CITY OF SANTA CRUZ

Water Department

Water Commission Agenda
Regular Meeting
7:00 p.m. – May 1, 2017
Council Chambers
809 Center Street, Santa Cruz

Agenda

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 1-12)

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. Accept the City Council actions affecting the Water Department ☆ (Pages 1-2)
2. Approve the April 3, 2017 Water Commission Minutes ☆ (Pages 3-8)
3. Receive the 3rd Quarter FY 2017 Financial Report ☆ (Pages 9-12)

Items Removed from the Consent Agenda

General Business (Pages 13- 23)

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

4. FY 2018 Recommended Operating Budget ☆(Pages 13-20)

Recommendation: That the Water Commission receive information regarding the recommended FY 2018 Operating Budget and provide feedback.

5. Update on the Winter Water Projects ☆(Pages 21- 23)

Recommendation: That the Water Commission accept information and provide feedback on the status of the various work elements associated with the Winter Water projects being pursued by the City of Santa Cruz and as recommended by the Water Supply Advisory Committee.

Subcommittee/Advisory Body Oral Reports

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

Adjournment The next meeting of the Water Commission is tentatively scheduled for June 5, 2017, at 7:00 p.m. in Council Chambers.

☆Denotes written materials included in packet

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 the 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.

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 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.

WATER COMMISSION
INFORMATION REPORT

DATE: 4/27/17

AGENDA OF: May 1, 2017

TO: Water Commission

FROM: Rosemary Menard, Water Director

SUBJECT: City Council Items Affecting Water

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

April 25, 2017

Lake Management Services Contract - Contract Amendment No. 1 (WT)

Motion carried to authorize the City Manager to execute Contract Amendment No. 1 with McCord Environmental Inc. (Davis, CA) for lake management services for the Loch Lomond Reservoir, in a form approved by the City Attorney.

Purchase of One (1) Hydro-Excavator (WT)

Motion carried to authorize the purchase of a Hydro-Excavator from Atlantic Machinery (Silver Spring, MD) in the amount of $399,761.

Water Supply Advisory Committee Aquifer Storage and Recovery Alternative: Contract Amendment No. 1 with Pueblo Water Resources for Groundwater Modeling (WT)

Motion carried to authorize the City Manager to execute Contract Amendment No. 1 with Pueblo Water Resources Inc. (Ventura CA) in the amount of $377,615 for groundwater modeling and data interpretation for the Aquifer Storage and Recovery Water Supply Alternative evaluation as per the recommendations of the Water Supply Advisory Committee, and to authorize the City Manager to execute an agreement in a form approved by the City Attorney.

Water Supply Advisory Committee Desalination Alternative: Award of Contract to Dudek for Preparation of a Desalination Feasibility Update (WT)

Motion carried to accept the proposal of Dudek (Santa Cruz CA) in the amount of $139,669 for the preparation of a Desalination Feasibility Update as per the recommendations of the Water Supply Advisory Committee and to authorize the City Manager to execute an agreement in a form approved by the City Attorney.

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

ATTACHMENTS: None.

Water Department

Water Commission
7:00 p.m. –April 3, 2017
Council Chambers
809 Center Street, Santa Cruz

Minutes of a Water Commission Meeting

Call to Order Chair Wilshusen called the meeting to order at 7:02 p.m. in the City Council Chambers.

Roll Call
Present: L. Wilshusen (Chair), D. Engfer (Vice-Chair), D. Baskin, J. Mekis, A. Schiffrin, D. Schwarm, W. Wadlow
Absent:

Staff Present: R. Menard, Water Director; H. Luckenbach, Deputy Director/Engineering Manager; T. Goddard, Administrative Service Manager; M. Kaping, Management Analyst; A. Poncato, Administrative Assistant III.

Others: 5 members of the public.

Oral Communications: There were no oral communications.

Statements of Disqualification: There were no statements of disqualification.

Announcements: There were no announcements.

Consent Agenda
1. Accept the City Council actions affecting the Water Department
2. Approve the March 6, 2017, Water Commission Minutes
3. Receive and discuss the information regarding the 2017 Water Supply Outlook
5. Accept the Water Department Strategic Framework for Communications on Water Supply Advisory Committee Recommendations
6. Accept the updated Water Commission meeting schedule for 2017

Commissioner Schiffrin moved the Consent Agenda. Commissioner Baskin seconded.
VOICE VOTE: MOTION CARRIED
AYES: All.
NOES: None.
ABSENT: None.

Items Removed from the Consent Agenda

4. Recommend that the City Council approve the FY 2018 – FY 2020 Capital Improvement Program budget

Can staff advise why there is a 10% increase in the projected years of the recommended CIP compared with the CIP in the Long Range Financial Plan?

- The nature of CIP planning is that the next year's budget requirements becomes clearer as projects move forward. Outlying year's project budgets will still swing; however, recent work completed on the water supply project and other work has assisted in making future estimates more concrete.
- Staff has updated the Long Range Financial Plan financial pro-forma to include the revisions to the CIP.

Final Comments and Requests for Follow Up

- For future consideration, present a comparative analysis when amounts increase significantly from the Long Range Financial Plan.
- Add footnotes which identify key assumptions of what numbers are firm and which still lack definition.
- Identify which projects in the CIP are or could be impactful to the WSAS strategies.

Commissioner Schiffrin moved to recommend that the City Council approve the FY 2018- FY 2020 Capital Improvement Program budget. Commissioner Baskin seconded.
VOICE VOTE: MOTION CARRIED
AYES: All.
NOES: None.
ABSENT: None.

General Business

7. Revision of Miscellaneous Fees

Ms. Menard introduced Ms. Kaping who provided an overview of the Water Department's updated Miscellaneous Fees.

Ms. Kaping pointed out the average amount of increase from the 2010 fees is 32% not 50% as stated in the staff report.

Are these fees simply to recover the cost of staff performing these activities?

- Yes, the fee rate is the labor rate plus parts required.

It seems unfair to raise prices 45-68% higher than the rate of inflation when fees such as restoring service after non-payment target citizens are already struggling with financial difficulties.

- The proposed fees were calculated based on actual labor costs. Inflation was not considered when the updated rates were calculated.

If a citizen cancels or reschedules an appointment without 1 business-day notices they are charged $500. What if a Water Department employee fails to show up for an appointment? Will the customer receive a credit?

- A Water Department employee will not miss an appointment because other staff members could make it in the event an employee is ill or unable to meet the job needs.

Why were labor rates calculated at only $63/hour?

- The Finance Department recently hired a consultant to do a city-wide fee study. The consultant used a blended rate per Department, which includes labor costs from all levels of service and management. This methodology is consistent with Water Department practices; the tasks listed in the fee schedule are not always completed by one person or one division. Many times it is several divisions working together to complete an assignment. Fees were determined using the consultant's methodology for an hourly blended rate.

Commissioner Schiffrin moved that the City Council approve the Water Department's updated Miscellaneous Fees. Commission Wadlow seconded.
VOICE VOTE: MOTION CARRIED
AYES: All.
NOES: None.
ABSENT: None.

8. Scopes of work for Water Supply Augmentation Strategy Work Plan: Raftelis - Financial Analysis of RW/ Dudek - Update of Desal project.

Ms. Luckenbach provided information on the scopes of work for Raftelis Financial Consultants Inc. (Los Angeles CA) for Phase 1 of the Water Reliability Impact Study and Dudek (Santa Cruz CA) for the Preparation of a Desalination Feasibility Update.

Raftelis Financial Consultants, Inc. discussion

What does pricing recycled water mean?

- A pricing policy for a project will depend on the value the project provides. For example, if you have a recycled water project that is an irrigation-only project (i.e., it will not solve the water supply issue), you will likely have a different pricing policy than if you have a project similar to Direct Potable Reuse (DPR) that does help to solve a water supply issue.

Does pricing recycled water mean that we are going to be selling water to others besides our water customers?

- It could. If you have a different customer base your pricing policy may change. Pricing policy will be taken into account on a project by project basis.

For purposes of the analysis, is it pricing recycling, costing recycling or both?

- It is probably both because there is a cost to make the water but you may have a different pricing strategy. For example, because it is very costly to treat recycled

water to a potable water standard, we would need to think about how we would allocate those costs.

Will the financial analysis determine future individual customer fees?

- No, this analysis will not determine future individual customer fees. That level of detailed analysis would be undertaken in a future study.

Will Raftelis do the work for in-lieu and ASR?

- Yes and we've updated the Water Commission work plan to indicate that we are bringing back a Phase 2 scope from Raftelis in a few months that will do this type of financial analysis for those alternatives.

Dudek discussion

Can the intake locations change?

- It is unknown if we can change them, but we will likely reduce the number of intakes based on the comments and feedback we received in comments to the draft EIR for the scwd2 desalination project.

As staff developed their statement of work with Dudek, what considerations were made related to the Moss Landing Desal project?

- That desal option was not specifically defined in the WSAC work plan so the idea of including the Moss Landing Desal project as an element to observe was not contemplated when staff developed their statement of work with Dudek.

Final Comments and Requests for Follow Up

- Evaluate the intertie component with Soquel Creek Water District in the feasibility update.
- Provide two desalination alternatives to City Council, city only and a regional project with Soquel Creek Water District.
- Observe energy costs and environmental impacts the same way we examine these impacts for ASR, in-lieu, and our recycled water alternatives.
- Update language on the second bullet point of task 3A to state: "Evaluate the intertie component of the project."

Public comments made by Christy Kirven and Kim Adamson.

Commissioner Schiffrin moved to accept the staff recommendation on the scopes of work for Raftelis Financial Consultants, Inc. and Dudek with the additional recommendation that the contract with Dudek be amended to evaluate the intertie component. Commissioner Baskin seconded.
VOICE VOTE: MOTION CARRIED
AYES: All.
NOES: None.
ABSENT: None.

9. Memorandum of Agreement (MOA)between the City of Santa Cruz and Soquel Creek Water District (SqCWD) regarding treated wastewater effluent for use in a potential future Pure Water Soquel Project

Ms. Menard provided an overview of the Memorandum Agreement between the City of Santa Cruz and Soquel Creek Water District.

What has changed since the last time the MOU was brought to the Commission?

- The language has been clarified in Paragraph 2. The language was also modified in Paragraph 5 to clarify procedural and timing matters related to implementation of portions of the MOU, certifying the EIR and approving a project.

How do we know how much water we need to get 1,500 acre-feet of advanced treated recycled water?

- 1,500 acre-feet of water is equal to 500 million gallons or 1.3 million MGD. The City's Wastewater Treatment Facility dry weather flow is about 6 mgd and it goes up in the winter season. It used to be 9-10 mgd but with conservation efforts, it is averaging between 6-7 MGD. The analysis has been done to determine how much untreated wastewater is required to produce 1,500 acre-feet of ATRW.

Is the purpose of this MOU for SqCWD to proceed with their recycled water program?

- Yes. SqCWD has been considering a project that uses a membrane bioreactor, which is basically a treatment process to treat raw sewage to secondary standard. Last year the City sent a signed a letter to SqCWD saying they can have access to the City's wastewater. This MOU provides SqCWD with additional certainty and clarity that they will have access to wastewater effluent from the City and they won't need include in the environmental analysis consideration of a facility to treat raw sewage.

Isn't it a better deal for SqCWD if we treat the water and sell it to them?

- Not necessarily, because if they build a water recycling treatment facility, they can finance it and spread those costs over 30 years. If SqCWD is a customer of ours, they pay the full freight of operating and capital costs without the benefit of getting to capitalize the major facility cost.

Is there a benefit for the potential wastewater treatment plant to reduce wastewater outflow into Monterey Bay?

- There is an agreement between a variety of parties around Monterey Bay for a water quality monitoring program. It's an annual program, the costs of which are divided among the participating agencies. As fewer agencies discharge into the bay, the size of the program doesn't go down; the costs may be allocated to the agencies who are still releasing flows into the ocean.

<u>Final Comments and Requests for Follow Up</u>

- Establish whether or not a time limit and/or a termination clause should be included in the agreement.
- List all the definitions in the same place within the agreement.

- Suggest updating language in section 2 to state: "… 1,500 acre-feet per year (not to exceed 1.3 million MGD).
- Correct Districts in section 2 so it is possessive.
- Determine the enforceability of the agreement and consider a risk analysis and loss analysis if it is considered to be enforceable.
- Identify what will happen if we do not choose to move forward with this agreement or plan.
- Confirm how we can get out of this plan.
- Amend the agreement to state that the parties involved will have to decide if they want to continue the agreement or not in X years.
- The language in section 5, and in one other section, originated specifically from SqCWD's CEQA attorney that was designed to help withstand future legal challenges. This was done so it doesn't presuppose an outcome of the CEQA process and the SqCWD Board decision making.

Commissioner Schiffrin moved that the Commission recommend that the City Council approve the Memorandum of Agreement between the City of Santa Cruz and Soquel Creek Water District with a further recommendation that the City Attorney review the agreement again and provide the City Council with information on any enforceability risks that the City would be subject to because of the agreement and also determine if there is a benefit to adding a termination clause after a limited time period to the agreement. Commissioner Engfer seconded.

VOICE VOTE: MOTION CARRIED
AYES: All.
NOES: None.
ABSENT: None.

Subcommittee/Advisory Body Oral Reports

- Commissioner Baskin reports that the Mid-County Groundwater Agency work to develop a Groundwater Sustainability Plan for the Santa Cruz Mid-County Groundwater Basin is in its early stages.

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

Adjournment Meeting adjourned at 8:38 p.m. The next meeting of the Water Commission is scheduled for May 1, 2017, at 7:00 p.m. in Council Chambers.

Respectfully submitted,

Amy Poncato

Digitally signed by Amy Poncato
DN: cn=Amy Poncato, o=Water Department, ou=Administration, email=aponcato@cityofsantacruz.com, c=US
Date: 2017.04.27 10:44:06 -07'00'

Staff

WATER COMMISSION
INFORMATION REPORT

DATE: 4/26/2017

AGENDA OF: May 1, 2017

TO: Water Commission

FROM: Malissa Kaping, Management Analyst

SUBJECT: 3rd Quarter FY 2017 Financial Report

RECOMMENDATION: That the Water Commission receive the information regarding the 3rd Quarterly FY 2017 Financial Report.

BACKGROUND: The 3rd Quarter FY 2017 Financial Report is attached as an informational consent item. This report is for the period of 7/1/16 through 3/31/17 and is a summary comparison of our actual expenses and revenues to date versus the projected budget at the 75% point of the fiscal year. Both our revenues and expenses are below the 75% mark, with total revenues exceeding expenses. It is expected that the FY 2017 year-end financials will also reflect total revenues exceeding expenses.

Operating Budget Comments

- The fund balances shown includes a journal entry in-process to transfer the IBank reimbursement funds received to the 90-Day Operating Reserve and the Emergency Reserve as planned.
- All costs, including personnel costs, related to the January and February storm response is included in the Fund 711 Operating budget expenses. Such expenses are being tracked with the intent of reimbursing Fund 711 from Fund 717, the Emergency Reserve, while the city is pursuing FEMA reimbursement.

CIP Comments

- The CIP page list of projects and (projected) project totals has been updated to match the CIP request going to Council on May 9th. The visual charts were removed due to lack of space; however, the information that would have been provided in the charts (number of projects by status, amount spent on water main replacements, and duration of projects by driver) is already included in the data tables.

FISCAL IMPACT: None

PROPOSED MOTION: Motion to receive the information regarding the 3rd Quarterly FY 2017 Financial Report

ATTACHMENTS:
3rd Quarter FY2017 Financial Report

3rd Quarter FY2017
Preliminary, Unaudited, as of 3/31/17

Water Operations, Fund 711

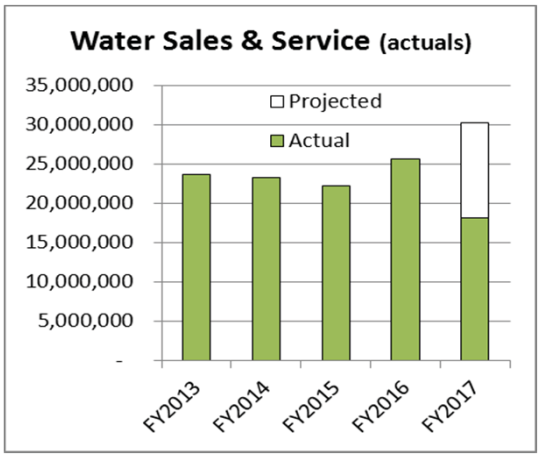
	FY2017 Ado Budget	FY2017 Adj Budget	Actual YTD Thru 3/31/17	Remaining Enc	FY2017 YTD Act + Enc	YTD % of Budget Act + Enc
Revenues						
Water Sales and Service *	30,278,463	30,278,463	18,177,840	-	18,177,840	60%
Miscellaneous	3,045,315	3,045,315	950,726	-	950,726	31%
Grants & Other Financing	20,008,000	20,008,000	25,003,224	-	25,003,224	125%
Total Revenues	**53,331,778**	**53,331,778**	**44,131,789**	**-**	**44,131,789**	**83%**
Expenses			-			
Personnel	12,741,984	12,741,984	8,320,946	-	8,320,946	65%
Services, Supplies, and Other	20,794,807	21,664,477	7,306,701	1,633,564	8,940,266	41%
Capital Outlay: Other	965,000	978,050	178,058	179,610	357,668	37%
Debt Service	970,550	1,220,550	1,098,649	-	1,098,649	90%
Total Expenses	**35,472,341**	**36,605,061**	**16,904,355**	**1,813,174**	**18,717,529**	**51%**
Balance		16,726,717	27,227,435		25,414,261	

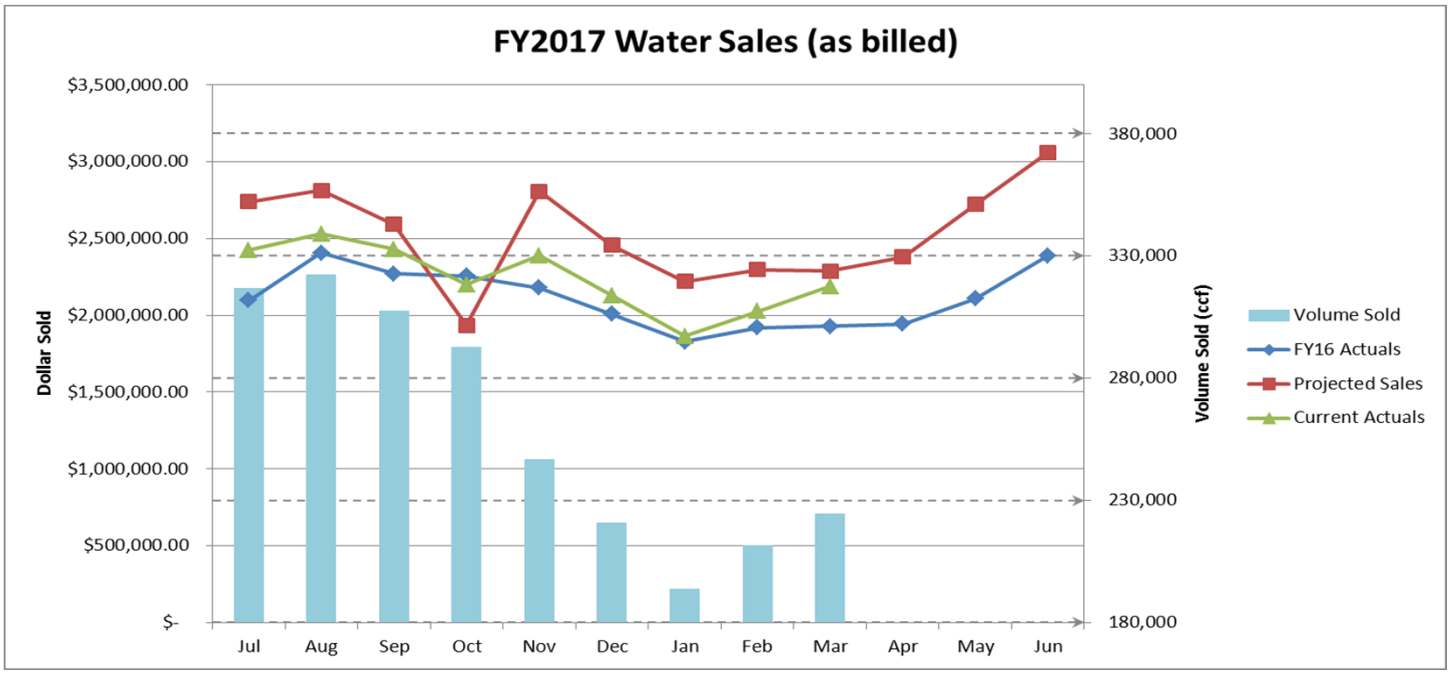
FY2017 Fund Balances

	Balance as of 3/31/17	Target Balance
711- Enterprise Operations **	10,437,219	6,600,000
713- Rate Stabilization	2,479,026	2,450,000
714- Public Art	328,477	N/A
715-System Devel. Charges	3,353,439	N/A
716- 90-Day Operating Reserve **	6,490,700	6,600,000
717- Emergency Reserve **	3,042,715	3,100,000
718- MHJB Endowment	145,442	145,000

* Actual revenues received (not as billed)

** Balance includes journey entry in process





CIP Projects Overview, as of 3/31/2017

Rehabilitation or Replacement Projects	Project #	Life of Project Total (Projected) **	Spend Thru 3/31/17 *	Project Duration	Current Status
Aerators at Loch Lomond	c701706	350,000	-	2017 - 2019	Feasibility
Bay Street Reservoir Reconstruction	c700313 & -027	25,969,205	24,445,044	2007 - 2017	Wrap-up/Phase 4
Beltz 10 & 11 Rehab & Development	c700026	509,243	64,243	2017 - 2018	Pre-Design
Coast Pump Station Line Repairs	c701707	550,000	-	2018	Feasibility
Felton Diversion Replac. & Pump Station	c701602	1,200,000	92,036	2016 - 2020	Pre-Design
Gravity Trunk Main Valve Replacement	c701504	640,000	583,519	2014 - 2017	Construction
Newell Creek Dam Inlet/Outlet Pipeline	c701606	49,940,744	1,183,015	2016 - 2021	Design
Newell Creek Pipeline Rehabilitation	c701701	19,920,000	9,999	2016 - 2020	Feasibility
N. Coast System Rehab- Laguna Diversion	TBD	1,750,000	-	2018 - 2021	Feasibility
N. Coast System Rehab- Majors Diversion	TBD	1,750,000	-	2018 - 2021	Feasibility
North Coast System Rehabilitation -Phase 3	c709835	15,686,759	13,309,558	2012 - 2017	Construction
North Coast System Rehabilitation -Phase 4	c709835	13,000,000	-	2021 - 2023	Pre-Feasibility
Pressure Regulating Stations	c701703	490,000	6,648	2017 - 2020	Pre-Design
San Lorenzo River Diversion & Tait Wells	c709872	2,055,014	1,964,711	2002 - 2017	Project Wrap-up
Tube Settler Replacement	c701708	2,200,000	-	2018	Pre-Design
University Tank No. 4 Rehab/Replace	c701505	3,770,000	-	2014 - 2020	Feasibility
University Tank No. 5 Replacement	c701506	3,978,000	330,998	2014 - 2018	Design
Water Treatment Upgrades	c700025 & -1401	815,548	443,621	On-going	Feasibility
Wharf Water Main Replacement	c701613	193,501	158,188	2016	Completed
WTP Concrete Tanks	c701501, -1503, &	10,828,320	921,645	2014 - 2020	Design
WTP Filter Rehabilitation and Upgrades	c701303	6,037,300	5,969,761	2013 - 2017	Construction
WTP Flocculator Mixers	c701502	2,360,000	-	2018 - 2019	Feasibility
		163,993,634	**49,482,985**		

Upgrades or Improvement Projects	Project #	Life of Project Total (Projected) **	Spend Thru 3/31/17 *	Project Duration	Current Status
Advanced Metering Infrastructure (AMI)	c701603	8,100,000	5,600	TBD	Feasibility
Loch Lomond Facilities Improvements	c701301	385,000	74,376	2013 - 2020	Design/Construction
Photovoltaic System Evaluation/Construc	c701607	910,000	290	2016 - 2018	Design/Construction
Security Camera & Building Access Upgrades	c701704	645,000	-	2016 - 2019	Feasibility
Spoils and Stockpile Handling Facilities	c701508	350,000	201,868	2015 - 2017	Construction
Water Resources Building	c701702	1,100,000	206,585	2016 - 2017	Design
		11,490,000	**488,719**		

Water Supply Reliability & Studies	Project #	Life of Project Total (Projected) **	Spend Thru 3/31/17 *	Project Duration	Current Status
Aquifer Storage and Recovery	c701609 & -10	3,635,000	460,299	2016 - 2020	Feasibility
Recycled Water	c701611 & -12	575,000	549,907	2016 - TBD	Feasibility
Source Water Evaluation	c701608	1,100,000	273,434	2016 - 2020	Feasibility
Water Supply Reliability - WSAC	c701402 & -03	2,296,250	2,296,249	2014 - 2016	Completed
Water Supply- WSAS Implementation	c701705	105,078,352	25,776	2020 - 2025	Feasibility
		112,684,602	**3,605,664**		

Water Main Replacements	Project #	Average Spend Per Year	Spend For 7/1/16 - 3/31/17	Project Duration	Current Status
Main Replacements - Engineering Section	c700002 +	1,298,289	1,096,515	Annual - Ongoing Programs	
Main Replacements -Customer Initiated	c700004	35,759	-		
Main Replacements - Distribution Section	c701507	369,643	182,022		
Main Replace.- Outside Agency Initiated	c700003	172,564	27,778		
		1,876,255	**1,306,315**		

* Amount includes encumbered and spent funds from the project start through 3/31/17.

** Non-inflated 2015 dollars, will change as projects move through design process. Includes budget adjustments in process.

WATER COMMISSION
INFORMATION REPORT

DATE: 4/25/2017

AGENDA OF: May 1, 2017

TO: Water Commission

FROM: Nicole B. Dennis,
Principal Management Analyst

SUBJECT: FY 2018 Recommended Operating Budget

RECOMMENDATION: That the Water Commission receive information regarding the recommended FY 2018 Operating Budget and provide feedback.

BACKGROUND: The City of Santa Cruz will hold its annual operating budget hearing beginning May 23 through May 25, 2017. Both the Operating and Capital Improvement Budgets are scheduled to be adopted on June 13, 2017. Due to the timing of the Water Commission meeting and the production of the printed budget document, the Water Commission will be provided with a draft of the FY 2018 Operating Budget for review and feedback at the May 1st meeting. The final, printed version will be provided to the Commission at their June 5th meeting.

DISCUSSION: The Water Department's Operating Budget provides the resources the Department needs to provide core services to customers. These include water service, and customer service and billing as well as all of the events that support these activities. For instance, all facility and system maintenance, resources to implement water conservation and backflow prevention programs, water quality monitoring and reporting, operation of the Loch Lomond recreation area, departmental finance, and administration functions, and watershed management and resource management activities.

Specifically planned for FY 2018, included in the operating budget and consistent with the Capital Improvement Program (CIP), the Department plans to:

- Continue working on the Department's strategic planning and organization development efforts;
- Conduct a public opinion poll, to establish a baseline of the community's awareness of the water supply gap and the WSAC recommendations;
- Continue to implement the WSAC recommended work plan;
- Pursue debt financing necessary to fund the planned CIP;

- Begin the NEPA/CEQA process for the draft aquatic-species Habitat Conservation Plan/Section 2081 Permit with NOAA and California DFW;
- Maintain water service reliability and water quality by cleaning and inspecting all potable water storage reservoirs; and
- Launch the new Utility Maintenance Technician Trainee program at Graham Hill Water Treatment Plant.

To address the staffing needed to accomplish the work of the Department, we are proposing the addition of 5.0 FTE positions and the replacement of two positions to better meet current demands.

In Customer Service, we are recommending the addition of a Utility Account Specialist (1 FTE). This lead worker position will improve our ability to provide excellent customer service by increasing our capacity to deal with increasingly complex billing and remittance processing needs.

In the Engineering Section, a new Assistant Engineer II (1 FTE) position will support existing and new capital projects included those related to reinvestments in our backbone infrastructure and in work related to planning for a supplemental water supply.

A Microbiologist I/II (1 FTE) is needed in the Water Quality Lab to meet current workload demand and expand lab testing to related to initiative such as the source water evaluation that is being conducted to support treatment planning.

Our Distribution section has never had a dedicated support position. Increased work load and the need support to maximize the benefit of a new computerized maintenance management system was identified as a need that could be met with the addition of a new Administrative Assistant II position (1 FTE), and this position has been added to the FY 2017-18 budget.

A Utility Account Specialist (1 FTE) is recommended for the Meter Shop to provide analytical support for the Department's meter reading program including the development and implementation of a meter testing and replacement program.

In addition to the staff listed above, we have also proposed the deletion of two staff positions and requested that they be replaced with a classification that better meets the needs of Department. In Administration, we recommend the deletion of an Administrative Assistant II (1 FTE) and the addition of an Administrative Assistant III (1 FTE). Given the complex workload in the Department, the two support positions in administration perform similar duties and there is no longer any meaningful distinction between the Administrative Assistant II and III positions. Both staff function and perform the duties of the Administrative Assistant III by supporting all sections of the Department, the managers, and Director.

The Department is also recommending the deletion of the Administrative Services Manager (1 FTE) and the addition of a Finance Manager (1 FTE) This change in staffing will allow the Department to recruit and retain a person with specific expertise in long-term financial planning

and management, municipal debt issuance and the review of bond documents and monitor cash flow needs.

The proposed FY 2017-18 budget is attached.

FISCAL IMPACT: Funds are available to support the FY 2017-18 Proposed Operating Budget from water sales revenues and other sources.

RECOMMENDED MOTION: No action requested at this time. Request the Commission provide feedback on the FY 2018 Recommended Operating Budget.

Attachment: FY 2018 DRAFT Operating Budget

			Fiscal Year 2017			
		FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Character						
Personnel Services		10,552,312	12,741,984	12,802,461	0	13,945,549
Services, Supplies & Other Charges		11,398,796	12,616,410	13,468,377	12,396,488	4,663,188
Capital Outlay		286,108	965,000	1,018,050	1,018,050	0
Debt Service		786,326	1,111,938	1,361,938	1,321,433	1,694,301
	Total Expenditures	23,023,541	27,435,332	28,650,826	14,735,971	20,303,038
Expenditures by Activity						
Water Administration	7101	4,478,178	5,166,074	5,416,135	3,847,703	4,559,174
Water Engineering	7102	2,033,528	3,028,647	3,278,931	1,050,925	2,578,292
Water Customer Services	7103	1,379,905	1,480,547	1,520,443	313,053	1,392,778
Water Conservation	7104	803,045	1,032,724	1,078,548	487,965	506,578
Water Resources	7105	1,010,381	1,486,943	1,639,357	620,319	641,431
Water Production	7106	5,908,516	6,100,712	6,211,014	3,614,384	3,065,547
Water Quality	7107	955,162	1,021,798	1,082,379	286,127	734,301
Water Distribution	7108	3,832,777	5,108,627	5,108,627	2,337,959	3,511,637
Water Recreation	7109	1,131,212	1,150,497	1,169,217	317,367	948,688
Water Meter Shop	7113	221	746,825	781,125	537,798	669,373
Meter Shop (no longer used)	7118	608,549	0	0	938	938
Water Debt Service	7140	786,326	1,111,938	1,361,938	1,321,433	1,694,301
Drought Response 2014	7199	95,741	0	3,113	0	0
	SubTotal Other Funds	23,023,541	27,435,332	28,650,826	14,735,971	20,303,038
	Total Expenditures	23,023,541	27,435,332	28,650,826	14,735,971	20,303,038
Resources by Fund						
Water	711	26,895,903	53,294,778	53,294,778	53,728,229	41,340,450
Water System Development Fees Fund	715	518,350	330,000	330,000	655,000	825,000
Water - Emergency Reserve Fund	717	435,984	0	0	0	0
	Total Resources	27,850,237	53,624,778	53,624,778	54,383,229	42,165,450
Net General Fund Cost		4,826,695	26,189,446	24,973,952	39,647,258	21,862,412

Activity Number: 7101

Department: Water

Activity Description:

The Water Administration section coordinates and manages department business by focusing on the following operational areas: human resources, finances, public relations, safety, and regulatory compliance. Administration is responsible for maintaining a rate structure that reflects cost of service, funds the department's capital improvement program, and provides adequate reserves. This section also facilitates the communication and interaction with the Water Commission, City Council, City Manager's Office and regulatory agencies.

		Fiscal Year 2017			
	FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Activity:					
Personnel Services	1,242,604	1,408,213	1,408,213	0	1,383,073
Services, Supplies & Other Charges	3,235,574	3,657,861	3,907,922	3,747,703	3,176,101
Capital Outlay	0	100,000	100,000	100,000	0
Total Expenditures	4,478,178	5,166,074	5,416,135	3,847,703	4,559,174

Activity Number: 7102

Department: Water

Activity Description:

The Water Engineering section provides engineering, planning, project design and construction management necessary for water facilities, as well as evaluation and installation of water saving technologies. The section keeps current with new technologies and water quality issues, remaining sensitive to mitigation of environmental impacts; reviews all requests for water services; maintains records of facilities, installations and maps; and oversees the Backflow Prevention Program.

		Fiscal Year 2017			
	FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Activity:					
Personnel Services	1,549,443	2,228,946	2,228,946	0	2,462,742
Services, Supplies & Other Charges	415,005	734,701	971,935	972,875	115,550
Capital Outlay	69,080	65,000	78,050	78,050	0
Total Expenditures	2,033,528	3,028,647	3,278,931	1,050,925	2,578,292
Activity Resources:					
Rents & Misc Revenues	1,231	0	0	20,514	0
Total Resources	1,231	0	0	20,514	0

Activity Number: 7103

Department: Water

Activity Description:

The Customer Services section (Santa Cruz Municipal Utilities -SCMU) provides customer service for water, sewer, refuse, and recycling services to the residents and businesses of the City of Santa Cruz, and only water services to the unincorporated surrounding areas. This section manages utility accounts and billing, processes opening and closing of accounts; and provides service in response to requests from the customers.

		Fiscal Year 2017			
	FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Activity:					
Personnel Services	910,416	1,022,433	1,062,329	0	1,282,597
Services, Supplies & Other Charges	440,332	458,114	458,114	313,053	110,181
Capital Outlay	29,157	0	0	0	0
Total Expenditures	1,379,905	1,480,547	1,520,443	313,053	1,392,778
Activity Resources:					
Charges for Services	691,062	725,615	725,615	725,615	761,896
Total Resources	691,062	725,615	725,615	725,615	761,896

Activity Number: 7104

Department: Water

Activity Description:

The Water Conservation section is responsible for promoting efficient water use and for implementing management practices that reduce customer demand for water, including public information and education activities, water budgets for large landscape customers, plumbing fixture replacement and appliance rebate programs, technical assistance, administration of landscape, and water waste regulations.

		Fiscal Year 2017			
	FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Activity:					
Personnel Services	151,789	387,103	387,103	0	479,607
Services, Supplies & Other Charges	651,256	645,621	691,445	487,965	26,971
Total Expenditures	803,045	1,032,724	1,078,548	487,965	506,578

Activity Number: 7105

Department: Water

Activity Description:

The Water Resources Management section is responsible for the drinking water source protection, environmental regulatory compliance, and general natural resource management. The section coordinates environmental projects related to water rights, water supply, habitat conservation, and environmental resource protection.

			Fiscal Year 2017			
		FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Activity:						
Personnel Services		506,214	569,579	569,579	0	609,987
Services, Supplies & Other Charges		504,166	917,364	1,069,778	620,319	31,444
	Total Expenditures	1,010,381	1,486,943	1,639,357	620,319	641,431
Activity Resources:						
Rents & Misc Revenues		12,400	0	0	0	0
	Total Resources	12,400	0	0	0	0

Activity Number: 7106

Department: Water

Activity Description:

The Water Production section is responsible for production, operation, and maintenance of water storage, diversion, collection, pumping, and treatment facilities from all sources throughout the system.

			Fiscal Year 2017			
		FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Activity:						
Personnel Services		2,300,259	2,610,428	2,610,428	0	2,822,838
Services, Supplies & Other Charges		3,480,791	3,415,284	3,485,586	3,499,384	242,709
Capital Outlay		127,466	75,000	115,000	115,000	0
	Total Expenditures	5,908,516	6,100,712	6,211,014	3,614,384	3,065,547
Activity Resources:						
Rents & Misc Revenues		44	0	0	0	0
	Total Resources	44	0	0	0	0

Activity Number: 7107

Department: Water

Activity Description:

The Water Quality Control section performs all water quality testing, and oversees matters pertaining to water quality control to maintain compliance with State and Federal standards and for planning for future treatment needs.

			Fiscal Year 2017			
		FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Activity:						
Personnel Services		659,076	718,944	739,525	0	686,132
Services, Supplies & Other Charges		268,490	267,854	307,854	251,127	48,169
Capital Outlay		27,595	35,000	35,000	35,000	0
	Total Expenditures	955,162	1,021,798	1,082,379	286,127	734,301

Activity Number: 7108

Department: Water

Activity Description:

The Water Distribution section is responsible for the maintenance and operation of all transmission mains, distribution mains, service lines, and hydrants in the service area.

		Fiscal Year 2017			
	FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Activity:					
Personnel Services	2,198,180	2,598,943	2,598,943	0	2,894,111
Services, Supplies & Other Charges	1,634,597	1,879,684	1,879,684	1,707,959	617,526
Capital Outlay	0	630,000	630,000	630,000	0
Total Expenditures	3,832,777	5,108,627	5,108,627	2,337,959	3,511,637

Activity Number: 7109

Department: Water

Activity Description:

The Water Recreation Facility section operates and maintains Loch Lomond Recreation Area. The section is also responsible for patrolling watershed property and protecting source water quality.

		Fiscal Year 2017			
	FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Activity:					
Personnel Services	650,665	790,205	790,205	0	832,571
Services, Supplies & Other Charges	447,739	300,292	319,012	257,367	116,117
Capital Outlay	32,808	60,000	60,000	60,000	0
Total Expenditures	1,131,212	1,150,497	1,169,217	317,367	948,688
Activity Resources:					
Licenses and Permits	2,843	600	600	1,900	1,425
Rents & Misc Revenues	215,361	130,000	130,000	319,100	238,500
Total Resources	218,204	130,600	130,600	321,000	239,925

Activity Number: 7113

Department: Water

Activity Description:

As of FY 2017, the Meter Shop was organizationally transferred to work more closely with Customer Service. The operating budget was transferred from Division 97, Activity 7118 to Division 92, Activity 7113.The Meter Shop is responsible for reading, inspecting, installing, maintaining, and replacing water meters and meter reading systems in the service area that covers the City of Santa Cruz and the unincorporated surrounding areas.

		Fiscal Year 2017			
	FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Activity:					
Personnel Services	0	407,190	407,190	0	391,567
Services, Supplies & Other Charges	0	339,635	373,935	537,798	372,680
Total Expenditures	0	0	0	938	938

Activity Number: 7140

Department: Water

Activity Description:

Funds principal and interest payments on issued debt.

			Fiscal Year 2017			
		FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Activity:						
Debt Service		786,326	1,111,938	1,361,938	1,321,433	1,694,301
	Total Expenditures	786,326	1,111,938	1,361,938	1,321,433	1,694,301

Activity Number: 7199

Department: Water

Activity Description:

This activity accounts for expenses and revenues beyond the department's base operating budget related to Stage 3 (or higher) Water Shortage Emergency incurred in calendar year 2014. Tracking of such expenses and revenues will begin with the Stage 3 Water Shortage Emergency declared by City Council on February 25, 2014 and continuing until such emergency is reduced to Stage 2 or lower.

			Fiscal Year 2017			
		FY 2016 Actual	Year-To-Date Ado Budget	Year-To-Date Adj Budget	Estimated Actual	2018 Dept Request
Expenditures by Activity:						

			Fiscal Year 2017			
Personnel Services		89,948	0	0	0	0
Services, Supplies & Other Charges		5,793	0	3,113	0	0
	Total Expenditures	95,741	0	3,113	0	0
Activity Resources:						
Fines and Forfeits		27,408	0	0	0	0
	Total Resources	27,408	0	0	0	0

WATER COMMISSION
INFORMATION REPORT

DATE: 4/26/2017

AGENDA OF: May 1, 2017

TO: Water Commission

FROM: Heidi Luckenbach, Deputy Director/Engineering Manager

SUBJECT: Update on the Winter Water Projects

RECOMMENDATION: That the Water Commission accept information and provide feedback on the status of the various work elements associated with the Winter Water projects being pursued by the City of Santa Cruz and as recommended by the Water Supply Advisory Committee.

BACKGROUND: The overarching goal of the Water Supply Advisory Committee's (WSAC) Plan is to provide significant improvement to the sufficiency and reliability of the Santa Cruz water supply by 2025. The three fundamental strategies recommended by the committee and being pursued by Water Department staff to meet the goal include water conservation, winter water harvest to achieve groundwater recharge by In Lieu water transfers and/or Aquifer Storage and Recovery, and Advanced-treated recycled water or desalination as potential back-up plans to a winter water harvest strategy.

The Water Commission receives quarterly updates on the progress being made in advancing all the elements of the Water Supply Augmentation Strategy; the last update was conveyed in a joint study session with the City Council on March 17, 2017, and the next scheduled for the June 2017 Commission meeting. Several workshops have been held at Water Commission meetings to discuss in more detail the water supply alternatives being evaluated. To date this has included one that focused on Aquifer Storage and Recovery on November 7, 2016, and one that focused on the Recycled Water Feasibility Planning Study work on February 6, 2017.

The implementation of the WSAS work plan is generating a significant amount of information that requires a lot of analysis, discussion and scrutiny to be prepared to make informed decisions about filling the City's water supply gap. Staff is providing these updates and other "educational" opportunities to support the Commission's ability to advise and make recommendations to the City Council on this topic.

DISCUSSION: This item is focusing on work efforts of the winter water-focused alternatives, including In Lieu water transfers or exchanges[1] and Aquifer Storage and Recovery[2], plus several tangentially related topics such as the evaluation of Ranney Collectors.

The following topics will be covered, the purpose of which is to convey the status of the winter water work, discuss any findings of particular interest or importance, and receive input.

Overview
Review components of the of WSAS Winter Water concept including partnership opportunities and potential volumes of water.

In lieu
Rosemary Menard, Water Director, and Kevin Crossley, Senior Engineer, will provide an overview of work done to date with both Soquel Creek and Scotts Valley Water Districts to understand operational opportunities and limitations related to a water transfer project(s). Topics include water quality testing (pipe loop testing), regional agreements, water rights and costs. Links are provided to key reference materials including:

- Attachment A - City of Santa Cruz Intertie Blending Analysis, Water Quality Impacts Assessment Technical Memorandum, Black & Veatch, June 2016;
- Attachment B - Appendix 8 of the WSAC final report, October 2015; and,
- Attachment C - Water Transfer Infrastructure Summary Report, submitted as Appendix C under a Proposition 84 grant, Kennedy/Jenks Consultants, October 2013.

Aquifer Storage and Recovery
Isidro Rivera, Associate Engineer with the City of Santa Cruz, and Robert Marks, Principal Hydrologist with Pueblo Water Resources will provide an overview of the scope of work for Phase 1 of the study, status of work performed to date including deliverables, and next steps.

Topics for focused discussion will be on the scope of work for the groundwater modeling in the Santa Cruz Mid-County and Santa Margarita groundwater basins.

Geochemical Interactions and Recommendations
The hydro-geochemical modeling work has been completed. No apparent fatal flaws were identified in any of the wells analyzed (Scotts Valley Well 10A, Santa Cruz Beltz 9, Beltz 12 wells and Soquel Creek well Tannery II). The only concern identified is the potential for calcite precipitation at wells in the Santa Cruz Mid-County Basin that could result in plugging;

[1] Using In Lieu Water transfers, available flows from the City's flowing sources would be delivered to Soquel Creek Water District and/or Scotts Valley Water District customers, thus allowing reduced pumping from these regional aquifers and enabling the aquifer to passively rest and recharge.
[2] Using Aquifer Storage and Recover, available flows would be injected into aquifers thereby actively recharging aquifers. A portion of the water delivered using In Lieu or ASR would be effectively banked in the aquifers to be extracted and available to the City when needed in future dry years.

however, by planning for the inclusion of a pH adjustment step for the injected water to 7.2 – 7.3 (either at GHWTP or the wellheads) that potential can be mitigated. There was no indication of adverse dissolution reactions (e.g., arsenic mobilization). Furthermore, it appears that injection will likely have ancillary beneficial impacts on manganese levels in the recovered water, i.e., manganese levels in recovered ASR water may be significantly lower than the native groundwater.

Key recommendations from the hydrogeochemical testing study include:

1. Perform supplemental pH measurements from the distribution system at the Beltz well sites.
2. Update the geochemical models based on those results.
3. Collect cores of target aquifers at Beltz 9 and 12.
4. Update the geochemical models based on those results.
5. Perform ASR pilot testing with specific procedures to validate the model results, particularly with regards to the calcite precipitation potential

Groundwater Modeling

The City Council recently approved a change order with Pueblo to hire Hydrometrics to perform groundwater modeling in both the Santa Cruz Mid-County and the Santa Margarita groundwater basins. The scope of work will be presented at the Water Commission meeting and is specifically designed to help inform the opportunities and limitations of groundwater storage in these two basins.

FISCAL IMPACT: Funds are available in the FY 2017 and 2018 capital improvement program budget work associated with this item.

RECOMMENDED MOTION: Motion to accept information and provide feedback on the status of the various work elements associated with the Winter Water projects being pursued by the City of Santa Cruz and as recommended by the Water Supply Advisory Committee.

Electronic Attachments (via links):

Attachment A Blending Analysis
http://www.cityofsantacruz.com/Home/ShowDocument?id=59513
Attachment B Appendix 8 of WSAC final report
http://www.cityofsantacruz.com/Home/ShowDocument?id=59515
Attachment C Water Transfer Infrastructure Summary Report
http://www.cityofsantacruz.com/Home/ShowDocument?id=59517

Discussion of the Basis for Historical Cost Analyses for Water Transfers and Water Exchanges Projects with a Specific Focus on In-Lieu to Scotts Valley and/or the Soquel Creek Water District

Santa Cruz

Water Commission

May 1, 2017

APPENDIX C – Infrastructure and Costs

CONJUNCTIVE USE AND WATER TRANSFERS – PHASE II (TASK 6)

Proposition 84
Department of Water Resources
Integrated Regional Water Management Planning Grant
Northern Santa Cruz County Integrated Regional Water Management
Agreement No. 4600009400

May **2015**

Prepared by:
Santa Cruz County Environmental Health Services

Submitted to:
Regional Water Management Foundation
Department of Water Resources

Table 14: Conceptual Level Project Costs for Potential Water Transfer Scenarios

Project Component	Scenario No.1: Current Tait & GHWTP Capacity, New Interties	Scenario No.2: Increase GHWTP Capacity	Scenario No.3: Increase Tait & GHWTP Capacity	Scenario No.4: Increase GHWTP Capacity & Treatment	Scenario No.5: Increase Tait & GHWTP Capacity and Treatment
Tait Street Diversion Improvements					
Improvements for existing 7.8 MGD systems	$2,770,000	$2,770,000	$2,770,000	$3,840,000	$3,840,000
Expansion to 14 MGD capacity	--	--	$5,950,000	--	$5,950,000
GHWTP Improvements					
Pre-treatment improvements	--	$24,800,000	$24,800,000	$24,800,000	$24,800,000
Oxidation and Disinfection improvements	--	$20,240,000	$20,240,000	$20,240,000	$20,240,000
Solids Handling Improvements	--	$5,538,400	$12,670,000	$12,670,000	$12,670,000
Distribution System Improvements					
Connection to Scotts Valley Water District	$5,770,000	$5,770,000	$5,770,000	$5,770,000	$5,770,000
Connection to Soquel Creek Water District	$18,410,000	$18,410,000	$18,410,000	$18,410,000	$18,410,000
Total Scenario Project Cost	$26,950,000	$77,528,400	$90,610,000	$85,730,000	$91,680,000

Table 16: Conceptual Life-Cycle Unit Water Costs for Potential Water Transfer Scenarios

Project Cost Component	Scenario No.1: Current Tait & GHWTP Capacity	Scenario No.2: Increase GHWTP Winter Capacity	Scenario No.3: Increase Tait & GHWTP Capacity	Scenario No.4: Increase GHWTP Capacity & Treatment	Scenario No.5: Increase Tait & GHWTP Capacity and Treatment
Scenario Capital Cost	$26,950,000	$77,526,400	$90,610,000	$85,730,000	$91,680,000
Annualized Water Transfer Capital Cost	$1,754,400	$5,047,100	$5,898,700	$5,581,000	$5,968,400
Additional Tait Street O&M Costs, $/yr	$45,000	$69,100	$182,700	$97,500	$209,200
Additional GHWTP O&M Costs, $/yr	$73,300	$102,600	$246,300	$195,800	$420,000
Additional Water Transfer Pumping Cost, $/yr	$22,300	$31,200	$74,800	$39,900	$85,600
Total Water Transfer Life-Cycle Cost, $/yr	$1,895,100	$5,244,000	$6,402,500	$5,914,200	$6,683,200
Potential Scotts Valley Water Transfer, AF/yr	325	331	473	381	534
Potential Soquel Creek Water Transfer, AF/yr	120	292	1022	417	1178
Life-Cycle Unit Water Cost for Water Transfers, $/AF	$4,260	$8,420	$4,280	$7,410	$3,900

Appendix 8
Cost Data and Cost Analyses

Overview

This Appendix describes key activities undertaken by City staff and the project technical tear support the Water Supply Advisory Committee (WSAC or Committee) as it evaluated alternatives and later defined the recommended water resources plan and associated costs (capital, operations and maintenance [O&M], and present value).

Progression: Ideas to Building Block Development to a Robust Adaptive Program

Figure A8-1 presents an overall flow schematic for the progressive development that moved from public and staff ideas offered at the Strategies and Ideas Convention (October 2014), through consolidated alternatives (CAs) to building blocks (BBs), portfolios, and final elemen and strategies.

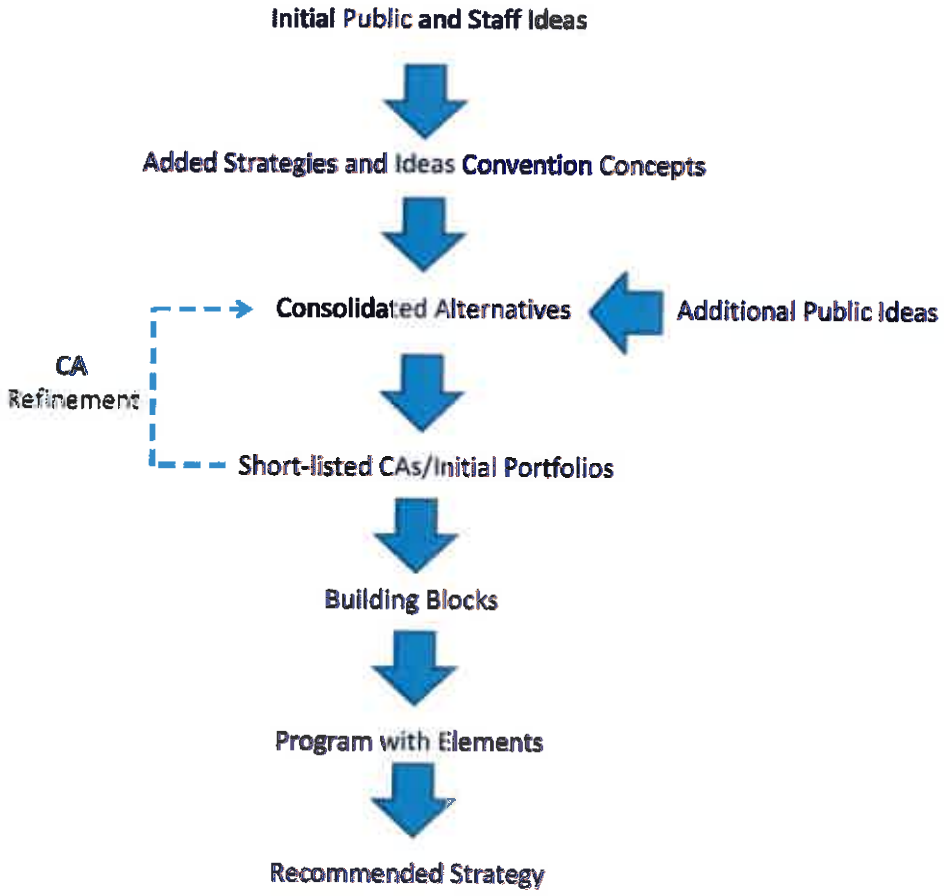


Figure A8-1 Overall flow schematic for the progressive development of the Proposed Water Supply Program

Table A8-1. Project Element Capital Cost Components and Assumptions

Element Number/Type	Capital Cost Components	Basis for Assumptions
1 – In lieu	Existing Infrastructure Improvements • Tait Street Diversion Improvements • Graham Hill WTP Improvements Pumps and Pipelines • 3,600 gpm Pump Station (City to Scotts Valley)at Intertie No. 1 • 16-inch Intertie 1 Pipeline (City to Scotts Valley), 3,600 linear feet (LF) • 3,600 gpm Pump Station (Soquel to City) at SqCWD Intertie • 16-inch Intertie Pipeline (City to Soquel Creek), 25,000 LF Wells • 4 350-gpm extraction wells in SVWD • 4 350-gpm extraction wells in SqCWD • Iron & manganese treatment, 8 wells • Land acquisition for wells, 4 sites in SqCWD and 4 sites in SVWD	• In lieu is based on winter demands for SqCWD and SVWD. • Water could be transferred to wells within the City, to SqCWD, and to SVWD. • Infrastructure is sized to accommodate 2.5-mgd (million gallons per day) peak flow between the City and SVWD and between the City and SqCWD. This sizing is to allow inclusion additional flows for ASR in the future. • The ultimate number and distribution of wells between agencies will be determined during project development. • The Tait Street and GHWTP improvements are based on current information that indicates that these facility upgrades are needed to treat a larger volume of higher turbidity water. This will be better defined moving forward. • It is assumed that the wells will all have a peak extraction flow rate of 350 gpm. • It is assumed that on-site iron and manganese treatment will be needed at each well. • Well footprints are estimated at 0.1 acre each. •

Project Elements Summary

	Element	1	2	3a	3b	3c	3d
	Building Block Approach	In-Lieu	ASR and In-Lieu Combined*	DPR Small (3 mgd)	IPR-Loch (3 mgd)	IPR-GW (3 mgd)	Local Desal (3mgd)
a	Capital Cost ($ M)	131	159	89	132	119	147
b	Annual O&M cost ($ M/yr)	2.6	3.7	3.5	5.2	4.2	3.9
c	Total Annualized Cost ($ M/yr)	11.6	14.6	9.6	14.3	12.4	14.0
d	Present Value Costs ($M)	185	237	162	241	207	229
h	Worst Year Yield (MG)	760	760	810	660	740	810
i	Average Year Yield (MG)	350	380	440	430	380	440
j	Worst year yield unit cost (Total Ann Cost/Wst Yr Yield)	15,500	19,300	11,900	21,600	16,700	17,300
k	ACAYY** (Total Ann Cost/Ave Yr Yield)	33,200	38,500	21,900	33,200	32,600	31,800
l	Worst Year Peak Season Shortage (MG)	480	470	420	570	490	420
m	Worst Year Peak Season Shortage (%)	29%	24%	25%	29%	25%	22%
n	Average Year Peak Season Shortage (MG)	120	30	30	40	90	30
o	Average Year Peak Season Shortage (%)	6%	5%	2%	2%	5%	2%

* Both the costs and yields in this column reflect the combined costs of implementing both in-lieu and ASR.

**ACAYY = Annualized Cost per million gallons of Average Year Yield

NOTES:

1 All estimates are preliminary, rounded, and subject to revision and refinement as more detailed analysis is developed.

2 Total annualized costs based on amortizing capital outlays using a capital recovery factor of 0.0688 (reflecting a 30-year bond term at a 5.5% rate of interest to estimate the annual payment), and adding annual O&M costs.

3 Present Value Costs calculated based on capital outlays occuring in first year, followed by 30 years of annual O&M expense, discounted to present worth using a 2.5% real discount rate. No inflation escalation included.

4 ASR costs and yields reflect the *combined* cost and yields associated with adding ASR to the in-lieu program. Energy use for the combined ASR and In-Lieu elements reflect a volume-weighted average across the two elements.

5 Potential for revenues from water sales, cost sharing, and grant funding are not reflected.

6 All Element 3 options scaled at 3 mgd, reflecting potential reuse production based soley on City of Santa Cruz effluent flows.

7 See additional notes on following page.

Excerpted from Appendix 8, Pages 7-8

1. It is beyond the scope of the WSAC to recommend the actual design of these Elements. For example, in lieu recharge (Element 1) might be implemented in many different ways, depending on the interests of neighboring districts, the constraints of water treatment, the constraints of existing distribution pipelines, etc. Similarly, direct injection (Element 2) may be conducted by the City alone, or in conjunction with neighboring districts, focused on one aquifer strata, or focused on several strata, etc. I.e., there are many unknowns that must be answered to define the final project.
2. The Project Elements Summary does not include the revenue from sale of water to neighboring districts, or other means of potential cost-sharing. It is premature to estimate that cost sharing contribution or possible revenues back to Santa Cruz.
3. The cost of upgrade of GHWTP, $62 million, is the largest single line item on the Gantt Chart. The purpose of this expenditure is to allow treatment of more winter water from the San Lorenzo River for the purpose of maximizing Elements 1 and 2. To be able to produce and deliver more water in the winter, we may need to deal with water with turbidity levels that are beyond that which can be effectively treated by the GHWTP. Lower cost options for addressing this purpose may be available and include: a) using existing GHWTP treatment capacity, b) constructing a Ranney Collector to reduce turbidity, and/or c) installation of a small-scale satellite treatment plant. The information needed to assess the feasibility of these alternatives is currently unavailable. A principal piece of needed data is an understanding of the current GHWTP's ability to treat water at the quality and quantity needed for Elements 1 and 2, followed by an understanding of the most cost-effective way of meeting treatment goals associated with these elements where the GHWTP might fall short.
4. The cost of upgrading the Tait St. Diversion, $14 million, is included in the cost estimate and is a placeholder for achieving increased diversion capacity on the San Lorenzo River for the purposes of maximizing Elements 1 and 2. However, with the City adoption of the aquifer recharge strategy and the completion of a Habitat Conservation Plan, the expectation is that state and federal fisheries agencies will remove their long-standing protest of the City's water rights application to use Felton Diversion for direct pumping to Graham Hill Treatment Plant. State approval of this water rights revision may allow the City to use the Felton Diversion for additional winter water diversion, rather than expand the Tait St. Diversion.
5. Current calculations are based on a 30-year life-cycle and do not account for residual value in capital expenditures beyond 30 years. Longer-lived infrastructure, such as pipelines between Santa Cruz and neighboring districts, likely has value that is not included in the cost accounting.
6. Costs could be significantly greater in order to generate yield sufficient to meet the gap, e.g., final pipeline routes could be longer or geological conditions could require more injection wells.
7. Strategy 1 will be implemented in incremental fashion. Initial expenditures are intended to define the project(s) and its feasibility at meeting the Plan's goals in the most cost effective way possible. Subsequent expenditures would be made based on feasibility and cost effectiveness with little risk of creating stranded assets.

Water Department

FY 2018 RECOMMENDED BUDGET

FY 2017 KEY INITIATIVES

- REHABILITATION AND REPLACEMENT OF BACKBONE INFRASTRUCTURE
- FINANCIAL PLANNING
- WSAC RECOMMENDATIONS
- STRATEGIC PLANNING AND ORGANIZATION DEVELOPMENT
- SUCCESSION PLANNING AND WORKFORCE DEVELOPMENT

FY 2017 ACCOMPLISHMENTS

1. Drought to Deluge
2. Watershed Management
3. Water Quality and Treatment
4. Customer Services
5. Engineering Planning for Infrastructure Improvements and Supplemental Water Supply
6. Distribution
7. Production and Maintenance
8. State and Regional Partnerships

FY 2018 KEY INITIATIVES

1. CONTINUED FOCUS REHABILITATION AND REPLACEMENT OF BACKBONE INFRASTRUCTURE AND FUNDING TO SUPPORT CAPITAL INVESTMENTS
2. ORGANIZATIONAL PERFORMANCE – TOOLS AND APPROACHES TO SUPPORT EFFECTIVELY AND EFFICIENTLY MEET OUR CHALLENGES
3. CONTINUED SUCCESSION PLANNING

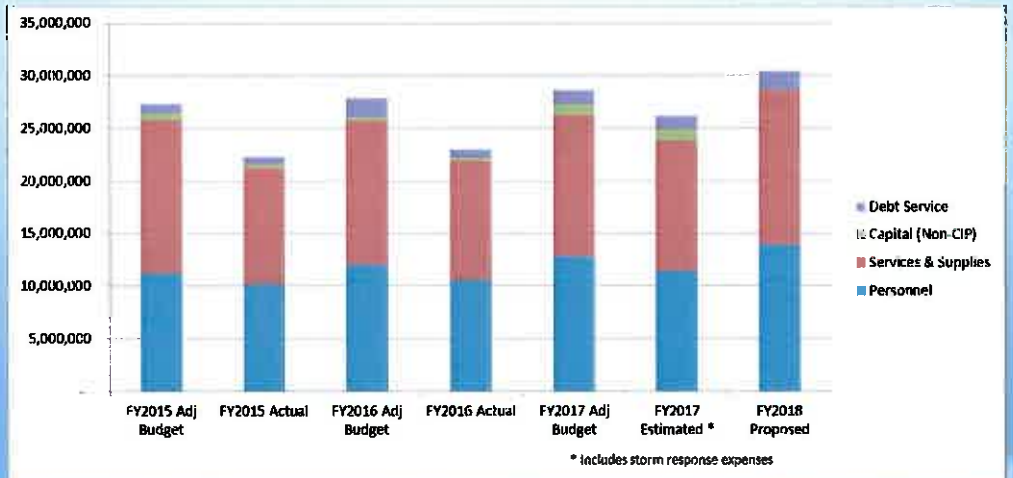
FY 2018 GOALS

- Deliver reliable, high quality supply of water that complies with all federal and state drinking water standards to our 96,000 customers, 24 hours a day, 7 days a week, 365 days a year
- Complete the Department's strategic planning process
- Conduct a public opinion poll
- Continue to implement the WSAC recommended work plan
- Begin the NEPA/CEQA process for the draft HCPs

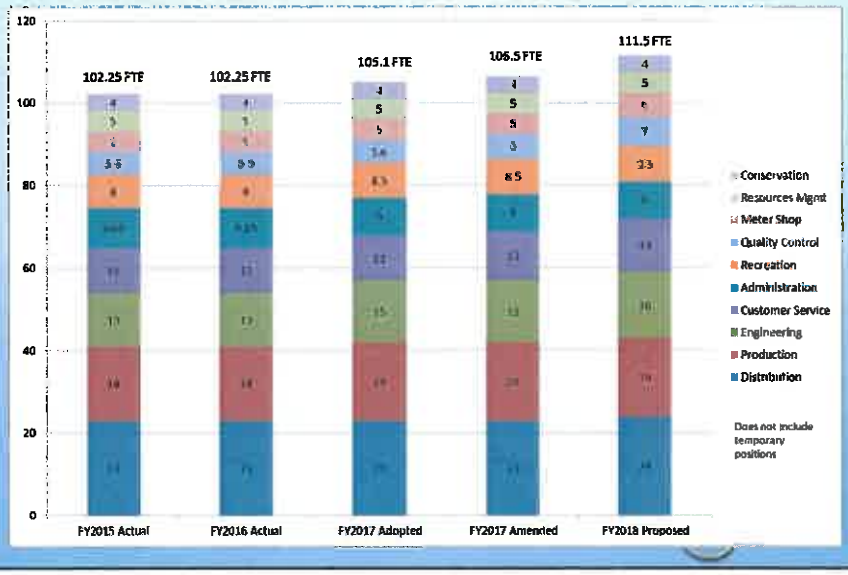
FY 2018 GOALS (Continued)

- Complete the preliminary engineering, environmental review and design for Capital projects
- Continue moving forward towards completion on several projects
- Maintain water service reliability and quality by cleaning and inspecting all potable water storage reservoirs
- Launch new Utility Maintenance Technician Trainee program at GHWTP

FY 2018 PROPOSED BUDGET
Expenditures by Object



FY 2018 PROPOSED BUDGET
Positions by Activity



FY 2018 PROPOSED BUDGET
New Positions

Section	Activity	Position	FTE
Admin	7101	Add Finance Manager	1.0
Admin	7101	Delete Administrative Svcs. Mngr.	-1.0
Admin	7101	Change existing AAII to AAIII	0.0
Engineering	7102	Add Assistant Engineer	1.0
Customer Svc	7103	Add Utility Account Specialist	1.0
Quality Control	7107	Add Microbiologist I/II	1.0
Distribution	7108	Add AAII	1.0
Meter Shop	7113	Add Utility Account Specialist	1.0
		Total	5.0

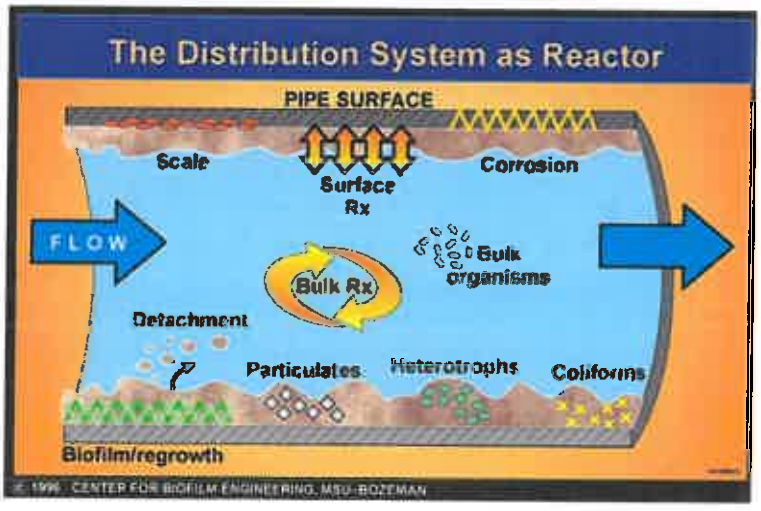
FY 2018 PROPOSED BUDGET
Revenues

- ✓Water Sales budgeted at 2.5 billion gallons ($40.2 million)
- ✓Next rate increase is effective July 1, 2017
- ✓Includes the $1.00/ccf Rate Stabilization Fee

Pipe Loop Study

Rosemary Menard, Water Director
Kevin Crossley PE, Senior Civil Engineer
May 1, 2017

PIPE SCALES ARE COMPLICATED



WEST BASIN WRF CORROSION PILOT

Loops of galvanized and copper pipe and brass faucets

Current Status

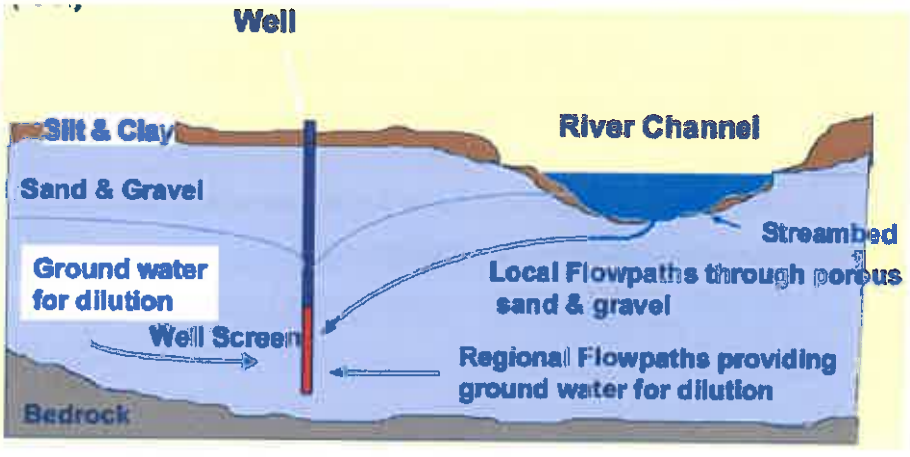
TASK	STATUS
Issue RFQ for Consultant Team	May 2017
Finalize Scope	June 2017
Initiate Study	Fall 2017
Complete Study	Spring 2018

Riverbank Filtration Study

Kevin Crossley PE, Senior Civil Engineer

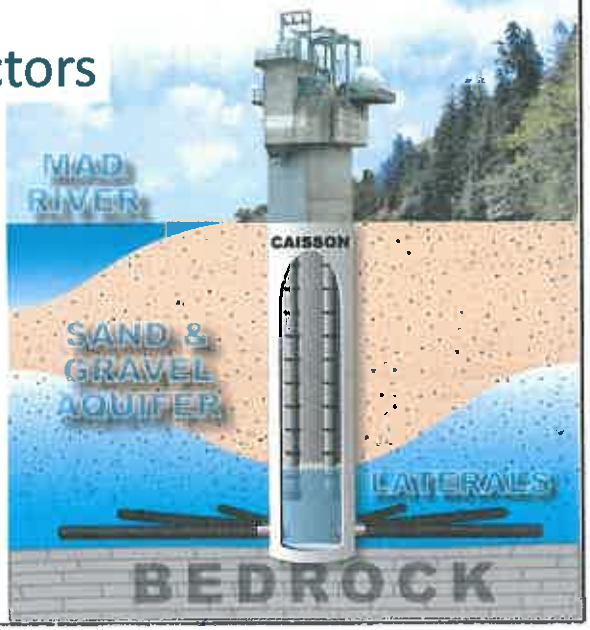
May 1, 2017

Overview:
Riverbank Filtration (RBF)



Source: https://www.researchgate.net/figure/268924778_fig_Figure-1-Schematic-diagram-of-riverbank-filtration-technique

Ranney Collectors



RBF and Winter Water Supply

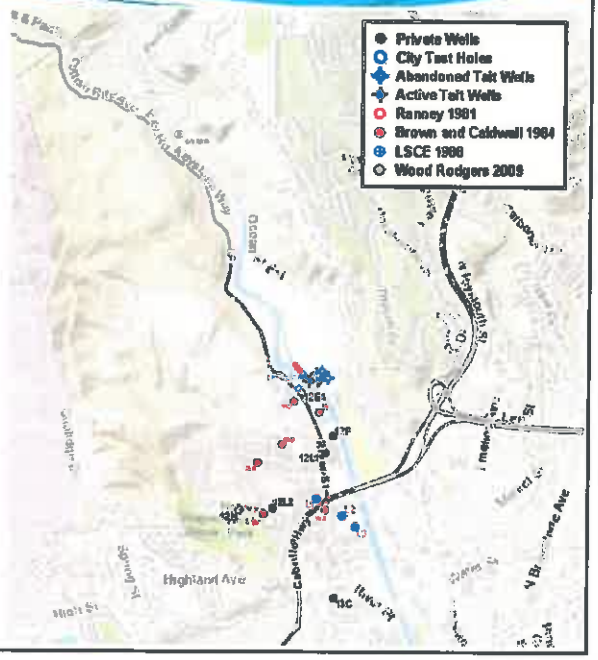
- Diversion
  - Increases overall diversion capacity/flexibility
  - Provide redundancy/resilience
- Treatment
  - Pre-treatment reduces need for chemicals
  - Source of stable water quality
  - Improve WTP performance during winter

RBF Study Objectives:

- Update Geologic Cross –Sections for Tait St
- Identify other sites to develop RBF in San Lorenzo River Alluvium (near Tait)
- Determine Feasibility of RBF in Felton Valley Alluvium

Goal: Double RBF Capacity from 1.5 MGD to 3 MGD

Past Studies (Tait St)



Current Status

TASK	STATUS
Felton Water Resources Literature Review	Complete
Finalize Study Scope/Objectives	Underway
Issue RFP for Consultant Team	July 2017
Complete Study	Fall 2018

Santa Cruz Water Commission
ASR Investigation Update

City of Santa Cruz Water Department

May 1, 2017

Robert C. Marks, P.G., C.Hg.,
Principal Hydrogeologist
Pueblo Water Resources, Inc.

1

Outline

- Project Background Review
- Overall Project Status
- Geochemical Interaction Analysis Results
- Groundwater Modeling Status
- Next Steps
- Q & A / Discussion

2

What is Aquifer Storage and Recovery (ASR)?

Formal Definition: *Aquifer Storage and Recovery (ASR) is the recharge of an aquifer via injection wells during times when water is available, and recovery of the water from the same wells during times when it is needed* (Pyne, 1994)

- Essentially a Form of Managed Aquifer Recharge, or "Groundwater Banking", that Utilizes Wells for the Injection and Later Recovery of Excess Water Supplies.

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ASR Applied to Santa Cruz

1. Source Water: "Excess" San Lorenzo River Flows
2. Infrastructure: Tait St. and Felton Diversion / GHWTP / Existing (or improved) SCWD Distribution (ASR)
3. Storage Aquifers: Santa Cruz Mid-County and/or Santa Margarita Groundwater Basins
4. Injection / Recovery Wells: Existing and/or Dedicated New ASR

4

WSAC ASR Implementation Plan

- **Phase 1 – Technical Feasibility Analysis**
- **Phase 2 – Pilot Testing**
- **Phase 3 – Permanent Project Implementation**

Estimated time to complete all 3 phases is 6 – 12 years

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ASR Implementation Plan
Phase 1 - Technical Feasibility Analysis

Primary Purposes

1. **Validate / Refine WSAC Recon-Study Findings**
   a. **Per Well Injection Capacities**
   b. **Geochemical Interaction Potentials**
   c. **Aquifer Storage and Losses**
2. **Develop Information Needed to Scope and Budget Phase 2 Pilot Testing**

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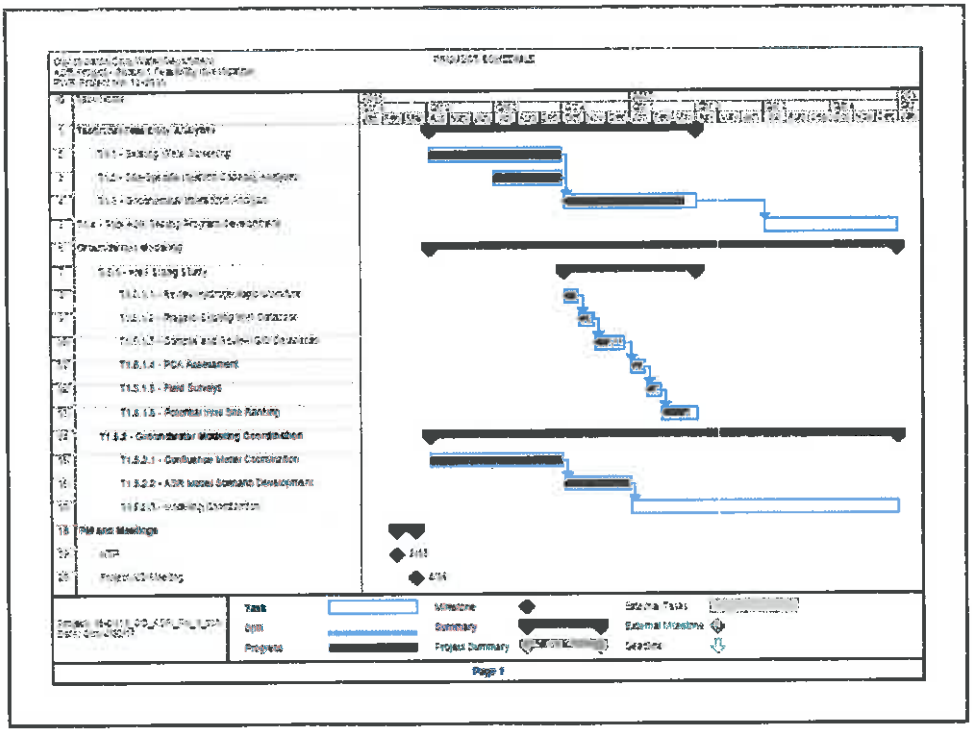
ASR Implementation Plan

Phase 1 – Technical Feasibility Analysis

1. **ID Existing Wells for ASR Pilot Testing**
2. **Site-Specific Injection Capacity Analyses**
3. **Geochemical Interaction Modeling**
4. **New ASR Well Siting Studies**
5. **Preliminary Groundwater Modeling**
6. **Develop Phase 2 Pilot Testing Program**

7



Geochemical Interaction Analysis
Purpose

Evaluate potential for adverse geochemical interactions during ASR operations:

- Precipitation Reactions (well plugging)
- Dissolution Reactions (undesirable water-quality)

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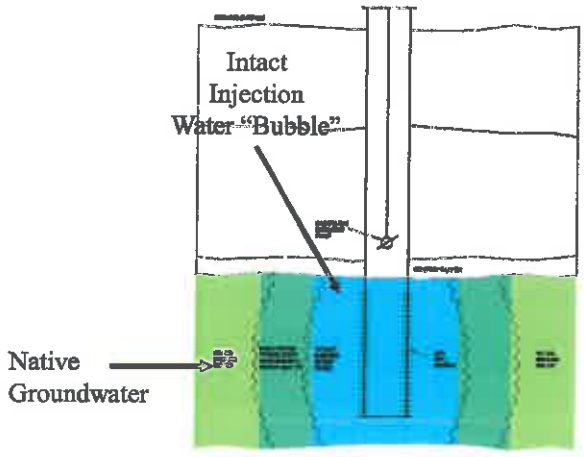
Geochemical Interaction Analysis
Typical ASR Well Cross-Section



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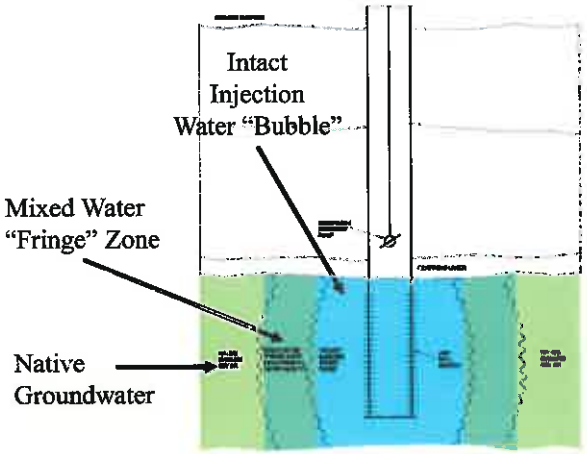
Geochemical Interaction Analysis
Typical ASR Well Cross-Section



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Geochemical Interaction Analysis
Methods

3-Component Geochemical Simulation Modeling:

1. Injection Source Water
2. Native Groundwater
3. Aquifer Mineralogic Matrix

Geochemist's Workbench Software (Rockware) used:

- Calculates Thermodynamic Equilibrium of Waters with as many as 650 minerals
- Analysis performed by Dr. Richard Glanzman (subconsultant to PWR)

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Geochemical Interaction Analysis
Groundwater Data Sources

Potential Pilot ASR Well	Groundwater Basin	Target Aquifer	Representative Mineralogy	Native Groundwater
SCWD Beltz 9	SC Mid-County	Tp (Aquifer A)	SC-22	12/14/16 sample
SCWD Beltz 12		Tp (Aquifers AA-Tu)	Cory St.	1/17/17 sample
SqCWD Tannery II		Tp (Aquifer A)	SC-22	12/14/16 sample
SVWD Well 10A	Santa Margarita	Tlo	Well 10A	12/15/16 sample

Notes:

Tp - Puriima Fm

Tlo - Lompico Sandstone

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Geochemical Interaction Analysis
Data Sources (con't)

- Water samples analyzed for over 60 specialized water chemistry parameters at State Certified Laboratory (Eurofins in Monrovia, CA)
- Aquifer mineralogy characterized using various methods (Mineralogy Inc in Tulsa, OK):
  - XRD
  - XRF
  - CEC
  - Acid Insoluble Residue Analysis
  - SEM
  - Thin Section Petrography

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Geochemical Interaction Analysis
Key Findings

GHWTP Equilibrium Modeling:

- Overall considered an excellent source water for ASR
- Will have diluting effect on groundwater
- Dominance of Calcium to Sodium by 2:1 Ratio will promote clay stability
- Depending on pH, the water has potential to be oversaturated with respect to Calcite (more on this later)

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Geochemical Interaction Analysis
Key Findings

Lompico Sandstone (Well 10A):

- Native groundwater is most similar to GHWTP of the 4 wells
- No mineral precipitation
- No dissolution reactions
- Beneficial reduction in Mn concentrations are likely

➢ **NO FATAL FLAWS IDENTIFIED**

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Geochemical Interaction Analysis

Key Findings (con't)

Purisima A Aquifer (Beltz 9 & Tannery II):

- Native groundwater is somewhat different from GHWTP
  - Supersaturated with respect to Calcite, Dolomite, and Iron Oxyhydroxide
- Moderate Potential for Calcite precipitation (pH dependent)
- No dissolution reactions
- Beneficial reduction in Mn concentrations are likely

➢ **NO FATAL FLAWS IDENTIFIED; however, pH adjustment of injection water MAY be needed**

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Geochemical Interaction Analysis

Key Findings (con't)

Purisima Tu / AA Aquifers (Beltz 12):

- Native groundwater is most significantly difference from GHWTP of all 4 wells
- Discrepancies between equilibrium modeling results and mineralogy data
- Highest Potential for Calcite precipitation (again, pH dependent)
- No dissolution reactions
- Evaluation of Mn in recovered water needs better mineralogy data

➢ **NO FATAL FLAWS IDENTIFIED; however, pH adjustment of injection water MAY be needed**

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Geochemical Interaction Analysis
Findings Summary

- **No Fatal Flaws** identified at any of the wells
- No dissolution reactions predicted
- Potential for Calcite precipitation at all Purisima wells
  - Calcite precipitation potential is pH dependent, and can be managed via pH adjustment of injected water

➢ Some discrepancies between field and lab pH for GHWTP sample (8.1 vs 7.4, respectively)

➢ Some discrepancies between equilibrium modeling of native groundwater and mineralogy data for Beltz 12

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Geochemical Interaction Analysis
Recommendations

- **Proceed with Phase 2 ASR pilot testing**
- Prior to pilot testing:
  1. Collect additional pH data from distribution system at Beltz well sites
  2. Update geochemical interaction analysis
  3. Collect cores of target aquifers at Beltz 12
  4. Update geochemical interaction model
- Include pilot testing protocol to validate model results. Specifically investigate:
  A. Calcite precipitation and associated plugging potential
  B. Mn concentrations in stored and recovered waters

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T1.5 – Groundwater Modeling
Current Status

- Initial "base-case" Confluence Model scenario runs have been completed:
  1. In-Lieu Only
  2. In-Lieu plus ASR
  3. ASR Only
  - Both historical (1985 – 2015) and future climate (2020 – 2070) scenarios
- Scope for GW Modeling has been developed and Contract Amendment approved by City Council on 4/25/17

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Groundwater Modeling
Planned Simulations

Climate	Project Scenario	Infrastructure Capacity (mgd) Injection	Extraction	Worst Yr. Shortfall (mg)	Scoped Iterations
Historical	No Project	0	0	1380	1
	In-Lieu Only	0	4	400	3
	ASR Only	5.5	4	0	3
	In-Lieu plus ASR	1.5	4	0	3
Future Climate Change	No Project	0	0	1230	1
	In-Lieu Only	0	4	470	3
	ASR Only	6	6	0	3
	In-Lieu plus ASR	2	6.5	0	3
				Scenarios Per Basin	20
				Total Scenarios	40

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ASR Performance Measures

Phase 1

Task	Potential Performance Measures	Findings To Date
1.1 - Existing Wells Screening	Suitable Existing Wells for Pilot Testing in Target Aquifers do not exist	**Satisfied**
1.2 - Site-Specific Injection Capacity Analysis	Results show that avg. Injection Capacity of 250 gpm (+/- 10%) is unrealistic	**Satisfied**
1.3 - Geochemical Interaction Modeling	Results show that undesirable geochemical interactions are likely	**Satisfied**
1.5 - Groundwater Modeling	Results show that target aquifers cannot sustain needed injection or recovery rates or unacceptable hydraulic losses occur	**Pending**

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Summary and Next Steps

- Phase 1 Investigation essentially on schedule and budget to date
- The following tasks have been substantially completed:
  - T1.1 – Existing Well Screening
  - T1.2 – Site Specific Injection Capacity Analysis
  - T1.3 – Geochemical Interaction Analysis
- **No Fatal Flaws** have emerged thus far
- Geochemical Interaction Analysis did show potential for Calcite precipitation at Purisima Aquifer wells
  - Potential depends on actual pH at well heads
  - pH adjustment can mitigate the potential
- **NEXT STEPS** - Pending Phase 1 tasks include:
  - T1.4 – Phase 2 ASR Pilot Test Work Plans
  - T1.5 – Groundwater Modeling

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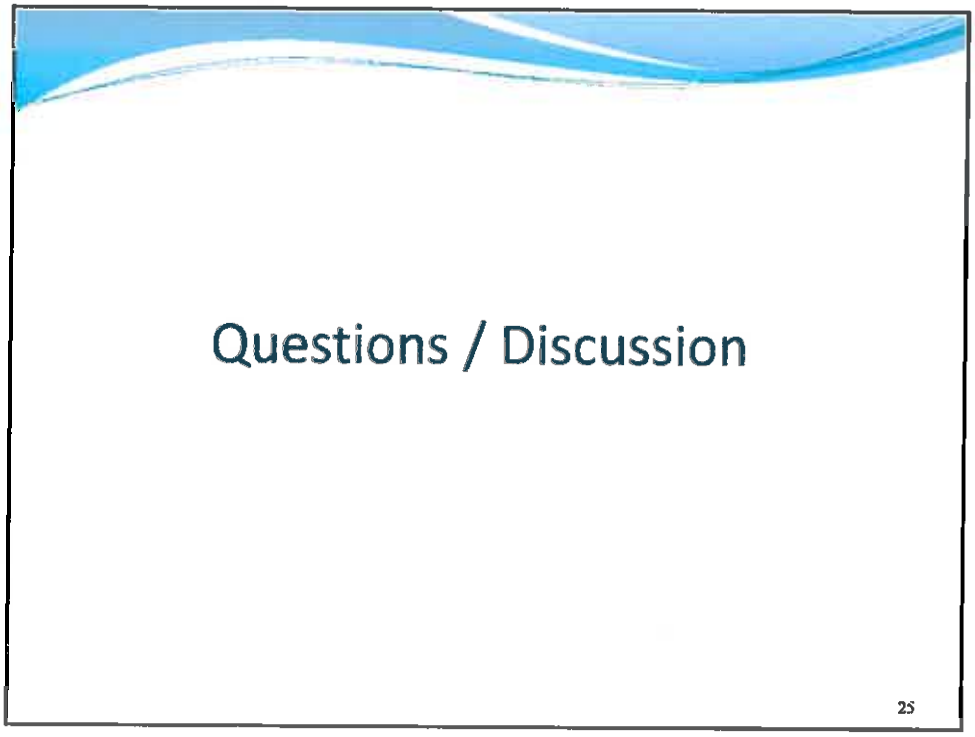
Questions / Discussion
25