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

Water Department

WATER COMMISSION

Regular Meeting

November 05, 2018

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

*Denotes written materials included in packet.

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

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

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

Call to Order

Roll Call

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

Oral Communications - No action shall be taken on this item.

Announcements - No action shall be taken on this item.

Consent Agenda (Pages 1.1-6.4) 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 (Page 1.1)

   Accept the City Council Actions Affecting the Water Department.

2. Water Commission Minutes from October 1, 2018 (Pages 2.1-2.9)

   Approve the October 1, 2018 Water Commission Minutes

3. FY 2018 4th Quarter Financial Report (Pages 3.1-3.5)

   Accept the information on the FY 2018 4th Quarter Financial Report.

4. Informational Item Providing an Update on CEQA Processes for Various Water Department Projects including the Newell Creek Dam Inlet Outlet, the Graham Hill Water Treatment Plant Concrete Tanks Replacement, and the Water Rights Amendment Project (Pages 4.1-4.4)

   Receive and accept the information on the CEQA work being performed on various projects.

5. Informational Item Providing an Update Planned In Lieu Water Transfer with Soquel Creek Water District (Pages 5.1-5.3)

   Review and accept the information on the In Lieu Water Transfer Project with Soquel Creek Water District.

6. Updated Working Draft - Water Commission Work Plan (Pages 6.1-6.2)

   Receive and accept the Updated Water Commission Work Plan for the remainder of 2018 and discuss the draft schedule for 2019 (Working Draft).

7. Informational Items from the Public (Pages: None)

Items Removed from the Consent Agenda

General Business (Pages 8.1-9.11) 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.

8. Update on Water Supply Augmentation Strategy Decision Process (Pages 8.1-8.5)

   Receive information on the approach to the Water Supply Augmentation Strategy decision making process and provide feedback to staff.

9. Review and Approval of City Council Staff Report Recommending the Prioritization of Recycled Water Alternatives above Seawater Desalination (Pages 9.1-9.11)

   Review and approve the draft Staff Report to the City Council recommending the prioritization of Recycled Water as the Element 3 Alternative.

Subcommittee/Advisory Body Oral Reports - No action shall be taken on this item.

10. Santa Cruz Mid County Groundwater Agency

11. Santa Margarita Groundwater Agency

Director's Oral Report - No action shall be taken on this item.

Adjournment

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WATER COMMISSION
INFORMATION REPORT

DATE: 10/24/2018

AGENDA OF: November 5, 2018

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:

October 9, 2018

Professional Services Contract for Aquifer Storage and Recovery Pilot Test Program with Pueblo Water Resources

Motion **carried** to authorize the City Manager to execute an agreement in a form approved by the City Attorney with Pueblo Water Resources (Ventura, CA) in the amount of $458,085 to conduct pilot testing of Aquifer Storage and Recovery (ASR) at the City's Beltz 12 well as part of Phase 2 of the evaluation of ASR opportunities in Santa Cruz.

October 24, 2018

Felton Diversion Inflatable Dam Rubber Bladder Replacement Project – Notice of Completion

Motion **carried** to accept the work of Cal West Construction General Building, Inc. (Gilroy, CA) as complete per the plans and specifications and authorizing the filing of a Notice of Completion for the Felton Diversion Inflatable Dam Rubber Bladder Replacement Project.

University Tank No. 5 Replacement Project – Bid Protest and Award of Contract

Motion **carried** to overrule the October 10, 2018 bid protest submitted by Paso Robles Tanks Inc. and to award the Replacement of University Tank No. 5 contract to Crosno Construction, Inc.

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

ATTACHMENTS: None.

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Water Commission
7:00 p.m. – October 1, 2018
Council Chambers
809 Center Street, Santa Cruz

Water Department

Summary of a Water Commission Meeting

Call to Order: 7:01 PM

Roll Call

Present: L. Wilshusen (Chair), D. Engfer (Vice-Chair), D. Baskin J. Mekis, A. Schiffrin, D. Schwarm

Absent: W. Wadlow with notification

Staff: R. Menard, Water Director; C. Coburn, Deputy Director/ Operations Manager; K. Crossley, Senior Civil Engineer; T. Goddard, Conservation Manager; H. Luckenbach, Deputy Director/Engineering Manager; S. Easley Perez, Associate Planner II; B. Pink, Environmental Projects Analyst; I. Rivera, Associate Professional Engineer; K. Fitzgerald, Administrative Assistant III

Others: 11 members of the public.

Presentation: None.

Statement of Disqualification: None.

Oral Communications: Scott McGilvray spoke as a member of the public.

Announcements: None

Consent Agenda

1. City Council Items Affecting Water

What are the budgetary impacts of Resolution NS-29,434, adopted by City Council on August 28, 2018, that amended the Classification and Compensation Plans?

- For the Water Department, this resolution allowed for position changes identified in the FY 2019 budget to be added or deleted as necessary to implement the budget. All fiscal impacts of these changes were/are reflected in this year's budget.

Commissioner Schiffrin moved the amended Consent Agenda. Commissioner Baskin seconded.

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

Items removed from the Consent Agenda

2. Water Commission Minutes from August 27, 2018

Commissioner Baskin proposed to amend the Minutes on page 2.6 to clarify that the Water Commission does not find it necessary to direct staff to present additional information on the results of the water quality testing work to Council.

Commissioner Schiffrin moved the amended Minutes. Commissioner Baskin seconded.

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

3. Update on Stage 1 Water Shortage Alert

How does the variance of this year's projected drawdown of Loch Lomond compare to the variances on projections from previous years, per the graph on page 3.6?

- This year's variance is larger than the historical average for several reasons:
  - additional late season rainfall and runoff that occurred after developing the forecast early in March to meet the City Council deadline;
  - lower than expected demand and the implementation of the recycled water system at Pasatiempo Golf Course; and
  - the increased supply made available from the use of Tait Wells.

  Flow projections were updated in May following the rains in late March and early April. After that, the predicted and actual flows in the San Lorenzo River were in close agreement.

How is the City going to address restaurants that were not responsive to the survey regarding restrictions on serving drinking water?

- The City does not have a specific action plan at this time. This survey was conducted to gather data for future development of an updated Water Shortage Contingency Plan to help us understand what opportunity exists in this demand sector to curtail water use.

A member of the public spoke regarding the commencement of in lieu water transfers to Soquel Creek Water District (the District) and excess water supplies. Another member of the public spoke on the potential use of recycled water to irrigate the DeLaveaga golf course. Other relevant points have been included in the summary above.

Commissioner Schiffrin moved Item 3. Commissioner Engfer seconded.

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

General Business

4. Quarterly WSAS Update

Ms. Heidi Luckenbach introduced the quarterly update on the Water Supply Augmentation Strategy (WSAS). The report provided an overview on the status of each substantial element of the WSAS that is being fulfilled per the Council Adopted WSAC Final Agreements and Recommendations.

Ms. Menard provided a summary of the Santa Cruz Water Rights project, as listed on page 4.8. The City is initiating the California Environmental Quality Act (CEQA) process for the modifications in the City's water rights that have been discussed for over a decade. The modifications being proposed will allow the City to improve and better utilize its surface water and will incorporate fish flows requirements agreed to by the City and the state and federal fishery agencies. The CEQA process will start in mid-October with the release of a Notice of Preparation/Initial Study for the project, and two public meetings planned in early November to receive public comment about the scope of the environmental review.

Commissioners commented positively on the progress of the Santa Cruz Water Rights project.

Does Advanced Metering Infrastructure (AMI) have the capability to detect leaks earlier in cases of excessive water use?

- Staff will be examining this ability further during the pilot testing phase of the project.

Is AMI required to provide customers with Home Water Use Reports?

- It is not required, but is it possible to integrate interval or hourly data that is received from AMI.

On page 4.4, why is there an open balance with Black & Veatch for in lieu water transfer study?

- This is a calculation error that staff will fix to reflect the zero balance on this contract.

Is the Water Transfer Pilot Program with Soquel Creek Water District (the District) on schedule to commence November 1st?

- The City is prepared to commence with the water transfers as of November 1st; however, the District may have some additional permitting requirements to fulfill which may influence the start date.

Do the assumptions being made in various climate change modeling efforts have an effect on the results we will see from groundwater modeling?

- Climate change scenarios are being used in the groundwater modeling and in the development of the hydrology that is an input to the Confluence supply model. There are a number of different scenarios being used to model climate change, from fewer yet more intense storms to fewer and less intense storms and all scenarios in between. So yes, the assumptions made about climate change will have an impact on model outcomes. To address this, staff is considering how to reasonably bound the potential climate outcomes to assess a supply project's ability to meet future supply gaps.

With such low water loss numbers coming out of the acoustic leak detection surveys, what benefit is there to the City of continuing to conduct these surveys?

- These audits are required by state regulations to comply with SB 555 that passed in 2015. SB 555 was passed as a reaction to the 2015 ongoing drought and requires that all water loss audits be validated by a third party.

The City submits documented proof of its water production and consumption that is reviewed and verified by the third party before it is submitted in an annual report mandated by the State. This report must also include how the City has, or plans to improve, its audit process and minimize overall water loss. The ongoing detection of leaks provides ongoing information that allows staff to better assess and prioritize the repairs to the system.

How do the City's current water loss rates compare to those in other utility districts?

- The City's level of real water loss in 2017 amounted to 155 million gallons out of a total of 2.56 billion gallons produced last year. To put this figure in context with other utilities, the water audit includes a performance indicator called infrastructure leakage index or "ILI" that is based on three factors: 1) the number of miles of water main on a system, 2) the number of service connections, and 3) average water pressure. This year our ILI was 0.9, on the very low end of the range for urban water systems.

How do distribution system water loss rates compare to raw water loss rates?

- Losses from the raw water transmission system (North Coast Diversion Pipelines, North Coast and Newell Creek Pipelines) are approximately 0.25 mgd. Raw water losses have decreased significantly over the past 25 years as a result of completed repairs and replacements of sections of the North Coast Pipeline. The condition assessment work on the Newell Creek pipeline will provide additional information about the state of that 14-mile long pipeline and is scheduled to begin this winter. As many of you will recall, the Newell Creek Pipeline experienced five major breaks within a six-week period during the 2017 winter storms.

Will the City have the ability to recover water from the Mid-County groundwater basin after it begins transferring water to Soquel Creek Water District under the pilot transfer project this winter?

- It is a future possibility if the pilot water transfer program is successful this winter. However, the pilot project agreement did not include a provision for recovery of water from the basin.

How does the Sustainable Groundwater Management Act impact the Aquifer Storage and Recovery (ASR) study?

- The Sustainable Groundwater Management Act (SMGA) requires Groundwater Sustainability Agencies to develop Groundwater Sustainability Plans (GSPs) that will, when implemented, allow the basin to achieve sustainability in 20 years. For over-drafted basins such as the Santa Cruz Mid-County Basin, it is anticipated that some combination of management actions, such as reducing pumping through the implementation of conservation programs, and projects that can make supplemental supply available in the basin will be needed to achieve sustainability. Two potential supplemental water supply options being explored by Soquel Creek Water District and Santa Cruz Water are the Pure Water Soquel Project and Aquifer Storage and Recovery, respectively.

Will information about the planning costs for the various water supply projects being considered be included in the for comparative project that will be considered during the planned decision making process for selecting a supplemental supply project or portfolio of supply projects?

- Yes, those costs will be included.

Commissioner Schiffrin submitted a proposal that the quarterly WSAS reports include brief introductions to each supply alternative option that will address and answer a set of contextual questions that will help those reading the document better understand the work being done. The questions included the following:

1. Is it technically feasible to implement?
2. How much of the water supply gap will it fill?
3. How reliable will the augmented supply be?
4. What is the unit cost and how will it impact water rates?
5. Can it be implemented within a reasonable time period (7 years)?

Two members of the public spoke and relevant points have been included in the summary above.

Commissioner Baskin made a motion to accept the information on the Quarterly WSAS update.

Commissioner Schiffrin proposed an amendment requesting that staff to include context on the next quarterly WSAS report that addresses the five questions raised and shared by Commissioners on policy concerns and the feasibility of each water supply alternative. Commissioner Mekis seconded.

Commissioner Baskin proposed that Commissioner Schiffrin's amendment allow staff the flexibility to determine when it is appropriate to add the proposed context to WSAS staff reports. Commissioner Schwarm seconded.

Commissioner Wilshusen provided clarification on the two motions brought to the floor by Commissioners Baskin and Schiffrin.

Commissioner Wilshusen moved Commissioner Schiffrin's amendment to the floor for a voice vote.

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

Commissioner Wilshusen moved Commissioner Baskin's motion to accept the information on the Quarterly WSAS Update with the amended direction to staff to the floor for a voice vote.

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

5. Aquifer Storage and Recovery: Summary of Phase 1 Findings and Discussion of Phase 2

Ms. Luckenbach introduced Mr. Isidro Rivera and Mr. Robert Marks, P.E. with Pueblo Water Resources for the presentation on the findings of the Aquifer Storage and Recovery (ASR) Phase 1 study. The presentation provided the status of the investigation on the technical feasibility of ASR based on various groundwater modeling scenarios for the Santa Margarita Groundwater

Basin (SMGB) and Santa Cruz Mid-County Groundwater Basin (MCGB), and outlined the next steps to proceeding with Phase 2 of the pilot program in the MCGB.

Could ASR pilot testing interfere with nearby wells that are operated by other districts and has the City addressed any potential well interference with those districts?

- If an ASR pilot test well were located in an area where there might be a potential impact to another district's operating well, the City would have to address that issue prior to initiating the pilot test. One way to do that would be to enter into temporary cooperative agreements with the other districts and work together with that district on the pilot to identify address any issues if/when they might occur.

What is the difference between the assumptions about the amount of water supplied for diversion to in lieu and or ASR in scenarios 4, 5 and 6?

- Confluence makes the following assumptions:
    - First, fish flows are met;
    - Second Santa Cruz's water demands are met, assuming they can be met within existing water rights constraints;
    - If serving in lieu water to water district customers, Confluence delivers average daily demand to all the water districts (Soquel, Scotts Valley and San Lorenzo Valley); and if not providing in lieu, then this number is 0; and
    - Finally if considering an ASR scenario (i.e., Scenarios 5 and 6) all remaining water available within existing water right allocations is diverted to ASR.

Hypothetically, could the supply gap be eliminated if the City were to invest in Scenario 4 (In Lieu only)?

- Not necessarily. Several issues require additional groundwater modeling to understand the feasibility of this alternative. First, recharge from in lieu is not necessarily occurring where the water is needed for extraction from existing wells. This is not insurmountable but important to understand so that extractions can, if possible, be located in the layers recharged. Second, in lieu recharge does not appear to be occurring as quickly as needed for future extractions. This is due largely to the fact that the neighboring agency demands are so low which is reflected in slow recharge.

Do the calculations for ASR include data from the existing water pumping operations from other municipalities and private wells?

- No, these numbers reflect baseline groundwater conditions that do not include present or future activities of other districts.

Will conflicts between water agencies due to the concurrence of projects that occur in the Mid County Groundwater Basin need to be resolved in the Santa Cruz Mid County Groundwater Agency?

- It is likely that any such issues would be brought to the Mid-County Groundwater Agency board for discussion and guidance.

Taj Dufour, Engineering Manager for the District, spoke regarding the importance of inter-district cooperation and commitment to improving the sustainability of the groundwater basin, as future supplemental water supply projects are considered.

Is there an alternate plan to develop an ASR pilot test well within the Santa Margarita basin, currently under the Land Trust of Santa Cruz County?

- The Water Department will continue to explore other options to locate a site where a well can be constructed and tested.

Is there a potential start date for Phase II of the Pilot Program within the Santa Margarita Groundwater basin?

- No.

Is the Beltz 12 Well the primary well that will be utilized for pilot testing ASR in the Mid-County Basin?

- Yes.

Are the other wells within the Beltz system suitable for injection wells?

- No, the wells would need to be retrofitted. The Beltz 12 Well will also undergo retrofitting to allow it to be used as an injection well before Phase II can commence.

Mr. Dufour commented that Soquel Creek Water District will be drilling and conducting pilot testing of an injection well site near Cabrillo College. This study can be mutually beneficial to the City by providing information about the mineral composition and hydrogeological profile of the underlying aquifer in that location.

How is actual data from the basin accounted for in the groundwater modeling scenarios?

- Historical data on parameters such as groundwater levels and how well operations affect draw down and recovery of the aquifer in the area adjacent to the well has been extensively used in creating the model. Furthermore, extensive calibration of the model has been done to document that modeled results reflect the actual performance of the aquifer under known, historical conditions.

Will pilot testing need to be conducted at each additional well site that can be a possible injection site?

- Each individual well site would need to undergo some version of testing to determine if it meets the parameters to be an injection well. This could include groundwater modeling and installation of monitoring wells but not necessarily a full-scale pilot test similar to Beltz 12.

Can staff provide clarification on how assumptions and actual data are delineated in groundwater modeling?

- These scenarios modeled in the groundwater analysis being shown tonight use daily water availability forecasts that are produced by Confluence and then fed into the groundwater model as appropriate for the various scenarios involving in lieu and/or ASR. The groundwater model uses temperature and precipitation data, which are needed to model groundwater, recharge rates.

Can staff clarify what action is being recommended to City Council on October 9, 2018 in regards to Phase II pilot testing?

- Staff is recommending that the City Council approve the agreement with Pueblo Water Resources to move forward on Phase II pilot testing in the Mid-County Groundwater Basin.

One member of the public spoke regarding the use of alternative aquifers. Another member of the public spoke and relevant points have been included in the summary above.

Commissioner Baskin moved that staff convey to City Council that by accepting the recommendation by staff, the Water Commission has reviewed the results of Phase 1 and supports proceeding to Phase 2 Pilot testing. Commissioner Schiffrin seconded.

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

6. Final Reports: Recycled Water Feasibility Planning Study and Desalination Feasibility Update Review, and Update on Alternatives Decision Making Process

Ms. Luckenbach presented the final reports of the Recycled Water Feasibility Study and the Desalination Feasibility Update Review. The presentation provided an overview of the each report and what led staff to prioritize Recycled Water as the Element 3 Alternative. The presentation also included a brief summary of the decision making process in alignment with the WSAC work plan schedule.

A commissioner commented on the potential public reactions of initiating Recycled Water projects within the community of Santa Cruz.

How does AB 574, the state regulation for direct potable recycled water (DPR), affect the City?

- DPR will be discussed in further detail at the November Water Commission meeting when the City will have a better understanding of the regulation after analysis is received by the contracted consultant Kennedy/ Jenks.

Commissioners requested that for the November Water Commission meeting, staff prepare a draft City Council agenda report that presents the analysis underlying the recommendation to prioritize recycled water as the Element 3 supply option. The Water Commission would like to have a chance to review and comment on this agenda report, as well as take action on the report's recommendation and have that action be conveyed to the Council as part of the report.

Three members of the public spoke on their concerns about the potential environmental impacts of Recycled Water. Another member of the public spoke regarding DPR regulations and recycled water and desalination.

Commissioner Schiffrin made a motion to accept the final reports on desalination and recycled water with condition that staff includes clarification on the contextual definition of prioritization in regards to water supply alternatives, and provide an explanation of the schedule for making a decision on the staff report to Council. Commissioner Engfer seconded.

Commissioner Baskin made a friendly amendment asking staff to bring a draft of the completed report on the prioritization of Advanced Treated Recycled water that will be brought to Council in November. Commissioner Schiffrin seconded.

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

Subcommittee/Advisory Body Oral Reports

7. Santa Cruz Mid-County Groundwater Agency
   - None.

8. Santa Margarita Groundwater Agency
   - None

Director's Oral Report: None.

Adjournment Meeting adjourned at 10:53 PM.

Respectfully submitted,

Katy Fitzgerald
Staff

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WATER COMMISSION
INFORMATION REPORT

DATE: 11/1/2018

AGENDA OF: November 5, 2018

TO: Water Commission

FROM: Malissa Kaping, Management Analyst and
Jeremy Becker, Finance Manager

SUBJECT: FY 2018 4th Quarter Financial Report

RECOMMENDATION: Accept the FY 2018 4th Quarter Financial Report.

BACKGROUND: The attached 4th Quarter FY 2018 Financial Report presents the FY 2018 year-end, unaudited, financial expenditures, revenues, and reserve balances. The report demonstrates the Water Department continues to meet financial objectives established in the 2016 Long Range Financial Plan (LRFP), which utilized water sales projections and water rates established by the 2016 Cost of Service (COS) report.

DISCUSSION: The Water Operations Fund 711 ended FY 2018 with nearly $40.7 million in revenues and nearly $30 million in expenses leaving a balance of $10.7 million. The balance represents expenditures on Capital Investment Program (CIP) projects.

Revenues: Water Sales
The nearly $40.2 million budgeted for water sales was the FY 2018 revenue requirement from the COS report. The actual revenue in water sales was nearly $38.3 million ($35.1 million for Water Operations Fund 711 and $3.2 for Rate Stabilization Fund 713) which is 4.7% less than the COS projection for revenue.

Revenues: Other
The amount earned in miscellaneous revenues in FY 2018 was $2.1 million and is an increase over the $1.3 million received in FY 2017. The bulk of the additional revenue was the nearly $560,000 in reimbursements from Federal Emergency Management Agency (FEMA) and California Office of Emergency Services (CalOES) for damages during the 2017 winter storms. Other miscellaneous revenues received remained consistent with FY 2017 levels such as the nearly $350,000 received in kiosk fees and concession sales at the Loch Lomond Recreation Area.

Expenses
When comparing actual expenditures to the FY 2018 Adopted Budget, the Department spent $1 million less than originally budgeted for operations. The bulk of this is salary savings due to vacancies and the time it takes to recruit and hire staff. During the fiscal year, the adopted budget was adjusted by nearly $5.2 million with a significant amount of that being prior year purchase order carry-forwards.

Fund Balances
The Department ended FY 2018 with a fund balance higher than reported in the Pro-Forma submitted to the Commission on June 4, 2018. The approximate balance for Fund 711, Fund 713, Fund 716 and Fund 717 is $25.8 million and exceeds the earlier reported balance of $23.5 million by 9.8 percent largely due to the $3.5 million draw on our Line of Credit. More importantly, the Department has exceeded the debt coverage targets with debt service coverage of 6.4x and 223 days of cash on hand. The targets in our Long Term Financial Plan for each target is 1.5x and 180 days.

Staff is presenting approximate balances due to the delay in issuing the FY 2018 Comprehensive Annual Financial Report (CAFR). The City's Finance Department is still completing adjustments for investment earnings, pension expenses and other post-employment benefits. That said, the overall balance is not expected to markedly change from what is shown on the report and an update will be provided after the CAFR is issued. Fund 711 transfers will be made to other Water funds as follows:

- 90 Day Operating Fund (716) - $879 thousand to keep 90 days of operating expenses in reserve;
- Emergency Fund (717) - $41 thousand to meet target balance of $3.1 million;
- Mt. Hermon June Beetle Endowment Fund (718) - $1 thousand to make up for missed investment; earnings target for fund; and,
- Equipment Replacement Fund (719) - $350 thousand to begin a balance for any future Department capital outlay.

CIP
A handful of projects have been completed or are in process of wrapping-up. The Gravity Trunk Main Valve Replacement, Wharf Water Main Replacement and the Water Supply Reliability project (WSAC) are fully complete and will be removed from the first quarterly financial report for FY 2019. Notice of Completions have been recorded for the final phase of the Bay Street Reservoir Reconstruction, Tait Wells, and the GHWTP Filter Rehabilitation projects but will remain on the quarterly reports while wrap-up work is completed. A Notice of Completion was also issued for the U5 maintenance tank which is phase one of the project with the pipeline replacement and full tank replacement in process.

Two new CIP projects were added to the report since the 3rd quarterly report. They are the Carbonera Tank Access Road and the Spillway Bridge Replacement. The Carbonera Tank Access Road sustained damage in the 2017 winter storms and the work is expected to receive FEMA funding. The Spillway Bridge is currently under construction and the new bridge will support heavy equipment such as fire trucks and the equipment needed for the Newell Creek Dam Inlet-Outlet project.

Looking Forward
The HDR supported Program is currently updating the projected project totals and taking any revisions through the Program's change management process. Updated project cost projections and the impact on the financials will be presented later in FY 2019.

FISCAL IMPACT: None

PROPOSED MOTION: Motion to accept the FY 2018 4th Quarter Financial Report.

ATTACHMENTS: 4th Quarter FY 2018 Financial Report

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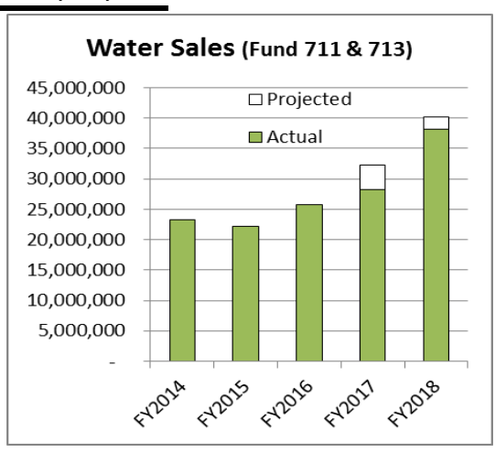
Water Department
Year End FY 2018 Financial Report
Preliminary, Unaudited, as of 6/30/18

	FY 2018 Ado Budget	FY 2018 Adj Budget	Actual YTD Thru 6/30/18	YTD % of Budget
Revenues for Fund 711 & 713				
Water Sales and Service: Fund 711	40,171,529	40,171,529	35,072,491	87%
Miscellaneous: Fund 711	1,193,181	1,536,181	2,099,819	137%
Grants & Financing: Fund 711 *	-	-	3,514,614	0%
Subtotal Operations	**41,364,710**	**41,707,710**	**40,686,924**	**98%**
Water Sales and Service: Fund 713	-	-	3,146,864	0%
Miscellaneous: Fund 713	-	21,730	3,569	16%
Subtotal Reserve	**-**	**21,730**	**3,150,433**	**14498%**
Total Revenues	**41,364,710**	**41,729,440**	**43,837,357**	**105%**

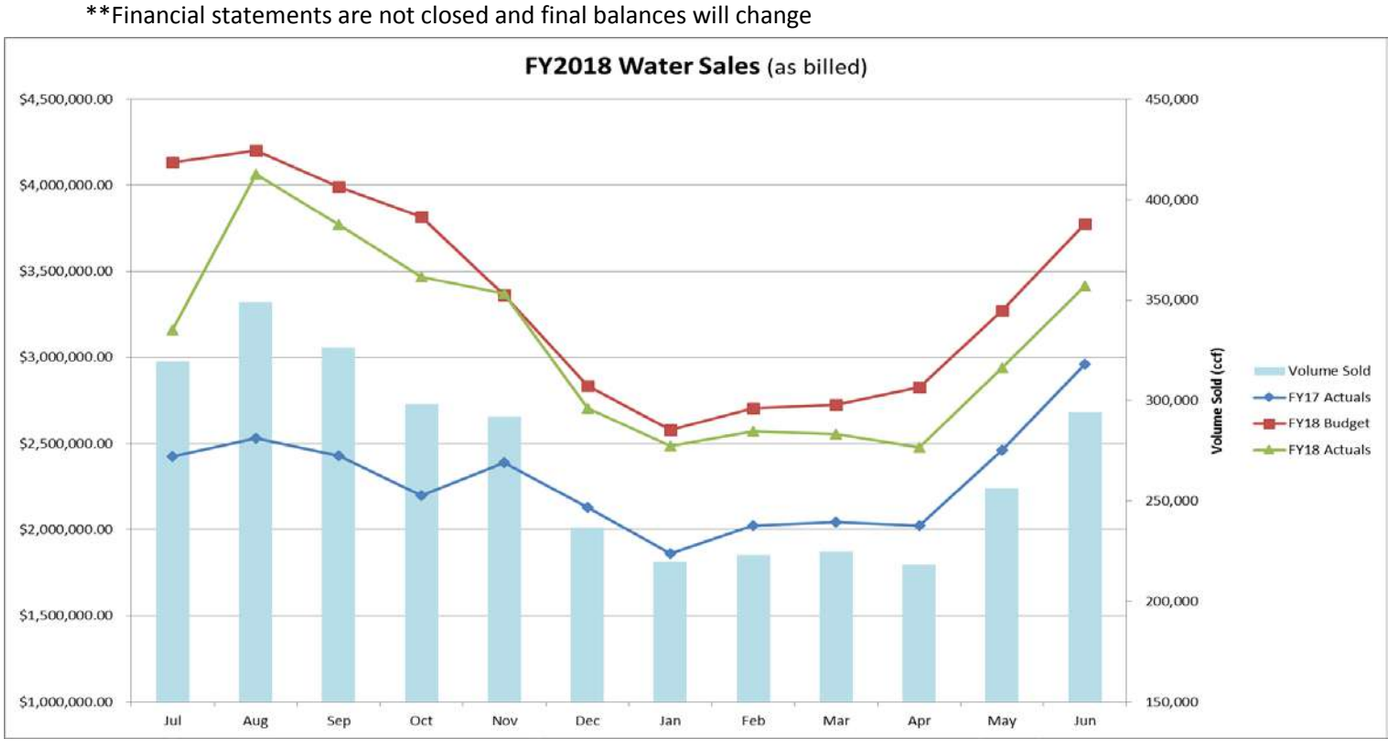
* Includes $3.5M line of credit drawdown

Expenses for Fund 711				
Personnel	14,249,469	14,501,384	13,427,998	93%
Services, Supplies, and Other	14,667,833	18,946,802	14,453,378	76%
Debt Service	1,949,327	1,949,327	1,126,039	58%
Capital Outlay: Other	175,000	813,180	986,479	121%
Total Expenses	**31,041,629**	**36,210,692**	**29,993,893**	**83%**
NET for Operations	***10,323,081***	***5,497,018***	***10,693,030***	



Fund Balances	Balance as of 6/30/18	Target for FY end
711- Enterprise Operations **	8,423,000	7,142,413
713- Rate Stabilization	5,639,000	5,821,270
714- Public Art	256,007	N/A
715-System Devel. Charges	3,671,000	N/A
716- 90-Day Operating Reserve **	7,404,000	7,142,413
717- Emergency Reserve	3,100,000	3,100,000
718- MHJB Endowment	144,000	144,000
719 - Equipment Replacement	350,000	-

**Financial statements are not closed and final balances will change



CIP Projects Overview, as of 6/30/2018

Rehab or Replacement Projects	Project #	Life of Project Total (Projected) *	Spend Thru 6/30/18 **	Project Duration	Current Status
Aerators at Loch Lomond	c701706	550,000	9,299	2017-2019	Design
Bay Street Reservoir Reconstruction	c700313	25,608,061	25,350,732	2007-2018	Post-Constr
Beltz 10 & 11 Rehab & Development	c700026	509,243	106,836	2017-2018	Design
Carbonera Tank Access Rd	e701706	487,490	44,467	2018-2019	Design
Coast Pump Station Line Repairs	c701707	695,120	130,000	2018-2019	Design
Felton Diversion Replac. & Pump Station	c701602	1,111,900	211,822	2016-2020	Construction
Gravity Trunk Main Valve Replacement	c701504	640,000	583,519	2014-2017	Complete
Newell Creek Dam Inlet/Outlet Replacement	c701606	49,192,744	5,447,805	2016-2022	Design
Newell Creek Pipeline Rehab/Replacement	c701701	20,022,600	19,499	2016-2020	Planning
N. Coast System Rehab- Laguna Diversion	c701801	1,620,000	86,500	2018-2021	PD/Feasibility
N. Coast System Rehab- Majors Diversion	c701802	1,570,000	86,500	2018-2021	PD/Feasibility
North Coast System Rehab	c709835	27,640,259	13,945,999	2003-2023	Planning
Pressure Regulating Stations	c701703	390,000	117,338	2017-2020	Construction
San Lorenzo River Diversion & Tait Wells	c709872	2,295,014	1,953,700	2002-2018	Post-Constr
Spillway Bridge Replacement	c701807	660,000	50	2018	Construction
Tube Settler Replacement	c701708	2,875,200	230,900	2018-2019	Design
University Tank No. 4 Rehab/Replace	c701505	3,770,000	-	2014 - 2020	Planning
University Tank No. 5 Replacement	c701506	4,428,000	579,366	2014 - 2019	Construction
Water Treatment Upgrades	c700025	1,857,147	1,693,729	TBD	Planning
Wharf Water Main Replacement	c701613	193,501	158,188	2016	Complete
WTP Concrete Tanks Replacement	c701501	28,838,320	2,052,883	2014 - 2021	Design
WTP Filter Rehabilitation and Upgrades	c701303	6,037,300	5,839,452	2013 - 2018	Post-Constr
WTP Flocculator Improvements	c701502	3,220,000	-	2018-2020	Planning
		184,211,899	**58,648,583**		

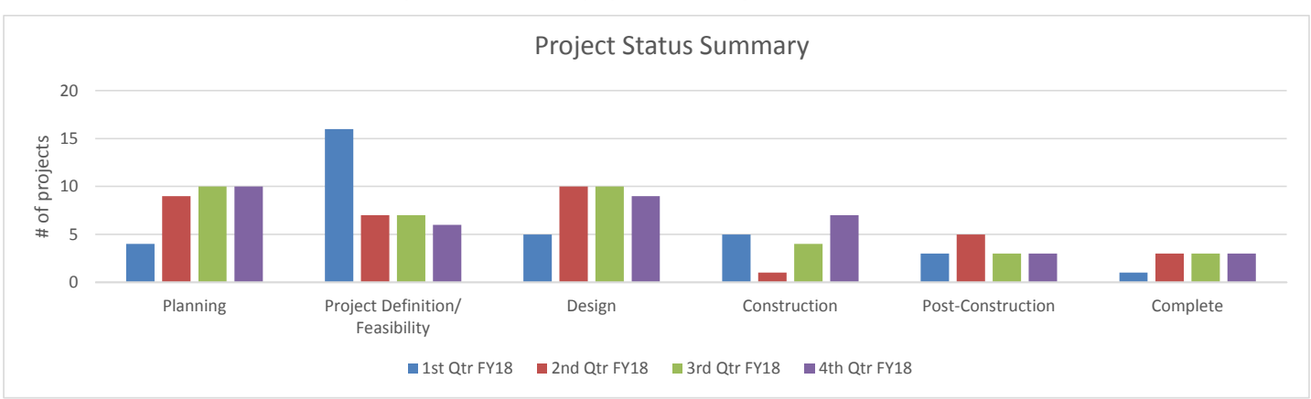
Upgrades or Improvement Projects	Project #	Life of Project Total (Projected) *	Spend Thru 6/30/18 **	Project Duration	Current Status
Advanced Metering Infrastructure (AMI)	c701603	11,100,000	96,705	2017-2023	PD/Feasibility
Brackney Landslide Risk Reduction	c701803	70,100	49,312	TBD	Planning
Coast Pump Station Flood Reduction	c701804	67,300	48,575	TBD	Planning
Loch Lomond Facilities Improvements	c701301	385,000	73,626	2013-2020	Design
Photovoltaic System Evaluation/Construc	c701607	910,000	821,140	2016-2018	Planning
Security Camera & Building Access Upgrades	c701704	645,000	176,996	2016-2019	Construction
Spoils and Stockpile Handling Facilities	c701508	350,000	228,249	2015-2019	Construction
Union/Locust Building Expansion	c701805	450,000	36,711	2017-2018	Construction
Water Resources Building	c701702	1,100,000	206,585	2017-TBD	Design
		15,077,400	**1,737,899**		

Water Supply Reliability & Studies	Project #	Life of Project Total (Projected) *	Spend Thru 6/30/18 **	Project Duration	Current Status
Aquifer Storage and Recovery	c701609 & -10	3,985,000	856,906	2016 - 2022	PD/Feasibility
Recycled Water	c701611 & -12	675,000	573,807	2016 - 2018	PD/Feasibility
River Bank Filtration	c701806	1,300,000	1,118,180	2018-2019	PD/Feasibility
Source Water Evaluation	c701608	1,200,000	417,742	2016 - 2020	Planning
Water Supply Reliability - WSAC	c701402 & -03	2,296,250	2,296,249	2014 - 2016	Complete
Water Supply Augmentation Strategy	c701705	106,648,352	148,405	2020 - 2025	Planning
		116,104,602	**5,411,288**		

Water Main Replacements	Project #	Average Spend Per Year	Spend For 7/1/17 - 6/30/18	Project Duration	Current Status
Main Replacements - Engineering Section	c700002 +	1,298,289	4,056,435	Annual - Ongoing Programs	
Main Replacements - Customer Initiated	c700004	35,759	-		
Main Replacements - Distribution Section	c701507	369,643	191,930		
Main Replace.- Outside Agency Initiated	c700003	172,564	123,625		
		1,876,255	**4,371,990**		

* Will change as projects move through Program validation & change management process.

** Amount includes current encumbered and spent funds from the project start through 6/30/18.



WATER COMMISSION
INFORMATION REPORT

DATE: 10/31/18

AGENDA OF: November 5, 2018

TO: Water Commission

FROM: Heidi Luckenbach, Deputy Director/Engineering Manager

SUBJECT: Update on California Environmental Quality Act (CEQA) Processes for Various Water Projects Including the Newell Creek Dam Inlet/Outlet Replacement, the Graham Hill Water Treatment Plant Concrete Tanks Replacement and the Water Rights Amendment Project.

RECOMMENDATION: Receive and accept the information on the CEQA work being performed on various projects.

BACKGROUND: The Water Department is executing a significant amount of work and has recently processed a number of environmental documents. The purpose of this report is to provide an update on projects most recently in the CEQA phase of development and to introduce a related process in development from the Santa Cruz Water Program.

DISCUSSION:
The following three projects are currently in environmental review in some fashion.

Newell Creek Dam Inlet/Outlet Replacement Project. This project includes the construction of a new inlet/outlet tunnel and pipeline below and around the existing dam, new inlet/outlet gates in the reservoir, new valving and operational controls (outlet structure) at the toe of the dam, and replacement of ~2,000' of existing pipeline that is part of the Newell Creek Pipeline Project between the toe of the dam, south. (Attachment 1.) Dudek was hired in December 2017 for environmental review and permitting for the project. Consensus was reached between City and Consultant staff to proceed with the development of an Environmental Impact Report (EIR) rather than a Mitigated Negative Declaration (MND) and to release the Notice of Preparation (NOP) without an Initial Study. The NOP was released on June 28, 2018 (link below as Attachment 2), two scoping meetings were held on July 18 and 19, and the comment period closed on July 31. Three comments were received: local resident, Monterey Bay Air Resources Board, and California Department of Fish and Wildlife with expected level of comments. The EIR is being drafted and is scheduled for release on November 6 with the review period running through December 21. Two public meetings will be held on December 11 and 13. A link to the draft EIR will be provided at the Commission's November 5 meeting.

Graham Hill Water Treatment Plant Concrete Tanks Replacement. This project includes the replacement of three of the four existing concrete tanks at the Graham Hill Water Treatment Plant (GHWTP). (Attachment 3.) As with several other projects at the GHWTP (namely the Filter Rehab and Tube Settler Replacement), a Notice of Exemption (NOE) was filed for this project based on a categorical exemption for "the replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced." No exception to the exemption applied. The NOE was posted with the County of Santa Cruz on April 13 and ended May 13, 2018 with no challenges. The Water Department is applying for state funding for this project. The State has questioned the appropriateness of the NOE for this project. In response, City staff agreed to prepare an Initial Study that will likely lead to a negative or mitigated negative declaration. There is no schedule impact to this new approach.

Santa Cruz Water Rights Project. This project involves the modification of existing City water rights to increase the flexibility of the water system by improving the city's ability to utilize surface water within existing allocations. The City prepared an Initial Study and issued a Notice of Preparation on October 15, 2018; link provided below under Attachment 4. Scoping meetings are planned for November 7 and 8; comments are requested by November 14, 2018. The current schedule has a draft EIR to be completed by summer 2019.

As part of the Santa Cruz Water Program, a Program Management Plan is being developed with the overarching goal to streamline the implementation of projects. The plan currently includes 18 strategies from project validation, business case development and risk management, to cost estimating, quality management, and change management. Included is the Environmental Permitting and Review Strategy, the purpose of which is to define the overall permitting and environmental review process for each project or suite of projects. This will help with consistency in understanding and application of the regulations, as well as to guide a more strategic way of thinking about grouping like projects, developing programmatic documents from which individual projects will be evaluated, and sequencing projects in a way that is mindful of the required environmental review.

FISCAL IMPACT: None

PROPOSED MOTION: Motion to accept the information.

ATTACHMENTS:
Attachment 1 Project Overview: Newell Creek Dam Inlet/Outlet Replacement Project
Attachment 2 Link to NOP for Newell Creek Dam Inlet/Outlet Replacement Project
http://www.cityofsantacruz.com/home/showdocument?id=71244
Attachment 3 Project Overview: GHWTP Concrete Tanks Project
Attachment 4 IS/NOP for Santa Cruz Water Rights project:
http://www.cityofsantacruz.com/home/showdocument?id=73445

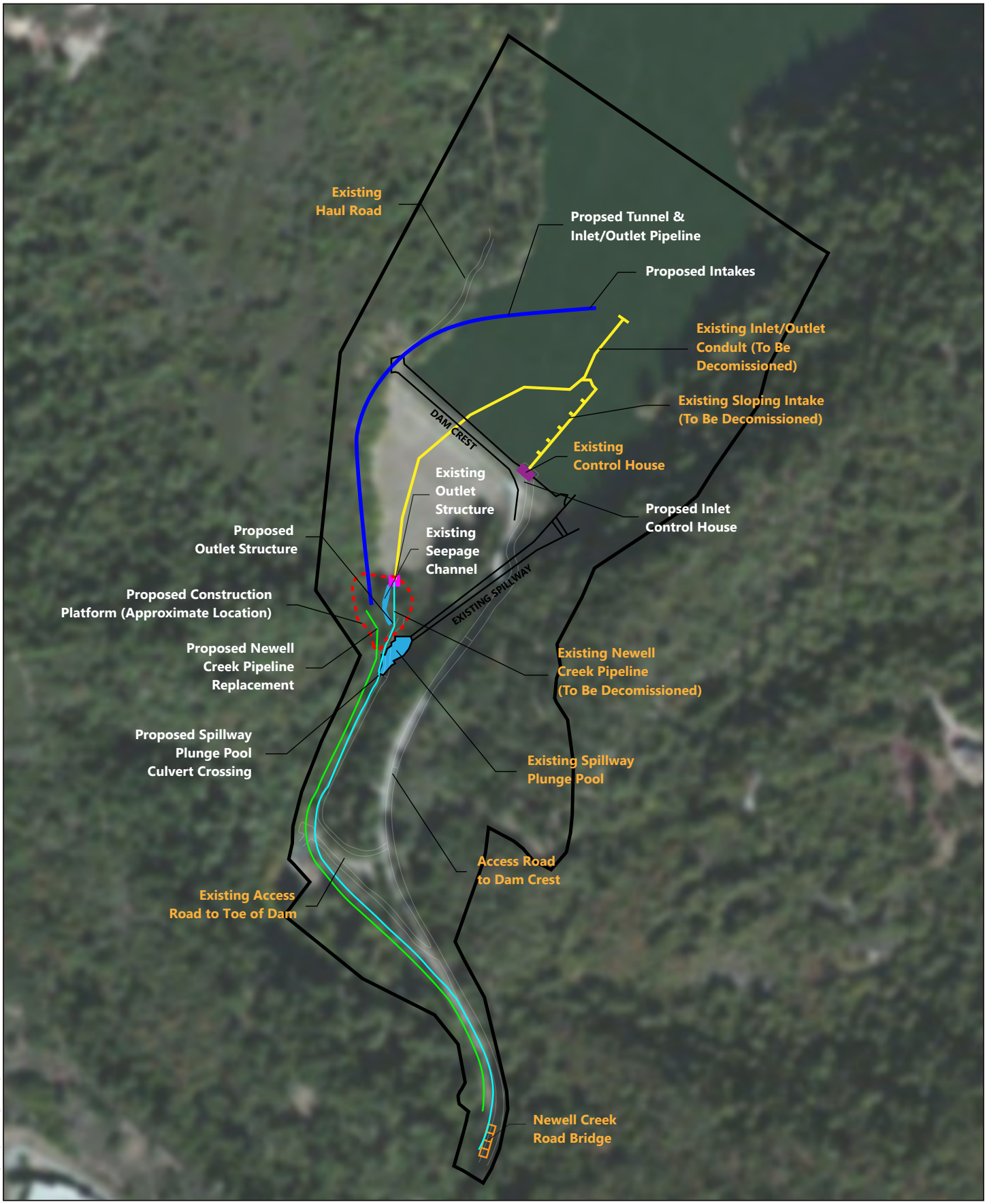


FIGURE 3-4

Project Overview

Newell Creek Dam Inlet/Outlet Replacement Project

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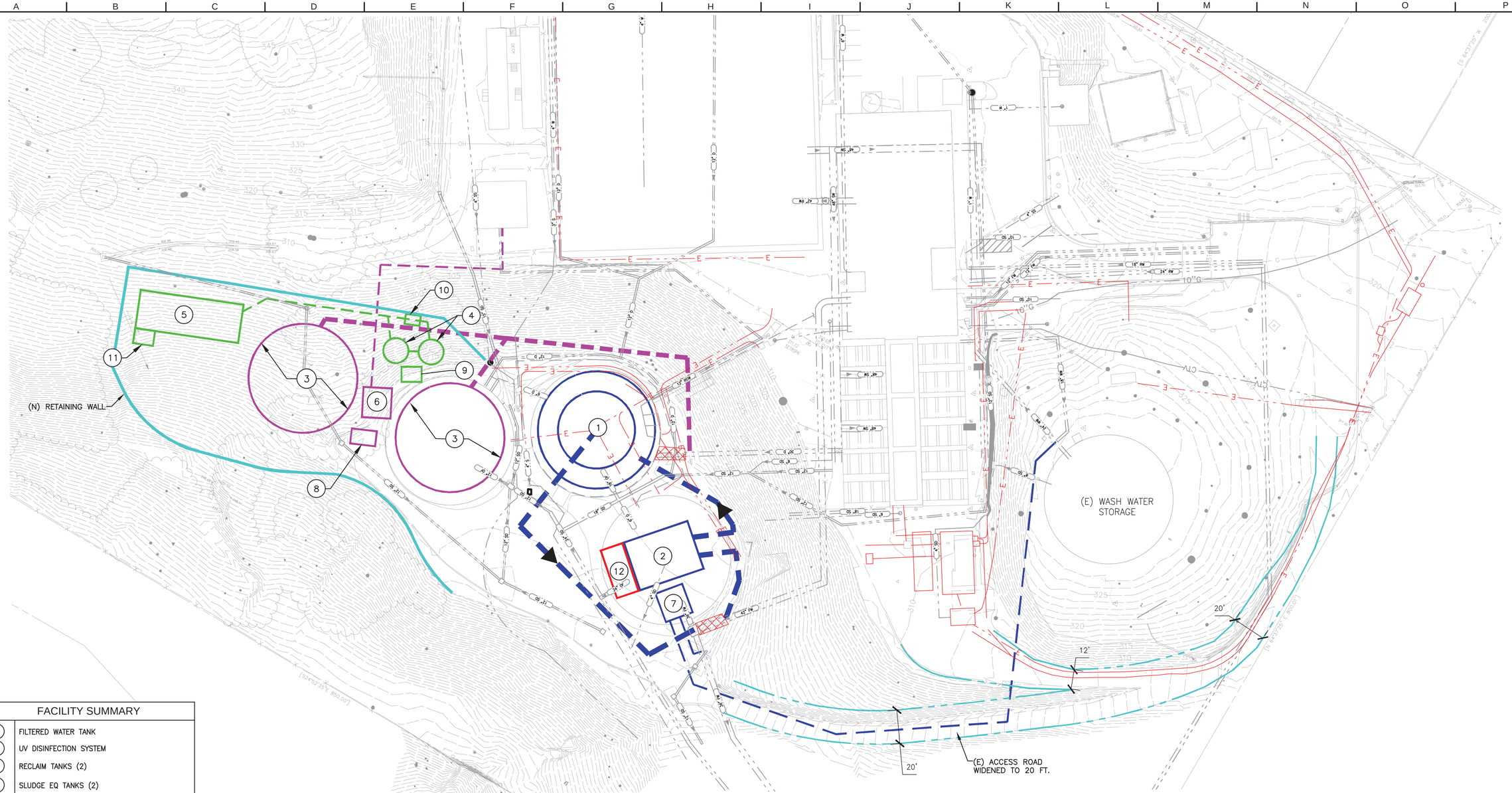

FACILITY SUMMARY	
1	FILTERED WATER TANK
2	UV DISINFECTION SYSTEM
3	RECLAIM TANKS (2)
4	SLUDGE EQ TANKS (2)
5	SOLIDS DEWATERING BUILDING
6	RECLAIM PUMP STATION
7	WASH WATER SUPPLY PUMP STATION
8	RECLAIM TANK SOLIDS TRANSFER PUMP STATION
9	SLUDGE PUMP STATION
10	SLUDGE DEWATERING PUMP STATION
11	FILTRATE WET WELL AND PUMP STATION
12	ELECTRICAL BUILDING

NOTES:

NOT ALL PIPING CONNECTIONS AND PROPOSED SYSTEMS SHOWN FOR CLARITY.

QA/QC REVIEW: _____

DATE: _____

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : AS SHOWN
DRAWN BY : DAP
DESIGNED BY : CMT
PROJ. MGR. : JLW

No.	ZONE	REVISIONS	BY	DATE

WEST YOST ASSOCIATES
2020 Research Park Drive
Suite 100
Davis, California 95618
(530) 756-5905
FAX (530) 756-5991

CITY OF SANTA CRUZ

GRAHAM HILL WATER TREATMENT PLANT IMPROVEMENT PROJECT

ALTERNATIVE 5

JOB NUMBER 698-14-16-01
DRAWING NUMBER **C06**
SHEET NUMBER X OF XX
REVISION -

4.4

N:\Clients\698 City of Santa Cruz\14-16-01 GHWTP Tank Imprvmts\CAD\Figures\A ve Layouts-5A.dwg 3/28/2018 3:36 PM jpavicic

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WATER COMMISSION
INFORMATION REPORT

DATE: 10/31/18

AGENDA OF: November 5, 2018

TO: Water Commission

FROM: Heidi Luckenbach, Deputy Director/Engineering Manager

SUBJECT: Update on Planned In Lieu Water Transfer with Soquel Creek Water District

RECOMMENDATION: Review and accept the information on the In Lieu Water Transfer Project with Soquel Creek Water District.

BACKGROUND: The Water Commission received an update on this project as part of the Water Supply Augmentation Strategy Quarterly report provided to the Water Commission in October. As things are changing quickly, staff wanted to provide additional and up to date information to the Commission. The purpose of this report is therefore to provide an update on the outstanding items described to the Commission in October, bring to the Commission's attention several matters raised by the Soquel Creek Water District (District), and discuss the pricing structure(s) used for the water transfer pilot study and how that may apply to a permanent in lieu agreement.

DISCUSSION:

Status of Pilot Water Transfer Project: The four outstanding items are described below with an updated status.

1. Finalization of the surface water distribution system monitoring plan has been completed by the District and is currently in review by the State Division of Drinking Water (DDW). DDW approval of the monitoring plan, as well as the District's drinking water permit amendment to serve surface water, are expected in early November.
2. Finalization of the intertie operations plan which describes the routine operations between the two water systems is complete and under review by the DDW.
3. The District has begun the "pre-transfer" water quality sampling that will continue for at least the next four weeks.
4. Notification of customers influenced by this project is underway. The District is in the process of notifying customers in the isolated zone (that will be receiving the surface water) to be prepared to open the intertie on or around November 26 assuming affirmation is received from DDW. The District proposed to DDW that affected

customers be provided notification at least one month in advance of the new (surface) source water with information on how to report water quality issues (phone number, website information, frequently asked questions, etc.).

Staff from both agencies remain encouraged by the possibility of beginning in lieu water transfers with Soquel Creek Water District as early as November 26, 2018.

Matters of Interest for Aquifer Storage and Recovery (ASR) and Water Transfers: The Soquel Creek Water District submitted comments to the City in response to the Notice of Exemption issued by the City for the ASR Pilot Test Program at Beltz 12. While the bulk of the comments were related to the ASR Pilot Test Program there are also comments related to the role of water transfers. The comments can be generally described as follows.

- What role would water transfers play in a portfolio of supply projects that may include ASR and the District's Pure Water Soquel project?
- How do the various groundwater projects support or conflict with the requirements to achieve sustainability of the Santa Cruz Mid County Groundwater Agency by 2020?
- What are the opportunities and limitations of producing some part of the volume of water needed by the City during a drought from the Mid County Basin?

The comments provided by the District simply reiterate that there are many details requiring thorough analysis and understanding for both the ASR and in lieu (water transfer) project(s) that require time and effort to fully understand. It is in the interest of both agencies to do so through mindful, diligent, and collaborative work.

Surface Water Transfer Costs: Under the terms and conditions of the 'Cooperative Water Transfer Pilot Project for Groundwater Recharge and Water Resource Management Between the City of Santa Cruz and Soquel Creek Water District' agreement (August 1, 2016), the City agreed to sell the District treated water at a price equal to $1,000 per million gallons. There has been a lot of discussion surrounding the basis of this number and its relation to the cost of water during a non-pilot scenario. There are several things to point out.

1. Short- Term Unit Cost for Pilot Study Only: For both the City and the District, this is a short-term pilot study to determine the technical feasibility of surface water transfers and its potential role in water supply planning for both the City and the District. This is a discounted price for the purposes of enabling this study to proceed and should not necessarily be assumed beyond the pilot study terms. To date, ~$800,000 has been encumbered for the evaluation of the winter water strategy, with an additional $4.5M in the budget for the next two fiscal years to continue with pilot testing of both ASR and in lieu. In the interest of data gathering, the pilot water transfer could have had no unit cost associated with it, but recognizing the value of the information to both agencies, a nominal price was negotiated between the City and District.
2. Longer -Term Unit Cost Estimate: Long-term water pricing will depend on many factors including if the supply can be interruptible or must be guaranteed if it is winter only, or summer as well, and if/when the City would receive water back. These issues, which would be part of the terms and conditions of service of a longer-term agreement, will need to be answered in concert with consideration of the City's current capital investment program that is upwards of $350M and will impact the cost of water. As a reference

point, past studies have provided initial cost estimates in the range of ~$11,000 to ~$22,000 per million gallons. (Kennedy/Jenks, 2015)

There is certainly work to be done in confirming the amount of water available for water transfers, the role of water transfers when considered along with other water supply projects, and the cost of water.

FISCAL IMPACT: None

PROPOSED MOTION: Motion to accept the information.

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WATER COMMISSION
INFORMATION REPORT

DATE: 10/31/18

AGENDA OF: November 5, 2018

TO: Water Commission

FROM: Rosemary Menard, Water Director

SUBJECT: Updated Water Commission Work Plan

RECOMMENDATION: Receive and accept the Updated Water Commission Work Plan for the remainder of 2018 and discuss the draft schedule for 2019 (Working Draft).

BACKGROUND/DISCUSSION:

Staff provides periodic updates to the Water Commission work plan to show major items to be received by the Water Commission. This item includes the remainder of calendar year 2018 and a skeleton of calendar year 2019.

FISCAL IMPACT: None

PROPOSED MOTION: Accept the Calendar Year 2018/2019 Water Commission Work Plan (Working Draft).

Attachment: Calendar Year 2018/2019 Water Commission Work Plan

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Working Draft – Calendar 2018/2019 Water Commission Work Plan (rev 10/30/18)

Major Water Commission Work Plan Item	Anticipated City Council Action on Water Commission Recommendations
November 5, 2018	
➢ Draft City Council Agenda Report recommending prioritizing recycled water as WSAC Element 3	General Business Council action on Element 3 – 11/27/18
➢ WSAS decision process discussion and feedback	
➢ 4th Quarter FY2018 Financial Report	
➢ Information Item on CEQA processes: water rights, NCD I/O, Concrete Tanks	
➢ Information Item: in lieu update including cost of pilot	
December 3, 2018	
➢ Workshop on water treatment – GHWTP condition assessment, seismic assessment, treatment process evaluation, requirements for ongoing operations with existing sources and water quality characteristics and with additional winter water sources and water quality characteristics.	
➢ Ongoing discussions on Decision Making	
➢ Quarterly Update on WSAS with new format	
January 7, 2019	
➢ CY 2018 Capital Projects Status and Updates	
➢ 1st Quarter FY2019 Financial Report (July – Sept 2018)	
February 4, 2019	
➢ Briefing on Projects for FY 2020 – 2030 CIP	
➢ First Look – Annual Water Supply Forecast	
➢ 2nd Quarter FY2019 Financial Report (Oct – Dec 2018)	
March 4, 2019	
➢ Joint workshop with members of the former Water Supply Advisory Committee – comprehensive update on status of work on supply options.	
➢ Quarterly Update on WSAS	
April 1, 2019	
➢ Annual joint meeting with City Council (likely scheduled for Council evening session either April 9 or 23)	
➢ Annual Water Supply Forecast	Annual Water Supply Forecast
May 6, 2019	
➢ Draft FY 2020 Operating and Capital budgets and Pro Forma	
➢ 3rd Quarter FY2019 Financial Report (Jan – Mar 2019)	
June 3, 2019	
➢ Final Action on FY 2020 Operating and Capital Budgets and Water Commission recommendation to Council	City Council Action on FY 2020 Budget June 11 or 25, 2019
➢ Quarterly Update on WSAS	
July 1, 2019	
➢ Likely Cancelled due to July 4th Holiday	
August5, 2019	
➢ Update on Winter 2018-2019 in lieu and ASR projects	
September 2,2019	
➢ Quarterly Update on WSAS	
October 2, 2019	
➢ 4th Quarter FY2019 Financial Report	
November 4, 2019	
➢ 4th Quarter FY2019 Financial Report (alternative date)	
December 2, 2019	
➢ Quarterly Update on WSAS	

Notes:

- 1st, 2nd, and 3rd quarterly financial reports will follow reporting quarter by 2 months.
- 4th Quarter financial report will follow reporting quarter by 3-5 months.

Pending List:

- Affordability Issues/Integrated Regional Water Management Disadvantaged Communities Planning Grant (when ready)
- Water System Development Charges – scope of upcoming review and possible revisions (when ready)
- WSAS Decision Process timeline and work plan (tentatively for March 2019)
- Potential enrichment session on climate change modeling for water supply, HCP, City planning

WATER COMMISSION
INFORMATION REPORT

DATE: 10/31/2018

AGENDA OF November 5, 2018

TO: Water Commission

FROM: Heidi Luckenbach, Deputy Director/Engineering Manager

SUBJECT: Update on Water Supply Augmentation Strategy Decision Process

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RECOMMENDATION: Receive information on the approach to the Water Supply Augmentation Strategy decision making process and provide feedback to staff.

BACKGROUND: Staff continues to work through the decision making process for selected water supply projects, or portfolio of projects, to implement as water supply augmentation for the city. (Attachment 1 includes a summary of supply alternatives being considered.)
Staff last reported on a series of next steps to the Commission at their June meeting.

DISCUSSION:
Below are the next steps identified and shared with the Water Commission at their June meeting with a brief statement about status.

1. Develop Performance Metrics (triggers) for all elements. Triggers were identified for ASR during the WSAC process, but not for the other elements.

   Triggers are under development for each element and are similar in nature to those developed for ASR; relating to the efficiency of project. These will be brought back to the Commission at a later date.

2. Review WSAC metrics of supply gap, cost, timeliness and yield, as well as Guiding Principles. Do they still make sense? Should others be added?

   The attached spreadsheet (Attachment 2) includes the criteria identified to date and being recommended by staff for Commission review and consideration. Criteria shown include WSAC thresholds and guiding principles as well as other standard decision making criteria used in the industry. The spreadsheet attempts to define the criteria, clarifies the basis for each criteria (fatal flaw, threshold, guiding principle, other), and a proposed rating structure. Staff is seeking any feedback on Attachment 2, for consistency with the WSAC recommendations and discussions held to date with the Commission.

3. Continue to develop a more detailed decision making process that will include rating structures, sensitivity analyses and the possibility of a triple bottom line (or triple bottom line plus) analysis.

   The attached (Attachments 2 and 3) shows the development of this work to date and will be discussed at the November meeting.

4. Continue to develop each element to equal level of detail for comparison with other elements.

   This is an ongoing task with details reported quarterly to the Commission.

5. Consider developing portfolios that include two or more elements.

   This is a future task.

6. Finalize comprehensive decision-making framework and associated tools and metrics; present to Commission for review and approval.

   This is an ongoing task.

7. Commission to then submit that framework to the Council for review, improvement, and, ultimately, approval to apply it going forward.

   This is a future task, once the framework is nearing completion. Staff is looking a March timeframe for submitting this item.

FISCAL IMPACT: None.

PROPOSED MOTION: Receive information on the approach to the Water Supply Augmentation Strategy decision making process and provide feedback.

ATTACHMENT(S):
Attachment 1: Table 1 Summary of Supply Alternatives
Attachment 2: Table 2 Alternatives Screening Criteria and Guidance for Scoring
Attachment 3: Table 3 Summary of Quantitative Results

TABLE 1:
Summary of Supply Alternatives

PURPOSE: Summarize Alternatives being considered for in lieu, aquifer storage and recover (ASR), recycled water and desalination and provide an updated status on whether alternative is moving forward for further development. Recommendations from prior studies are included where appropriate.

Alternative	Sub Alt - RWFPS	Description	Source Water	Treatment	City Use	Notes
In Lieu		Near Term with SqCWD	City's Surface Water	GHWTP	Offset portion of SqCWD demand as pilot test using North Coast sources	In place. No further analysis required.
		Longer Term with SqCWD, CWD, SVWD and/or SLVWD	City's Surface Water	GHWTP	Offset portion of regional agency's demands using all city's flowing sources	Evaluation ongoing
ASR		Purisima	City's Surface Water	GHWTP	Use Mid-County Groundwater Basin to store excess surface water	Evaluation ongoing
		Santa Margarita			Use Santa Margarita GW Basin	Evaluation ongoing
		Purisima and Santa Margarita			Use both basins	Evaluation ongoing
Recycled Water	1A	Santa Cruz PWD Title 22 Upgrade Project for NPR use in and around the SC WWTF	Santa Cruz WWTF	Tertiary Treatment at SC WWTF	Serve in-plant uses, truck filling and demonstration site at the La Barranca park near the WWTF.	This was one of two near-term reccommended projects for the RWFPS; however, this project stalled because of discussions regarding potential to implement tertiary treatment as part of Pure Water Soquel Project. Not selected as standalone. These customers would better be served as part of a new tertiary at WWTF built as part of Pure Water Soquel Project (i.e. Alt 3b) or as part of a larger Water Department led NPR project (Alt 1b).
	1B	Maximize tertiary treatment and reuse for identified City NPR uses.	Santa Cruz WWTF		Four phases of potential customers were identified within the City's service area - (1) near plant, (2) northern extension, (3) eastern extension, (4) UC Santa Cruz (UCSC) extension.	The UCSC Extension was the other near-term reccommended projects for the RWFPS; however, this project is contingent on a major partnership with UCSC and UCSC is showing interest in exploring reuse independent from the City. Not selected as standalone. Potential to serve other Phase 1-4 customers from a new tertiary treatment at WWTF, built as part of Pure Water Soquel Project or a Water Department led tertiary treatment project, remains as a potential future option for NPR in the City.
	2	UCSC satellite treatment and reuse on campus	Local Raw Wastewater (UCSC)	Membrane bioreactor (MBR) at UCSC	Beneficial reuse to meet on-campus non-potable demands. All facilities located on or near campus.	UCSC is showing interest in exploring independent from the City. Any partnership between the City and UCSC would include treatment at City's WWTF, not at a satellite facility. Not selected because it does not provide potable water offset.
	3A	City sends secondary water to SqCWD for their use only	Santa Cruz WWTF	None	This alternative would minimize City involvement in the Pure Water Soquel Project (except for some permit authority). This alternative provides no water for use in the City.	The RWFPS used this alternative as a baseline to compare the cost of varying levels of the City's participation (Alts 3B through 3E); however it was not analyzed because it provides no water to the City. Not selected because this alternative provides no benefit to City; Alt 3b and 3c could provide a greater benefit to the City.
	3B	City sends tertiary water to SqCWD for combined use	Santa Cruz WWTF	Tertiary Treatment at SC WWTF	Serve idetnified potential NPR users along the alignment from City to SqCWD and potentially one or more phased extension from Alt 1B (i.e. DeLaveaga Golf Course).	This was not selected in the RWFPS because of high cost for City to fund 100% of tertiary treatment costs, including flows for Pure Water Soquel Project, because it was assumed that pretreatment (MF/UF) would still be required at the AWTF. Selected for further development. If the Pure Water Soquel Project decides to constructs tertiary treatment at the WWTF, the City may elect to upsize the facility and conveyance in the future to meet in City demands. Cost effectiveness may improve if additional NPR demands are added. The Pure Water Soquel Project would not necessarily preclude expansion at WWTF for additional NPR or larger IPR project(s).
	3C	City sends additional secondary effluent (or tertiary RW) from SC WWTF to SqCWD AWTF and conveys advanced treated water back to the City for use	Santa Cruz WWTF	Advanced Treatment at SqCWD	Groundwater Replenishment Reuse (GRR) in Beltz Wellfield + NPR users along alignment(s)	The RWFPS identified this project as a potential mid-term GRRP to support the Pure Water Soquel project and leverage regional benefits. This alternative could also send tertiary water from the SC WWTF and serve City NPR customers along the way (see Alt 3b). Selected for further development. The City will continue to work with Pure Water Soquel Project to quantify potential future GRR demand in the City and any minor infrastructure to facilitate future expansion (turnouts, empty can for PS, adjacent space for modular process trains, storage and ancillary facilities).
	3D	City sends advanced treated water from an AWTF at/near the SC WWTF to SqCWD for combined use	Santa Cruz WWTF	Advanced Treatment at SC WWTF or nearby location	NPR users along alignment to the SqCWD AWTF	The Pure Water Soquel project is no longer considering locating an AWTF at the Santa Cruz WWTF. Not selected due to the timeline for the Pure Water Soquel project and other water supply alternatives being explored by the City.
	3E	City sends advanced treated RW from an AWTF at/near the SC WWTF to SqCWD for combined use	Santa Cruz WWTF		GRR in Beltz Wellfield + NPR users along alignment from the City to SqCWD AWTF	The Pure Water Soquel project is no longer considering locating an AWTF at the Santa Cruz WWTF. Not selected due to the timeline for the Pure Water Soquel project and other water supply alternatives being explored by the City.
	4a	City led GRRP from an AWTF at/near the SC WWT for local groundwater replenishment in the City's service area.	Santa Cruz WWTF	Advanced Treatment at SC WWTF or nearby location	GRR in Purisima and/or Santa Margarita Basin(s) with NPR uses along the way	The Pure Water Soquel Project will require some space at the SC WWTF to send secondary or tertiary water to SqCWD, which would leave less available space at the SC WWTF and would present a potentially more attractive option to expand the AWTF in at SqCWD to bring purified water back for GRR (Alt 3c). Not selected due to the timeline for the Pure Water Soquel Project and other water supply alternatives being explored by the City.
	4b	City led GRRP with a decentralized AWTF at the DA Porath Pump Station for local groundwater replenishment in the City's service area.	Raw Wastewater from the Santa Cruz County Sanitation District Collection	MBR + Advanced Treatment at DA Porath PS	GRR in Purisima and/or Santa Margarita Basin(s) with NPR uses along the way	Not selected. Limited source water supply from DA Porath Pump Station with significant MBR siting, construction and environmental permitting challenges. Alternative has been removed from SqCWD EIR.
	5	Surface Water Augmentation (SWA) via an AWTF with blending in Loch Lomond Reservoir	Santa Cruz WWTF	Advanced Treatment at SC WWTF or nearby location	Reservoir augmentation in Loch Lomond for blending and storage, to be conveyed to the GHWTP and enter the City's potable water distribution system.	Not selected because facility operation would be limited when the reservoir is full from natural runoff, which is the lowest cost and lowest energy supply. However, if the Water Department operated Loch Lomond differently in the future this alternative could be revisited.
	6	Stream Flow Augmentation via AWTF with discharge to San Lorenzo River downstream of Tait Street Wells	Santa Cruz WWTF		Augment San Lorenzo River flows direcly downstream current diversion point to allow for increased diversions within existing water rights	Not selected due to nitrogen TMDL in the river, potential concerns related to the proximity of the discharge to the point of diversion and potential impacts to anadromous fish.
	7	Direct Potable Reuse (DPR) via AWTF with raw water blending prior to treatment at GHWTP	Santa Cruz WWTF	Advanced Treatment at SC WWTF or nearby location	Blend with raw water prior to treatment at GHWTP to maximze available beneficial reuse year-round	This was not selected in the RWFPS; however since finalizing the report a proposed Framework for Regulating Direct Potable Reuse in California was released (April 2018), which identifies key research areas to fill the identified knowledge gaps prior to the adoption of water recycling criteria for direct potable reuse through raw water augmentation by December 2023 (per AB 574). Alternative will be tracked. Given the outcome of the framework and interest in potable reuse Statewide, raw water blending should continue to be tracked as a potential long-term strategy to maximize reuse and reduce ocean discharge.
	8A	4-way Regional GRRP (City, SVWD, SLVWD and SqCWD)	Santa Cruz WWTF (secondary) + SVWD WRF (tertiary)	AWTF @ El Pueblo Site in Scotts Valley	Regional AWTF produces water for GRRP in Santa Margarita groundwater basin. Use production wells to serve City, SVWD, SLVWD and possibly SqCWD.	Identified as a potential Long-Term GRRP in the RWFPS to continue discussions to make the region more resilient in the long term. Not selected because the Pure Water Soquel Project is moving forward as an independent project and without SqCWD's participation, this project would become a 3-way regional project (Alt 8b).
	8B	3-way Regional GRRP (City, SVWD and SLVWD)	Santa Cruz WWTF (secondary) + SVWD WRF (tertiary)		Regional AWTF produces water for GRRP in Santa Margarita groundwater basin. Use production wells to serve City, SVWD and SLVWD	Identified as a potential Long-Term GRRP in the RWFPS to continue discussions to make the region more resilient in the long term. Will be tracked. The City continues to engage SVWD and SLVWD regarding potential long-term opportunities for regional groundwater replenishment, thus this project continues to be considered as a potential Long-Term GRRP. However, needs to be considered with ASR which, if feasible, would likely be the preferred alternative.
Desalination		SWRO Facility similar to scwd2 project. With or without partnerships	Monterey Bay	SWRO		

TABLE 2:
Alternatives Screening Criteria and Guidance for Scoring

QUANTITATIVE Results from Alternatives Evaluation			
Quantitative results will be provided for each alternative and used to inform qualitative scoring			
ALTERNATIVES EVALUATION	**Supply:**	**Costs [1]:**	**Energy / Other:**
	Annual Volume (AFY)	Construction Costs ($)	Energy (kWH/AF) of RW Delivered
	Average Annual Flow (mgd)	O&M Costs ($/yr)	GHG emissions (Tons of CO_2e per year)
	Peak Season Deliveries (AF Summer)	Life Cycle Costs ($/AFY)	Social Cost of Carbon ($/MT)
	Peak Flow (mgd)	ACAYY	Construction Footprint (SF)
			# and Size of Facilities

[1] *The WSAC defined ACAYY as a cost metric to evaluate the cost-effectiveness of different water supply projects using the Confluence Model to estimate yield. A similar approach will be used to the yield of each recycled water alternative to allow for comparison btw alternatives and with other water supply options (i.e. ASR Study).*

PURPOSE: Describe how quantitative and qualitative metrics are used to evaluate and score each alternative to identify a preferred project or list of prioritized projects to move forward for future development.

- The upper matrix lists the QUANTITIVE results that will be developed as part of the alternatives evaluation and used to inform the qualitative scoring.

- The lower matrix describes the QUALITATIVE screening criteria and provides guidance for scoring each project against the criteria.

QUALITATIVE Criteria for Comparing Alternatives [3]							
Categories	**Alternatives Screening Criteria**	**Considerations for Assessing Project based on Criteria**	**Guidance for Scoring**				
			Fully Meets Criteria	**Mostly Meets Criteria**	**Generally Meets Criteria**	**Somewhat Meets Criteria**	**Unable to Meet Criteria**
			5	**4**	**3**	**2**	**1**
ENGINEERNG & OPERATIONAL CONSTRAINTS	**Technical Complexity (3)**	Construction Complexity - Degree of construction challenges: #/size of facilities, ROW, utilities, terrain, disturbed/undisturbed area, seismic/sea level rise vulnerability, etc.	Few new facilities on already disturbed areas with minimal construction complexities.	Some new facilities located in relatively disturbed areas with a range of construction complexities.			Facilities located in undisturbed areas with higher degree of construction complexity.
		Operations and Maintenance (O&M) complexity - Degree of challenges for new systems, treatment processes, and other technologies.	O&M of new facilities does not introduce new technical complexitites; Minimial changes in responsbilities required.	O&M of new facilities introduce some degree of technical complexity for limited aspects of the project; Some new responsibilities and training may be required.			O&M of new faciliE23:J23ties introduce a high degree of technical complexity for multiple aspects of the project; New responsibilities, roles and certifications would be required.
	System Flexibility and Phasing Potential (2)	Measure of flexibility and redundancy to maintain service levels, Removes system bottlenecks (robust), Improves reliability	Improves service level and reliabiliy, increases flexibility in operations, and creates redundancy for a more robost system.	Improves service level and reliabiliy, increases flexibility in operations, OR creates redundancy for a more robost system, (but not all three).			Makes little to no contribution to improving service level, reliability, flexibility or redundancy
		Opportunities to expand/transition to a higher yield and/or treatment level.	Flexible to expand/transition to higher yield/treatment level.	Some to limited ability to expand/transition to higher yield/treatment level.			Significant constraints to expand/transition to higher yield/treatment level.
	Legal and Regulatory Requirements	Degree of legal certainty and regulatory viability via a regulatory pathway/approved use.	No known legal uncertainties. Existing regulations allow type of reuse with straightforward permitting requirements.	Case-by-Case approach possible to address legal and regulatory issues.			Likely legal challenges related to water rights and/or existing regulations have not been developed or highly complex permitting process
	Timeliness (1)	Ability to implement Project, with supplies available in a timely manner.	Can fully implement by 2025.	Can be paritally implemented by 2025.			Cannot be implemented by 2025.
ECONOMIC	**Cost Effectiveness of Project/Portfolio (1)**	Economically feasible based on relative present value/unit cost, including opportunities for cost sharing.	LOW relative costs.	MEDIUM relative costs.			HIGH relative costs.
	Yield of Project/Portfolio (1)	Ability to fill water supply gap.	Fills gap.	Partially fills gap.			Cannot fill gap.
	ACAYY of Water System with Project/Portfolio (1)	WSAC metric that considers cost in relation to alternatives ability to reduce gap.	LOW ACAYY.	MEDIUM ACAYY.			HIGH ACAYY.
ENVIRONMENTAL	**CEQA Considerations (3)**	Potential extent of environmental impacts and mitigation requirements.	Potential for Mitigated Negative Declaration (MND) with few impacts and minimal mitigation requirements.	Range of potential impacts and mitigation requirements.			Complex CEQA requirements with potential for significant impacts and substantial mitigation requirements.
	Permit Considerations (3)	Complexity of permit application, acquisition, and/or implementation.	Relatively simple permitting process(es) that are in place.	Moderately challenging process(es) or straightforward but labor-intensive process(es).			Challenging process(es) likely.
	Energy/GHG (3)	Relative energy use and GHG production based on calculations for daily operations (ie. pumping) and facility material production (ie. pipelines).	LOW energy use/GHG production.	MODERATE energy use/GHG production.			HIGH energy use/GHG production.
SOCIAL	**Regional Collaboration Opportunities, Partnerships and Agreements (2)**	Level of reliance on cooperation and coordination between multiple outside agencies/users.	Minimial Reliance. City has control of agreements, or there are willing partners to facilitate regional coordination and cost-sharing.	Some Reliance. City has less control and is reliant on others to lead/make decisions with range benefits for cost-sharing but uncertain partnerships.			Significant Reliance. Uncertain as to ability to come to agreements and confirm willingness to cost-share, no partnerships.
	Public Acceptance/Health/Safety (2)	Local Political & Public Support.	Little to no public/political opposition.	Some public/political opposition or opposition from a few select groups.			Potential or perceived public opposition that would take considerable work to overcome.
		Perceived Public Heatlh and Safety.	No perceived public health issues/concerns.	Some percieved public health issues/concerns.			High degree of perceived public health issues/concerns.

[3] *Criteria and scoring guidance are preliminary and subject to change*

Tier 0 Fatal Flaw. Not technically feasible or no regulatory framework.
Tier 1 (1) WSAC "Thresholds" of Cost, Timeliness, Yield
Tier 2 (2) WSAC Guiding Principles: Public Health, Public Acceptance, Regional Collaboration, Plan Goal, Incremental Implementation
Tier 3 (3) Other: Feasibility (technical, legally, political, TBL), permitability

UNITS:
AF = acre-feet
AFY = acre-feet per year
MG = million gallons
mgd = million gallons per day
kWH = kilowatt hour
MT = metric ton
CO_2e = carbon dioxide equivalent

Table 3:
Summary of Quantitative Results

Quantiative Data (To be populated)

			Treatment Levels and Flows			Recycled Water Delivered						Estimated Costs			Energy / Others							
Alternative	Sub Alt	Description	Treatment Level	ADDITIONAL Treatment Capacity City Facilities (mgd)	Treatment Capacity Non-City Facilities (mgd)	Regional Ave Annual Reuse (AFY)	Regional Average Annual Flow (MGD)	RW Use in Santa Cruz (AFY)	RW Use in Santa Cruz (MGD)	Peak Season Deliveries (AF in Summer)	Peak Hourly Flow (MGD)	Estimated Construction Cost ($mil)	Annual O&M Cost ($mil/yr)	Total Annual Cost ($/AF)	Unit Energy of RW Delivered (KWH/AF)	Est O&M GHG Emissions (MTCO2/yr)	Total Pipeline Length (ft)	Total Pipeline Length (miles)	Pipeline GHG Emissions (MTCO2)	# of Non-Pipeline Facility Sites (#)	Est Non-Pipeline Footprint (SF)	Social Cost of Carbon ($)
In Lieu		Near Term with SqCWD																				
		Longer Term with SqCWD, CWD, SVWD and/or SLVWD	WTP																			
ASR		Purisima	WTP																			
		Santa Margarita	WTP																			
		Purisima and Santa Margarita	WTP																			
Recycled Water	1A	Santa Cruz PWD Title 22 Upgrade Project for NPR use in and around the SC WWTF	Teriary																			
	1B	Maximize tertiary treatment and reuse for identified City NPR uses.	Teriary																			
	2	UCSC satellite treatment and reuse on campus	Teriary																			
	3A	City sends secondary water to SqCWD for their use only	Secondary																			
	3B	City sends tertiary water to SqCWD for combined use	Tertiary																			
	3C	City sends additional secondary effluent (or tertiary RW) from SC WWTF to SqCWD AWTF and conveys advanced treated water back to the City for use	AWT																			
	3D	City sends advanced treated water from an AWTF at/near the SC WWTF to SqCWD for combined use	AWT																			
	3E	City sends advanced treated RW from an AWTF at/near the SC WWTF to SqCWD for combined use	AWT																			
	4a	City led GRRP from an AWTF at/near the SC WWT for local groundwater replenishment in the City's service area.	AWT																			
	4b	City led GRRP with a decentralized AWTF at the DA Porath Pump Station for local groundwater replenishment in the City's service area.	AWT																			
	5	Surface Water Augmentation (SWA) via an AWTF with blending in Loch Lomond Reservoir	AWT																			
	6	Stream Flow Augmentation via AWTF with discharge to San Lorenzo River downstream of Tait Street Wells	AWT																			
	7	Direct Potable Reuse (DPR) via AWTF with raw water blending prior to treatment at GHWTP	AWT																			
	8A	4-way Regional GRRP (City, SVWD, SLVWD and SqCWD)	AWT																			
	8B	3-way Regional GRRP (City, SVWD and SLVWD)	AWT																			
Desalination		SWRO Facility similar to scwd2 project. With or without partnerships	Desalination																			

WATER COMMISSION
INFORMATION REPORT

DATE: 10/31/2018

AGENDA OF November 5, 2018

TO: Water Commission

FROM: Heidi Luckenbach, Deputy Director/Engineering Manager

SUBJECT: Review and Approval of City Council Staff Report Recommending the Prioritization of Recycled Water Alternatives above Seawater Desalination

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RECOMMENDATION: Review and approve the draft Staff Report to the City Council recommending the prioritization of Recycled Water as the Element 3 Alternative.

BACKGROUND: At its October 1, 2018 meeting, the Water Commission heard a report from staff summarizing the information to date on the recycled water and desalination alternatives being evaluated as part of the implementation of the Water Supply Augmentation Strategy, Element 3 Alternative. At that meeting, staff recommended the prioritization of Recycled Water as the Element 3 alternative. While supportive of the recommendation for the reasons provided, the Commission wanted the opportunity to provide a recommendation to the City Council on this important step. To facilitate that effort, the Commission asked staff to bring its draft agenda report on this item to the November Water Commission meeting. The Commission would provide review and comment on the report and take action on a recommendation to the Council for inclusion on the Council agenda report.

DISCUSSION: The attached memo is intended to achieve three goals: (1) recommend the prioritization of recycled water alternatives over desalination for the reasons provided, (2) recommend the further study of the identified recycled water alternatives, and (3) support improvements at the City's Wastewater Treatment Facility to a tertiary level of treatment that would be necessary for any beneficial use of recycled water.

FISCAL IMPACT: None.

PROPOSED MOTION: Motion to support staff's recommendation to prioritize recycled water as the Element 3 alternative, support the further study of the identified projects, and support the expansion and improvements to the tertiary treatment system at the City's Wastewater Treatment Facility.

ATTACHMENT(S):
Attachment 1: Draft City Council Staff Report
Attachment 2: Table 1 Recycled Water Alternatives Evaluation (Recycled Water Feasibility Planning Study June 2018)
Attachment 3: Table 2 Updated Summary of Benefits and Challenges, and Addition of Adapted Pathways. (updated October 2018)

CITY COUNCIL
AGENDA REPORT

DATE: 11/13/18

AGENDA OF: 11/27/18

DEPARTMENT: Water

SUBJECT: Water Supply Augmentation Strategy Implementation; Priortization of Recycled Water Alternatives above Seawater Desalination (WT)

RECOMMENDATION: Motion to support staff's recommendation to prioritize the further study of recycled water alternatives over seawater desalination, consistent with the implementation work plan recommended by the Water Supply Advisory Committee and approved by City Council; perform additional analysis on identified recycled water projects; and support improvements at the City's Wastewater Treatment Facility to a tertiary level of treatment that would be necessary for any beneficial use of recycled water.

BACKGROUND: The Water Supply Advisory Committee's (WSAC) October 2015 Final Report on Agreements and Recommendations includes a work plan to produce the necessary information for the community, Water Commission and City Council to make a decision on a supplemental supply project or portfolio of supply projects for implementation. The work plan focuses around four fundamental supply alternatives: in lieu water transfers and/or exchanges with neighboring water agencies (identified by the WSAC as Element 1), aquifer storage and recovery (identified by the WSAC as Element 2), recycled water and desalination (collectively identified by the WSAC as Element 3).

There are several milestones in the implementation plan for making go, no-go decisions about the alternatives being considered so that by the end of calendar year 2020, or thereabouts, a clear project or portfolio of projects has been found to be feasible and ready for implementation, and by the end of calendar year 2025, or thereabouts, projects are complete or nearing completion. By the end of calendar year 2017 a decision about Element 3 was anticipated to proceed with recycled water or desalination. Due to the timing of the studies surrounding these alternatives, this decision point was delayed until now.

At their October 1 and November 5 meetings the Water Commission heard from staff the findings of the above-mentioned studies, as well as staff's recommendation to prioritize recycled water over desalination.

DISCUSSION: Two studies have been completed that inform the decision making related to Element 3: the Recycled Water Feasibility Planning Study (RWFPS) was finalized in June 2018, and the Desalination Feasibility Update Review (Desal Update) was completed in August 2018.

Recycled Water Feasibility Planning Study: This study identified, evaluated and prioritized recycled water alternatives that could then be compared with the desalination alternative so that a "preferred" Element 3 could be selected and advanced through preliminary design, environmental review, etc. as per the WSAC Implementation Plan and Timeline. This study was a joint project between the Water and Public Works Departments and therefore had two objectives: identify recycled water uses that could reduce or eliminate the water supply gap as identified by the WSAC and, identify projects that beneficially reuse treated wastewater. These two objectives could be at odds when evaluating a project's merit since not all beneficial uses of this water source resulted in a water supply project. This two year study identified a large number of alternatives, and concluded by recommending the following.

Irrigation Projects

- **Santa Cruz Public Works Department (SCPWD) Title 22 Upgrade Project** –This project would meet in-plant demands, develop a bulk water station and serve the irrigation demands of the nearby La Barranca and Neary Park. Public Works staff is advancing this project.
- **BayCycle Project** – expand the SCPWD Title 22 Upgrade Project to increase production and non-potable reuse to serve UCSC and City customers along the way. This is a longer term project that would require partnerships with end-users in order to be successful.

Groundwater Recharge Projects

- **Coordination with Pure Water Soquel** – continue to work closely with Soquel Creek Water District to support the evaluation and implementation of the Pure Water Soquel project.
- **Explore Groundwater Replenishment and Reuse (GRR) at Beltz Wellfield** – to replenish the Santa Cruz Mid-County Groundwater Basin in the Beltz Wellfield area, through a collaborative project with Pure Water Soquel or as an independent City led project.
- **Explore GRR in Santa Margarita Groundwater Basin (SMGB) –** to replenish the SMGB through a potentially regional project with the potential to make the region more resilient in the long term.

The RWFPS showed that the groundwater recharge projects listed above are technically feasible, able to meet at least a portion of the water supply gap, provide regional opportunities and may be incrementally expandable. Additional information is needed however to fully understand their potential as part of a water supply solution.

Desalination Feasibility Update Review: The Desal Update was completed in August 2018 and found that a desalination project as described in the update also shows merit: a desalination project could provide up to 3.3 million gallons per day of potable water to meet the WSAC plan goal and fill the water supply gap; it is technically feasible; provides regional opportunities; could be incrementally expanded; etc. The final task of the Desal Update was to consult with agencies with regulatory purview over ocean water desalination to understand the opportunities and limitations of the recently adopted Ocean Plan Amendment (OPA). Following a March 2018 meeting with staff from the State Water Resources Control Board (SWRCB), the Regional Water Quality Control Board (RWQCB), and the California Coastal Commission (CCC), our consultant for this study, Dudek, drafted a "Seawater Desalination Marine Work Plan" describing the work needed to support completion of CEQA and the regulatory permitting process under the new

OPA guidance. Dudek received agency feedback in mid-June and subsequently finalized the study.

The City's earlier work on desalination included an open-ocean intake. Dudek's analysis indicated that pursuing a project with an open-ocean intake would present major permitting issues because the OPA requires a subsurface intake unless such an intake is determined to be infeasible by the RWQCB under the OPA definition of "feasible." After a variety of meetings and further evaluations of options, City staff determined that the OPA requirements would likely have a significant impact on the cost and timeliness of a desalination project, extending the study and permitting period of any project by at least two years, if not more.

Prioritization: The WSAC report provided a lot of guidance for analyzing the various water supply alternatives and making decisions. Criteria such as cost, timeliness, yield, public health and acceptance, regional collaboration, and resiliency, among others, were included in the recommended decision making process. Staff has been developing a decision making matrix that will be used to comparatively evaluate supply alternatives. While desalination meets many of the criteria put forth in the attached, it is unable to meet (or will be very challenging to meet) the following criteria: legal and regulatory requirements, timeliness, permit considerations, political and public support.

Staff is recommending prioritizing ongoing work as follows:

1. Continue to evaluate the opportunities and benefits of replacement and expansion of the existing tertiary treatment facility at the WWTF. This step is needed to support any future reuse opportunity pursued by the City including projects that show possibility from a water supply perspective such as irrigation, groundwater replenishment, surface water augmentation at Loch Lomond Reservoir.
2. Continue to evaluate treating wastewater to advance treatment standards for potential groundwater replenishment and/or as surface water augmentation by sending to Loch Lomond Reservoir. Advance treatment refers to the set of water treatment processes beyond tertiary that meet the standards needed for these uses. The RWFPS identified these two alternatives as potentially beneficial to the City for water supply.
3. Cease work on desalination.

Staff is not suggesting a complete rejection of desalination. Because there is still much to learn about the ability of in lieu, aquifer storage and recovery and recycled water to meet the water supply objectives of the city, staff believes that absolute rejection of desalination would not be prudent unless and until the other alternatives have been fully vetted. Should these other alternatives prove unsuccessful at meeting the plan goal, desalination could be revisited. However, to be consistent with the WSAC timeline, and because recycled water is showing some strong merit and opportunities, staff recommends prioritizing recycled water alternatives over desalination by furthering the analysis of the aforementioned alternatives.

Finally, while work described above is moving forward, staff will closely follow ongoing local, regional and statewide developments to monitor progress on direct potable reuse and regional groundwater recharge projects with neighboring water agencies.

FISCAL IMPACT: None at the time. Scopes of work for the additional analysis described above are being developed.

Prepared by:	Submitted by:	Approved by:
Heidi R. Luckenbach	Rosemary Menard	Martín Bernal
Deputy Director/Engr Manager	Water Director	City Manager

Attachments:
None

Table 1: Recycled Water Alternatives Evaluation (from RWFPS June 2018)

Alternative	Sub Alt	Description	Ave Annual Reuse in the City (mgd)	Ave Annual Reuse in the City (AFY)	Total Capital Cost[1] ($mil)	Life Cycle Unit Cost ($/AF)
Alternative 1 – Centralized Non-Potable Reuse (NPR)	Alt 1A	SCPWD Title 22 (tertiary) upgrades to the existing disinfected reclaimed water system at the Santa Cruz WWTF to serve in-plant uses, La Barranca Park and a new City truck fill station.	0.25	282	$1	$1,000
	Alt 1B	Additional tertiary treatment at Santa Cruz WWTF (or off-site) to meet identified non-potable demands for Phases 1 to 4, all within the City's service area.	0.74	840	$34	$3,400
Alternative 2 – Decentralized NPR	Alt 2	Satellite treatment (via membrane bioreactor (MBR)) of local raw wastewater from the UC Santa Cruz campus to meet on-campus non-potable demands. All facilities are located on or near UCSC campus.	0.14	155	$28	$12,000
Alternative 3 – Santa Cruz Participation in SqCWD led Groundwater Recharge Reuse Project (GRRP)	Alt 3A [2]	Send secondary effluent from the Santa Cruz WWTF to SqCWD for their GRRP. No reuse in the City.	0	0	n/a	n/a
	Alt 3B	Expand tertiary treatment at the Santa Cruz WWTF to deliver to SqCWD for the GRRP in SqCWD, serving NPR customers along the way.	0.49	550	$20	$2,600
	Alt 3C [3]	Send additional secondary effluent from the Santa Cruz WWTF to the SqCWD AWTF and return advanced treated water for groundwater replenishment and NPR in the City's service area.	2.0	2,248	$69	$3,300
	Alt 3D	AWTF at the Santa Cruz WWTF (or a nearby location). Send advanced treated water to SqCWD for their GRRP, serving NPR customers along the way.	0.08	88	$7	$9,000
	Alt 3E [3]	AWTF at the Santa Cruz WWTF (or a nearby location). Send advanced treated water to SqCWD for their GRRP, serving NPR customers and groundwater replenishment in the City's service area along the way.	2.1	2,368	$69	$2,900
Alternative 4 – Santa Cruz GRRP	Alt 4A [3]	AWTF at Santa Cruz WWTF (or a nearby location). Send advanced treated water for groundwater replenishment and NPR in the City's service area.	2.1	2,389	$70	$2,900
	Alt 4B [3]	Satellite treatment of local raw wastewater from Santa Cruz County Sanitation District at DA Porath Pump Station. New MBR plus AWTF to produce advanced treated water for groundwater replenishment and NPR in the City's service area.	2.0	2,240	$99	$4,000
Alternative 5 – Surface Water Augmentation (SWA)	Alt 5 [4]	AWTF at the Santa Cruz WWTF (or a nearby location). Send advanced treated water for blending and storage in Loch Lomond Reservoir, to be conveyed to the GHWTP and enter the City's potable water distribution system.	1.6	1,777	$107	$5,300
Alternative 6 – Streamflow Augmentation	Alt 6 [4]	AWTF at the Santa Cruz WWTF (or a nearby location). Send advanced treated water to augment San Lorenzo River flows (downstream of San Lorenzo River Diversion) to maintain habitat, meet future fishery requirements.	1.6	1,777	$75	$3,900
Alternative 7 – Direct Potable Reuse (DPR)	Alt 7 [5]	AWTF at the Santa Cruz WWTF (or a nearby location). Blend advanced treated water with raw water at the Coast Pump Station, for further treatment at the GHWTP prior to distribution as finished water, suitable for drinking.	3.2	3,584	$111	$3,000
Alternative 8 – Regional GRRP	Alt 8a [5]	Regional AWTF to produce advanced treated water for groundwater replenishment in the Santa Margarita Groundwater Basin. Utilize existing or new production wells to serve Santa Cruz, SVWD, SLVWD and SqCWD. Send secondary effluent from WWTF to AWTF in Scotts Valley.	3.2	3,584	$124	$3,500
	Alt 8b [5]	Regional AWTF to produce advanced treated water for groundwater replenishment in the Santa Margarita Groundwater Basin. Utilize existing or new production wells to serve Santa Cruz, SVWD and SLVWD. Send secondary effluent from the Santa Cruz WWTF to SqCWD for their GRRP.	3.2	3,584	$141	$3,700

[1] All costs represent City's share based on the recycled water produced and conveyed to SCWD's service area.
[2] Alt 3A provides 0 AF of reuse in the City, therefore the facility capital and unit cost for the City are not calculated.
[3] Alts 3C, 3E, 4A and 4B are limited by the available GRR capacity at the Beltz Wellfield, 2.0 mgd (2,240 AFY), plus additional NPR customers along each alignment.
[4] Discharge for Alts 5 and 6 is seasonally limited to the summer and shoulder months, when there would be available capacity in the reservoir or when flows are low in the San Lorenzo River. The supply of recycled water is assumed to be limited to the average daily dry weather flow less other demands (in-plant uses plus deliveries to Pure Water Soquel) and losses from advanced treatment (i.e. brine concentrate), 3.2 mgd (3,584 AFY). Since discharge would only occur during the summer and shoulder months, an assumed 181 dry day period, the average annual reuse would be 1.6 mgd (1,777 AFY).
[5] Alts 7 and 8 have no seasonal limitations.

Table 2: Updated Summary of Benefits and Challenges, and Addition of Adapted Pathways (updated October 2018)

Alternative Project	Major Benefits / Advantages	Potential Limitations / Challenges	Adapted Pathways for Reuse (post RWFPS)
Alt 1a - Santa Cruz PWD Title 22 Upgrades	• Lowest cost alternative • Shortest time to implementation • Easy to implement with minimal impact on City operations • Few environmental and social obstacles • Opportunity to introduce RW to the community • Minimal upgrades to existing infrastructure	• Does not offset potable water in significant way • Limited reuse outside of the WWTF • Total potable offset is less than the amount of recycled water use due to in-plant demands	**RWFPS:** Selected as Preferred Alternative. **Progress:** PW predesign efforts and initiation of permitting activities. Project stalled because of discussions regarding potential to implement tertiary treatment as part of Pure Water Soquel Project. **Adapted Pathway:** Not selected as standalone for water supply. These customers would more efficiently be served as part of a new tertiary at WWTF built as part of a larger project such as Pure Water Soquel Project (i.e. Alt 3b) or as part of a larger Water Department led NPR project (Alt 1b).
Alt 1b - Maximize Tertiary Treatment for NPR	• Right water for the right use (i.e., tertiary for NPR) • Short time to implementation • Existing regulations with straightforward permitting • Minimal impact on City operations • Few environmental and social obstacles	• Significant conveyance and pumping to serve all demands • High capital and unit costs due to extensive infrastructure required	**RWFPS:** Selected as an expansion of the Preferred Alternative but only includes the alignment to UCSC and customers along the way. **Progress:** Contingent on major partnerships such as UCSC. **Adapted Pathway:** Not selected as standalone for water supply. Potential to serve other Phase 1-4 customers from a new tertiary treatment at WWTF, built as part of Pure Water Soquel Project or a Water Department led tertiary treatment project, remains as a potential future option for NPR in the City.
Alt 2 - UC Santa Cruz Campus NPR	• Utilizes a local resource • Reduces pumping requirements by treating at/near UCSC • Does not use WWTF site • Easy to implement with minimal impact on City operations	• Limited reuse due to small on-campus demands • Treatment facility siting challenges on campus • Complexity for MBR operation but the onus of this would be on UCSC • Does not offset potable water in significant way	**RWFPS:** Not selected. **Progress:** UCSC is showing interest in exploring independent from the City. **Adapted Pathway:** Not selected because it does not provide potable water offset.
Alt 3a - SqCWD GRRP (Baseline, WWTF sends secondary)	Not analyzed because it provides no water to the City.		**Progress:** The Pure Water Soquel project is moving forward. **Adapted Pathway:** This alternative would minimize City involvement in project (except for some permit authority). This alternative provides no benefit to City; Alt 3b and 3c could provide a greater benefit to the City.
Alt 3b - SqCWD GRRP with Tertiary NPR in Santa Cruz (WWTF sends tertiary)	• Investment in infrastructure with potential future regional benefit • Potential for conveyance cost-sharing and pursuing funding as a region • Right water for the right use (i.e., tertiary for NPR) • Avoids sending secondary effluent through the City (treated as raw sewage if spill/break occurs) • Cost effectiveness would improve if SqCWD is willing to fund some to all of the tertiary treatment	• Minimal reuse in the City along alignment to SqCWD • Does not offset potable water in significant way • Potential for Interagency infrastructure challenges (ownership, ops, construction, etc.) • May limit future expansion at the Santa Cruz WWTF • More equalization storage would be needed to add new tertiary treatment • Uncertain if NPR turnouts could impact water quality and require additional pretreatment at the AWTF	**RWFPS:** Not selected because of high cost for City to fund 100% of tertiary treatment costs, including flows for Pure Water Soquel project, because it was assumed that pretreatment (MF/UF) would still be required at the AWTF. **Progress:** Current thinking is that a tertiary project at the Santa Cruz WWTF could be constructed as part of Pure Water Soquel. Secondary conveyance is also being considered as Alt 3a. It is uncertain if serving NPR customers along the way would require a duplicative MF/UF at the AWTF. **Adapted Pathway:** If the Pure Water Soquel project constructs tertiary treatment at the WWTF, the City may elect to upsize the facility and conveyance in the future to meet in City demands. Cost effectiveness may improve if additional NPR demands are added (e.g. the Northern Extension Customers from Alt 1b to serve DeLaveaga Golf Course). There is also opportunity to phase tertiary expansion to align with timing and interest for these demands. The Pure Water Soquel Project would not necessarily preclude expansion at WWTF for additional NPR or larger IPR project(s).

Alternative Project	Major Benefits / Advantages	Potential Limitations / Challenges	Adapted Pathways for Reuse (post RWFPS)
Alt 3c - SqCWD GRRP with GRR and NPR in Santa Cruz (WWTF sends secondary)	• Investment in regional infrastructure can be realized in the long term • Potential for cost-sharing and pursuing funding as a region • Potential to bank recharged water for extraction during dry years • Greater water supply benefits and beneficial use • Does not limit WWTF expansion • Environmental benefit of maintaining groundwater levels	• Additional studies to confirm GW basin capacity, ability to capture recharged flow and meet all regulatory requirements • Water quality exceeds needs for NPR (though minimal NPR demand is served in the City) • Interagency infrastructure challenges (ownership, ops, construction, etc.) • Sending secondary effluent through the City (treated as raw sewage if spill/break occurs)	**RWFPS:** Identified as a potential Mid-Term GRRP – support the Pure Water Soquel project and leverage regional benefits. **Progress:** The Pure Water Soquel project may reserve space to expand capacity of AWTF to meet potential future demands for GRR in Santa Cruz. This alternative could also send tertiary water from the WWTF and serve City NPR customers along the way (see Alt 3b). **Adapted Pathway:** Work with Pure Water Soquel project to quantify potential future GRR demand in the City and any minor infrastructure to facilitate future expansion (turnouts, empty can for PS, adjacent space for modular process trains, storage and ancillary facilities).
Alt 3d - SqCWD GRRP with AWTF and NPR in Santa Cruz (WWTF sends ATW)	• Investment in infrastructure with potential future regional benefit • Potential for cost-sharing and pursuing funding as a region • Avoids sending secondary effluent through the City (treated as raw sewage if spill/break occurs)	• Minimal reuse in the City • Potential for Interagency infrastructure challenges (ownership, ops, construction, etc.) • May limit future expansion at the Santa Cruz WWTF • Water quality exceeds needs for NPR (however, minimal NPR reuse in the City) • AWTF is too costly and requires too much energy for NPR use alone. • Does not offset potable water in significant way	**RWFPS:** Not selected. **Progress:** The Pure Water Soquel project is no longer considering locating an AWTF at the Santa Cruz WWTF. **Adapted Pathway:** Not selected due to the timeline for the Pure Water Soquel project and other water supply alternatives being explored by the City.
Alt 3e - SqCWD GRRP with AWTF, GRR and NPR in Santa Cruz (WWTF sends ATW)	• Investment in infrastructure with potential future regional benefit • Potential for cost-sharing and pursuing funding as a region • Avoids sending secondary effluent through the City (treated as raw sewage if spill/break occurs) • Potential to bank recharged water for extraction during dry years • Greater water supply benefits and beneficial use than NPR alone.	• Potential for Interagency infrastructure challenges (ownership, ops, construction, etc.) • May limit future expansion at the Santa Cruz WWTF • Water quality exceeds needs for NPR (however, minimal NPR reuse in the City) • Unable to meet Pure Water Soquel Project timeline • Does not align with City's timeline for exploring other water supply alternatives	**RWFPS:** Identified as a potential Mid-Term GRRP – support the Pure Water Soquel project and leverage regional benefits. **Progress:** The Pure Water Soquel Project is no longer considering locating an AWTF at the Santa Cruz WWTF. **Adapted Pathway:** Not selected due to the timeline for the Pure Water Soquel project and other water supply alternatives being explored by the City.
Alt 4a - Santa Cruz Centralized GRRP (WWTF sends ATW)	• City controlled project • Potential to bank recharged water for extraction during dry years • Greater water supply benefits and beneficial use than NPR alone. • Environmental benefit of maintaining groundwater levels	• Water quality exceeds needs for NPR (however, minimal NPR reuse in the City) • Operational complexity and energy for treatment and injection • Additional studies to confirm GW basin capacity, ability to capture recharged flow and meet all regulatory requirements	**RWFPS:** Identified as a potential Mid-Term GRRP **Progress:** Pure Water Soquel project will require some space to send secondary or tertiary water to SqCWD, which would leave less available space at the SC WWTF and would present a potentially more attractive option to expand the AWTF in SqCWD to bring purified water back for GRR (Alt 3c) **Adapted Pathway:** Not selected due to the timeline for the Pure Water Soquel project and other water supply alternatives being explored by the City.
Alt 4b - Santa Cruz Decentralized GRRP	• Does not limit WWTF expansion	• Limited source water supply from DA Porath Pump Station • Significant MBR siting, construction and environmental permitting challenges • Complexity for MBR operation	**RWFPS:** Not selected. **Progress:** None. **Adapted Pathway:** None.

Alternative Project	Major Benefits / Advantages	Potential Limitations / Challenges	Adapted Pathways for Reuse (post RWFPS)
Alt 5 - SWA at Loch Lomond Reservoir	• Maximize beneficial reuse in summer/shoulder months • Potential to modify operational practices to maximize supply benefits • Potential environmental benefits to maintaining reservoir levels	• High capital and unit costs due to extensive infrastructure required • Challenging regulatory, CEQA/NEPA and permitting requirements • Operational complexity for treatment and reservoir management • Significant energy for conveyance and treatment • May limit future expansion at the Santa Cruz WWTF • Additional limnological studies needed to confirm assumptions	**RWFPS:** Not selected. **Progress:** Surface Water Augmentation regulations became effective 10/1/2018. There were no significant changes from the Draft SWA regulations, thus the RWFPS evaluation of permitability is still valid. The limitations/challenges however, do not change. **Adapted Pathway:** This project is not recommended for selection because facility operation would be limited when the reservoir is full from natural runoff, which is the lowest cost and lowest energy supply. However, if the Water Department operated Loch Lomond differently in the future this alternative could be revisited.
Alt 6 - Augmentation of the San Lorenzo River	• Maximize beneficial reuse in summer • Limited new conveyance infrastructure needed • Potential environmental benefits to maintaining streamflow	• High unit costs due to ability to augment in summer months only • Regulatory viability is highly uncertain (TMDL/WQOs) • Challenging regulatory, CEQA/NEPA and permitting requirements • Operational complexity for treatment • Proximity of point of discharge to San Lorenzo River Diversion • May limit future expansion at the Santa Cruz WWTF • Additional studies needed to assess impacts to anadromous fish	**RWFPS:** Not selected. **Progress:** None. **Adapted Pathway:** None.
Alt 7 - Raw Water Blending at GHWTP (DPR)	• Maximize available beneficial use year-round • Maximize development and use of a local, sustainable new water supply – with fewest limitations and minimal losses • Lower unit cost than other potable reuse alternatives due to limited new conveyance infrastructure needed and higher amount of reuse	• High capital cost and operational complexity due to additional treatment steps • Existing regulations have not been developed; no DPR project is currently permitted in California • Long timeline for implementation • Potential impact to GHWTP operations and source water issues • Significant energy for treatment • May limit future expansion at the Santa Cruz WWTF	**RWFPS:** Not selected. **Progress:** A proposed Framework for Regulating Direct Potable Reuse in California was released in April 2018, which provides DDW's current thinking on regulating direct potable reuse in California. The framework identifies key research areas to fill the identified knowledge gaps prior to the adoption of water recycling criteria for direct potable reuse through raw water augmentation by December 2023 (per AB 574). **Adapted Pathway: G**iven the outcome of the framework and interest in potable reuse Statewide, raw water blending should continue to be tracked as a potential long-term strategy to maximize reuse and reduce ocean discharge.
Alt 8a - 4-way Regional GRRP (City, SVWD, SLVWD and SqCWD) (WWTF sends secondary)	• Potential for more beneficial reuse than in the Beltz Wellfield area alone • Potential to bank recharged water for extraction during dry years • Investment in regional infrastructure can be realized in the long term • Potential for cost-sharing and pursuing funding as a region • Does not limit WWTF expansion because facilities are elsewhere • Environmental benefit of maintaining groundwater levels	• Highest capital cost alternative • Longest timeline to implementation • Complex institutional arrangements and multi-agency coordination • Interagency infrastructure challenges (ownership, operations, construction, etc.) • Challenging water rights and transfer agreements • Operational complexity and energy for treatment and injection • Significant energy for conveyance and treatment • Additional studies to confirm GW basin capacity, ability to capture recharged flow and meet all regulatory requirements	**RWFPS:** Identified as a potential Long-Term GRRP – continue discussions to make the region more resilient in the long term. **Progress:** The Pure Water Soquel Project is moving forward as an independent project. **Adapted Pathway:** Without SqCWD's participation, this project would become a 3-way regional project (Alt 8b).

Alternative Project	Major Benefits / Advantages	Potential Limitations / Challenges	Adapted Pathways for Reuse (post RWFPS)
Alt 8b - 3-way Regional GRRP (City, SVWD and SLVWD) (WWTF sends secondary)	• Same as Alt 8a • Reduced energy and infrastructure capacity as compared to Alt 8a	• Same as Alt 8a	**RWFPS:** Identified as a potential Long-Term GRRP – continue discussions to make the region more resilient in the long term. **Progress:** The City continues to engage SVWD and SLVWD regarding potential long-term opportunities for regional groundwater replenishment. **Adapted Pathway:** This project continues to be tracked as a potential Long-Term GRRP. However, needs to be considered with ASR which, if feasible, would likely be the preferred alternative.

Acronyms

afy	acre feet per year
ATW	advance-treated water
AWTF	advance water treatment facility
DPR	direct potable reuse
IPR	indirect potable reuse
NPR	non potable reuse
mgd	million gallons per day
SVWD	Scotts Valley Water District
SLVWD	San Lorenzo Valley Water District
SqCWD	Soquel Creek Water District
SWA	surface water augmentation
TMDL	total maximum daily load
WQO	water quality order
WWTF	Wastewater Treatment Facility

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