Offsets and Adjustments	**$1,868,218**	**$0**	**$1,868,218**
Revenue Required from Rates	**$34,830,518**	**$9,136,232**	**$43,966,750**
Percentage of Revenue Requirement	*79.2%*	*20.8%*	*100%*

The current surcharge percentage for Outside City water service is 14.5%. Based on this updated analysis, an Outside customer surcharge applied to all water rates would be equal to 3.8%, as detailed in the equation below:

*Outside City surcharge applied to all water rates = Capital revenue requirement percentage (from **Table 6**) x Surcharge for asset-related costs percentage (from **Table 5**) = 20.8% x 18.2% = 3.8%*

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WATER COMMISSION
INFORMATION REPORT

DATE: 12/3/2020

AGENDA OF: December 7, 2020

TO: Water Commission

FROM: Rosemary Menard, Water Director

SUBJECT: Presentation of the Analysis on the Cost to Provide Water Transfers to Soquel Creek Water District

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RECOMMENDATION: That the Water Commission receive information on the analysis of the cost of providing water transfers to the Soquel Creek Water District and provide feedback to staff.

BACKGROUND: In 2016, the City of Santa Cruz and the Soquel Creek Water District (District) signed the Cooperative Water Transfer Pilot Project for Groundwater Recharge and Water Resource Management. The agreement has a five-year term and is set to expire at the end of December 2020. Both parties are interested in extending the agreement as circumstances, including the need to carefully evaluate the compatibility of surface and groundwater sources prior to initiating any transfer, delayed implementation until the winter of 2018.

The agreement has an existing provision for the cost of water transferred from the City to Soquel Creek. That provision established the cost at $1000 per million gallons (roughly $335 per acre foot). That price was set based on a very simplistic analysis to represent the City's cost of production and in recognition that water transfers contemplated under the terms of the agreement are seasonally limited, limited as to the volume of water potentially available, and interruptible based on the City's needs to meet the demands of its own customers as well as comply with fish flow requirements.

DISCUSSION: In advance of renewing the Pilot agreement, the City has tasked Raftelis to help us do a more detailed analysis of how to price City water transferred to Soquel Creek. In addition to updating the price element of the agreement, the current plan is to retain all the constraining factors listed in the paragraph above in the agreement. Until the City has been able to modify the place of use for its San Lorenzo River water rights, the volume of water that can be transferred has to be limited to no more than the monthly volume of water diverted for use from the City's North Coast pre-1914 water rights.

Attachment 1 to this staff report is the slide presentation that Raftelis will present at the Water Commission meeting on December 7th. The analysis recognizes the constraints and reflects the reality that water is only sent to the District when it is clearly not needed to meet the City's own needs and obligations.

One topic that may arise when the information about the potential cost of water to be transferred to Soquel Creek is presented is how that cost might compare to other water supply options that might be developed or are under development in the region. This is certainly a relevant question and has been under study for some time. The table below is an excerpt from the PowerPoint presentation provided to the Water Commission and many members of the former Water Supply Advisory Committee (WSAC) at their joint workshop on April 1, 2019.[1] This table describes the probability of the City being able to supply three different volumes of water to the District under historical and three different climate change scenarios and with two different assumptions about the Graham Hill Water Treatment Plant's ability to treat more challenging winter water. The question asked was:

> "What percentage of the time could Santa Cruz provide Soquel Creek with the specified volume of water after it has met its fish flow requirements; after it had met its own daily demand; and after it had put available water into storage for its drought supply?"

The results with the greatest probability of success are volumes under 500 acre feet per year with the current low level of water demand. Providing 1500 acre feet per year annual supply to allow the District to offset its pumping and address seawater intrusion is largely infeasible in most years.

FLOWS	DEMAND	FRACTIONS OF WATER YRS ACHIEVING VOLUME TARGETS					
		Current GHWTP			Improved GHWTP		
		Annual 1500 AF	Off-Pk 500 AF	Off-Pk 300 AF	Annual 1500 AF	Off-Pk 500 AF	Off-Pk 300 AF
Historical	**3.2 bg**	**0%**	**15%**	**60%**	**15%**	**70%**	**90%**
	2016-18	**30%**	**95%**	**98%**	**45%**	**96%**	**99%**
GFDL CC	**3.2 bg**	**0%**	**2%**	**3%**	**15%**	**85%**	**100%**
	2016-18	**10%**	**98%**	**100%**	**55%**	**100%**	**100%**
CMIP5 CC	**3.2 bg**	**15%**	**45%**	**55%**	**40%**	**55%**	**80%**
	2016-18	**45%**	**95%**	**100%**	**55%**	**99%**	**100%**
Catalog CC	**3.2 bg**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
	2016-18	**0%**	**5%**	**20%**	**20%**	**80%**	**85%**

[1] See slide #51 in the presentation at https://drive.google.com/file/d/13QH9BKSqi0svTJT4QlvBMR1WWUTcAYH8/view?usp=sharing

The take-away from this table is that price isn't the only thing that matters in choosing a water supply option.

One final note: The current analysis did not look at how water would be priced under a water exchange scenario. At this time, neither the City nor the District is in a position to project the potential for an in-lieu water banking strategy to be part of a long-term water supply strategy for Santa Cruz or the District. It may be that such a strategy is feasible at some point in the future once the threat of seawater intrusion into the Santa Cruz Mid-County Groundwater Basin is addressed.

FISCAL IMPACT: None.

PROPOSED MOTION: None.

ATTACHMENTS:
Attachment 1 – PowerPoint Presentation on Cost of Water Transfers for 12/7/2020

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