Water Commission Agenda
Regular Meeting
7:00 p.m. – Monday, February 3, 2014
Council Chambers
809 Center Street, Santa Cruz

Agenda

Call to Order

Roll Call

Presentation *Organized groups may make presentations to the Water Commission. Presentations that require more than three minutes should be scheduled in advance with Water Department staff.*

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.

Approval of Minutes ☆ (Pages 4-8)

Recommendation: Motion to approve the January 6, 2013 Water Commission Minutes.

Consent Agenda (Pages 9-66)

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.

1. Three-month Calendar ☆ (accept info) (Page 9)
2. City Council Items Affecting Water ☆ (accept info) (Page 10)
3. Loch Lomond West Side Feasibility Analysis - Feasibility Criteria ☆ (accept info) (Pages 11 -15)
4. Correspondence from R. Longinotti dated 1/7/2014☆ (accept info) (Pages 16-18)
5. Correspondence from P. Gratz dated 1/27/2014 ☆ (accept info) (Pages 19-66)

Items Removed from the Consent Agenda

General Business (Pages 67-114)

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.

1. Initial Water Supply Outlook ☆ (Pages 67-77)

   Recommendation: For information and deliberation by the Water Commission.

2. Water Supply Community Engagement Update ☆ (Oral Report)

   Recommendation: That the Water Commission receive an update on Water Supply Community Engagement process.

3. Habitat Conservation Plan Negotiations Update ☆ (Pages 78-93)

   Recommendation: That the Commission receive information and provide comments regarding the HCP.

4. Water Conservation Master Plan - Evaluation of Measures ☆ (Pages 94-111)

   Recommendation: That the Water Commission: 1) receive an update on the Water Conservation Master Plan, 2) provide input on additional information needed to help select a preferred water conservation program at a future meeting, and 3) provide input on the process for completing the plan.

5. Election of Officers ☆ (Pages 112-113)

   Recommendation: That the Water Commission elect a Chair and Vice-chair for 2014.

Subcommittee/Advisory Body Oral Reports No items.

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

1. Oral report on the status of existing contracts related to the Commission's work program.

Information Item (Pages 114-135) No action shall be taken on this item.

1. Water Resources Report ☆ (Pages 114-134)

2. Water Shortage Contingency Plan ☆ (Pages 135 -See Attached Report: Water Shortage Contingency Plan)

Media Articles (Pages 136-162) No action shall be taken on this item.

1. News Article – Santa Cruz Sentinel 12-29-13 ☆ (Pages 136-138)
2. News Article – Santa Cruz Sentinel 1-03-14 ☆ (Page 139-141)
3. News Article – Santa Cruz Sentinel 1-06-14 ☆ (Pages 142-143)
4. News Article – Santa Cruz Sentinel 1-10-14 ☆ (Pages 144-146)
5. News Article – Santa Cruz.com 1-14-14 ☆ (Pages 147-148)
6. News Article – Santa Cruz Sentinel 1-14-14 ☆ (Pages 149-150)
7. News Article – Good Times 1-15-14 ☆ (Pages 151-153)
8. News Article – Santa Cruz Sentinel 1-16-14 ☆ (Pages 154-155)
9. News Article – Santa Cruz Sentinel 1-17-14 ☆ (Pages 156-157)
10. News Article – Santa Cruz Sentinel 1-26-14 ☆ (Pages 158-160)
11. News Article – Santa Cruz Sentinel 1-28-14 ☆ (Pages 161-162)

Documents for Future Meetings No action shall be taken on this item.

The following document is being included in this agenda packet in order to provide ample review time. It will be an item of business and will include a staff report at a future meeting.

Items Initiated by Members for Future Agendas

Adjournment The next meeting of the Water Commission is scheduled for March 3, 2014 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 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 arrangement can be made. The Cal-Relay system number: 1-800-735-2922.

Water Commission
7:00 p.m. – Monday, January 6 , 2014
Council Chambers
809 Center Street, Santa Cruz

Water Department

Draft Minutes of a Water Commission Meeting

Call to Order –Chair A. Schiffrin called the meeting to order at 7:05 p.m. in the City Council Chambers.

Roll Call

Present: D. Baskin, G. Mead, D. Meyers, A. Schiffrin, W. Wadlow, and L. Wilshusen.

Absent: D. Stearns (with notification)

Staff Present: L. Almond, Interim Water Director; T. Goddard, Administrative Services Manager; H. Luckenbach, Deputy Director/Engineering Manager; N. Dennis, Principal Management Analyst; L. Rossiter, Management Analyst; G. Rudometkin, Administrative Assistant III; D. Valby, Associate Civil Engineer; K. Dodd, Associate Civil Engineer; K. Crossley, Associate Civil Engineer; M. Zeman, Assistant Engineer.

Others: Approximately 16 members of the public.

Presentation There were no presentations.

Statements of Disqualification There were no statements of disqualification.

Oral Communications

Oral and written communications were made by S. McGilvray. All written materials will be included in the official file.

Announcements There were no announcements.

Approval of Minutes

Commissioner D. Baskin moved approval of December 2, 2013 Water Commission minutes.
Commissioner D. Meyers seconded.
VOICE VOTE: MOTION CARRIED
AYES: D. Baskin, G. Mead, D. Meyers, W. Wadlow, and L. Wilshusen.
NOES: None.
ABSENT: D. Stearns
ABSTAINED: A. Schiffrin due to absence from the December 2nd meeting.

Consent Agenda

Item 1 - Three-month Calendar was pulled for discussion.
Commissioner D. Baskin moved the Consent Agenda. Commissioner Wilshusen seconded.
VOICE VOTE: MOTION CARRIED
AYES: D. Baskin, G. Mead, D. Meyers, A. Schiffrin, W. Wadlow, and L. Wilshusen.
NOES: None.
ABSENT: D. Stearns

Items Removed from the Consent Agenda

1. Three-month Calendar

Interim Water Director L. Almond and N. Dennis, Principal Management Analyst responded to Commission questions.

Commission Discussion/Comments:

- Requested a declaration of water shortage in light of the current water supply.
- Requested Rate Study and HCP negotiations update at a future meeting.

Commissioner G. Mead moved approval of item #1 of the Consent Agenda. Commissioner D. Baskin seconded.
VOICE VOTE: MOTION CARRIED
AYES: D. Baskin, G. Mead, D. Meyers, A. Schiffrin, W. Wadlow, and L. Wilshusen.
NOES: None.
ABSENT: D. Stearns

General Business

1. Water Supply Community Engagement

Tina Shull, Assistant City Manager provided information on the Community Engagement Process and responded to Commission comments and questions.

Commission Discussion/Comments:

- Concern expressed regarding the roles of Water Commission and the Water Supply Advisory Committee (WSAC).
- Concern expressed due to the very technical issues involved with water supply.
- Concern expressed regarding current water supply will not be addressed with the lengthy process of forming this new committee.
- Concern expressed on the hold put on the Environmental Impact Report.
- Would like to request Council to allocate the funds to complete the EIR.
- Concern expressed over the competency level of the new WSAC members and staff.

- Concerned expressed that there is no mention in the WSAC policy framework regarding documents such as the Urban Water Management Plan and Integrated Water Management Plan as these documents are foundational policy.
- Comment was made that in the Integrated Water Management Plan contained a curtailment goal (of 15%) that we felt the community could sustain. It is important that conservation, curtailment, and the alternative water supply component are recognized.
- Suggested that a request should be made to City Council and the City Manager's office to hold some money in order to convene a technical panel that could include statewide or national expertise.
- Concern expressed over the committee's duplicative aspect, having the charge of WSAC and the Commission do similar work.
- Concern expressed whether current staff will have the time to staff WSAC along with all of their workload.
- Concern that we have a Water Department that has been working on this problem steadily for the last 20+ years and we have a Commission that is the current repository of that knowledge for purposes of advising the council for the last 20 + years.
- Concern expressed that the WSAC's one year timeframe for this project may be too short.
- Regional collaboration with Soquel Creek, San Lorenzo Valley, and Scotts Valley is something not addressed in the WSAC Framework. Afraid regional cooperation will be lost.
- Concern over whether the Commissioners can serve on the Committee due to the Water Commission by-laws, under the Term of Office, Section 4: Dual Service says no member shall be eligible to serve on two advisory bodies unless one is established for less than 13 months. The 12 month timeframe of this Committee is right on the precipice of the 13 months and the innuendo that the timeframe can extend beyond a year would then eliminate anyone form the Water Commission from serving
- Suggestion was made that it might be good tact for WASC to conduct Town Hall or Q & A meetings rather than give technical recommendations to City Council, the attempt or the goal is to engage the community, the Committee can be a conduit for how the community is thinking or wants.
- Concern expressed about the appropriateness for WASC for them to be redoing everything the Commission has done the last 20 years and trying to come up with a different solution for something that has already been studied.
- Requested that the Committee facilitator visit the Commission for a collaborative effort.

2. Major Projects Update and Basis of Cost Estimates

Deputy Water Director/Engineering Manager H. Luckenbach provided the staff report on this item and staff responded to Commission questions.

Presentations were made on the following projects:

- Bay Street Reservoir Replacement – D. Valby, Associate Civil Engineer
- North Coast System Rehabilitation Program – K. Crossley, Associate Civil Engineer Beltz Well #12 - K. Crossley, Associate Civil Engineer
- Water Treatment Plant Upgrades – H. Luckenbach, Deputy Water Director/Engineering Manager
- Water Main Replacement Program – K. Dodd, Associate Civil Engineer
- Loch Lomond Recreation Area Facilities Improvements - L. Rossiter, Management Analyst
- Tank Recoating Projects – M. Zeman, Assistant Engineer

Subcommittee/Advisory Body Oral Reports No items.

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

1. Monthly Status of Water Supply
   Oral and written communications were made by T. Goddard, Administrative Services Manager.

2. Water Supply Project Update
   Oral communications were made by T. Goddard, Administrative Services Manager and L. Almond, Interim Water Director and responded to Commission questions.

Information Items No action shall be taken on this item.

1. Training Opportunities for Commissioners

2. Changes to Brown Act - Effective January 1, 2014

3. Written Materials Provided by Members of the Public

Media Articles (Pages155-169) No action shall be taken on this item.

1. News Article – Santa Cruz Sentinel 11-26-13 ☆ (Page 155-157)
2. News Article – SantaCruz.com 11-27-13 ☆ (Page 158)
3. News Article – Santa Cruz Sentinel 11-27-13☆ (Pages 159-160)
4. News Article – Good Times 12-04-13☆ (Pages 161-162)
5. News Article – Santa Cruz Sentinel 12-7-13☆ (Pages 163-164)
6. News Article – Santa Cruz Sentinel 11-13-13☆ (Pages 165-167)
7. News Article – SantaCruz.com 12-17-13☆ (Pages 168-169)

Documents for Future Meetings No action shall be taken on this item.

1. New City Council Procedural Rules for Motions and Debate Pages

Items Initiated by Members for Future Agendas

Adjournment Meeting adjourned at 9:35pm until the next meeting of the Water Commission is scheduled for February 3, 2014 at 7:00 p.m. in Council Chambers.

Respectfully submitted,

Gloria Rudometkin

Digitally signed by Gloria Rudometkin
DN: cn=Gloria Rudometkin, o=City of Santa Cruz, ou=Water - Administration, email=grudometkin@cityofsantacruz.com, c=US
Date: 2014.01.29 15:06:37 -08'00'

Staff

WATER COMMISSION REPORT

DATE: February 3, 2014

TO: Water Commission

FROM: Interim Water Director

SUBJECT: Water Commission Meeting Schedule and Upcoming Agenda Items (Subject to Change)

March 3, 2014
- Revised Water Supply Outlook
- Communications Plan Update
- Water Rate Study Update
- Long-Term Financial Impact of Capital Improvement Program

April 7, 2014
- Final Water Supply Outlook
- Training Opportunities for Water Commissioners
- Water Commission Work Plan Update
- Draft Capital Improvement Program Budget

May 5, 2014
- Operating Budget Overview

Unscheduled Items
- Municipal Code Revisions
- Desalination Project Financial Analysis (tentative)
- Water Supply Reliability Public Awareness and Participation Plan - Scope of Work
- Economic Analysis of No Project - Scope of Work (tentative)
- Water Commission Work Plan Update (quarterly item)
- Water Rate Study
- Next Year's Water Commission Calendar
- HCP Negotiations Update
- Consumer Confidence Report
- Training Opportunities for Water Commissioners (quarterly item)

WATER COMMISSION
REPORT

DATE: February 28, 2014

TO: Water Commission

FROM: Interim Water Director

SUBJECT: City Council Items Affecting Water

City Council Meeting of January 28, 2014:

Inspection, Testing, and Construction Management Consulting Services for the Bay Street Reservoir Replacement Project - Phase 2 – Contract Amendment No. 2 (WT)

Motion to ratify Contract Amendment No. 2 with Consolidated CM, Inc. (Oakland, CA) for Inspection, Testing, and Construction Management Consulting Services for the Bay Street Reservoir Replacement Project - Phase 2 in the amount of $119,130.

Declaration of Drought and Call for Voluntary 20 Percent Water Use Reduction (WT)

Resolution declaring a State of Drought in the City of Santa Cruz and calling for a voluntary 20 percent water use reduction by all City water customers.

W A T E R D E P A R T M E N T
M E M O R A N D U M

DATE: February 3, 2014

TO: Water Commission

FROM: Lydia Rossiter, Management Analyst

SUBJECT: West Side Recreation Feasibility Analysis for Loch Lomond Recreation Area – Feasibility Criteria

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RECOMMENDATION: Receive information.

As requested by the Water Commission, attached is a description of the proposed feasibility criteria for the West Side Recreation Feasibility Analysis.

Loch Lomond West Side Feasibility Study

Proposed Feasibility Criteria

The following reflects proposed criteria for evaluating the feasibility of opening the west side of the Loch Lomond Reservoir for public recreation, specifically oriented to hiking and biking activities. Due to the unique issues related to opening the west side, two levels of criteria have been developed to assist in the evaluation. Level 1 is specifically oriented to how the west side can be accessed and how to evaluate each access point. Level 2 feasibility is specific to the evaluation of use and management of the west side for public recreation activities.

The criteria will be assessed on a 1 to 5 scale with 1 being the lowest or "inadequate" and 5 the highest or "excellent". In addition, each criteria point will be weighted based on its relative importance to the Department and its overall goals and mission. There are 6 identified access points (see the Map on page 4) that will be evaluated. These access points will first be evaluated on Level 1 criteria and those that score 3 or better (neutral or better) will then be evaluated on Level 2 criteria. If no access points have a score of 3 or better, the consultant will return to the Water Commission to make a determination about moving forward with the analysis. While many of the items in Level 2 will be similar, there are particular elements related to management that depend on the access point.

Level I Criteria

1. **Reasonable Infrastructure Cost:** The capital costs for developing the access point is reasonable and within the Department's Capital Budget without need to borrow or leverage other funds, donations or resources.

2. **Impact to Supply or Delivery of Water:** Access point does not interfere or negatively impact water supply or delivery due to conflicts in use, degradation of shoreline or water delivery infrastructure.

3. **Available Public Right of Way:** Access point is located on public land or is able to be acquired for public use without purchase of additional land or easements.

4. **Adequate Space for Parking and Trail Head Facilities:** Space and proximity to access point provides for ranger's fee collection station, parking for a minimum of 7-10 cars, trash receptacles and restrooms.

5. **Equitable Access:** Access point provides for access for all level of users from expert bikers to families and can be in compliance with ADA requirements.

6. **Ability to Collect Fees:** Access point allows Department to control and require fees at access point.

7. **Recreation Operations Impact:** Location allows for effective management, ranger access and public safety considerations.

8. **Additional Benefits for other Operations:** Access point improvements could contribute to other Department mission or goals such as improved access for fire safety or education.

9. **Security for Dam Operations:** Access point does not negatively impact the security of the Dam.

10. **Neighborhood Impacts:** Level of impacts to surrounding neighbors particularly as it relates to traffic, parking and trespassing as well as noise or other potential disturbances.

Level 1 Criteria: Access Points

Criteria *1- inadequate* *2 - poor* *3 - neutral* *4 - good* *5 – excellent/not an issue*	Weight (Scale 1-10)	1 - Ferry	2 – Trail Extension	3- Eagle Tree Ln/ Upper Zayante	4- Bear Creek Road	5 –Dam/Newell Creek	6 - Upper Lompico
Reasonable Infrastructure Cost	10						
Impact to Supply or Delivery of Water	10						
Available Public Right Away	6						
Adequate Space for Parking and Trail Head Facilities	8						
Equitable Access (all abilities and ADA)	6						
Ability to Collect Fees	8						
Operations Impact	8						
Additional Benefits for other Operations	3						
Security for Dam Operations	10						
Neighborhood Impacts	5						
Weighted Score							
Final Score							

Level 2 Criteria

1. **Cost Recovery Potential:** The development and operation of the Westside area provides 100% cost recovery, on an annual basis. This includes the requirements for additional staffing, maintenance and operation.

2. **Trail and Facilities Improvement Costs:** The costs to prepare recreation level trails for mountain bikes and hikers is reasonable and can be covered within the Department's capital budget without leveraging or identifying additional funding sources.

3. **Trail and Facilities Maintenance Costs:** Trails and facilities maintenance costs can be incorporated into the Recreation Area's operations schedule and budget without excessive costs or impacts.

4. **Fire Risk:** Public use on the west side does not contribute to an increase in fire risk to the area that cannot be mitigated or managed within reasonable costs.

5. **Impact to Water Quality:** Recreational use of trails and facilities does not create impacts on water quality that cannot be mitigated or managed within reasonable costs.

6. **Recreational Experience:** The development of trails and facilities on the west side creates a recreational experience that is unique in the region, provides a regional draw and is competitive with other similar facilities in Santa Cruz Region.

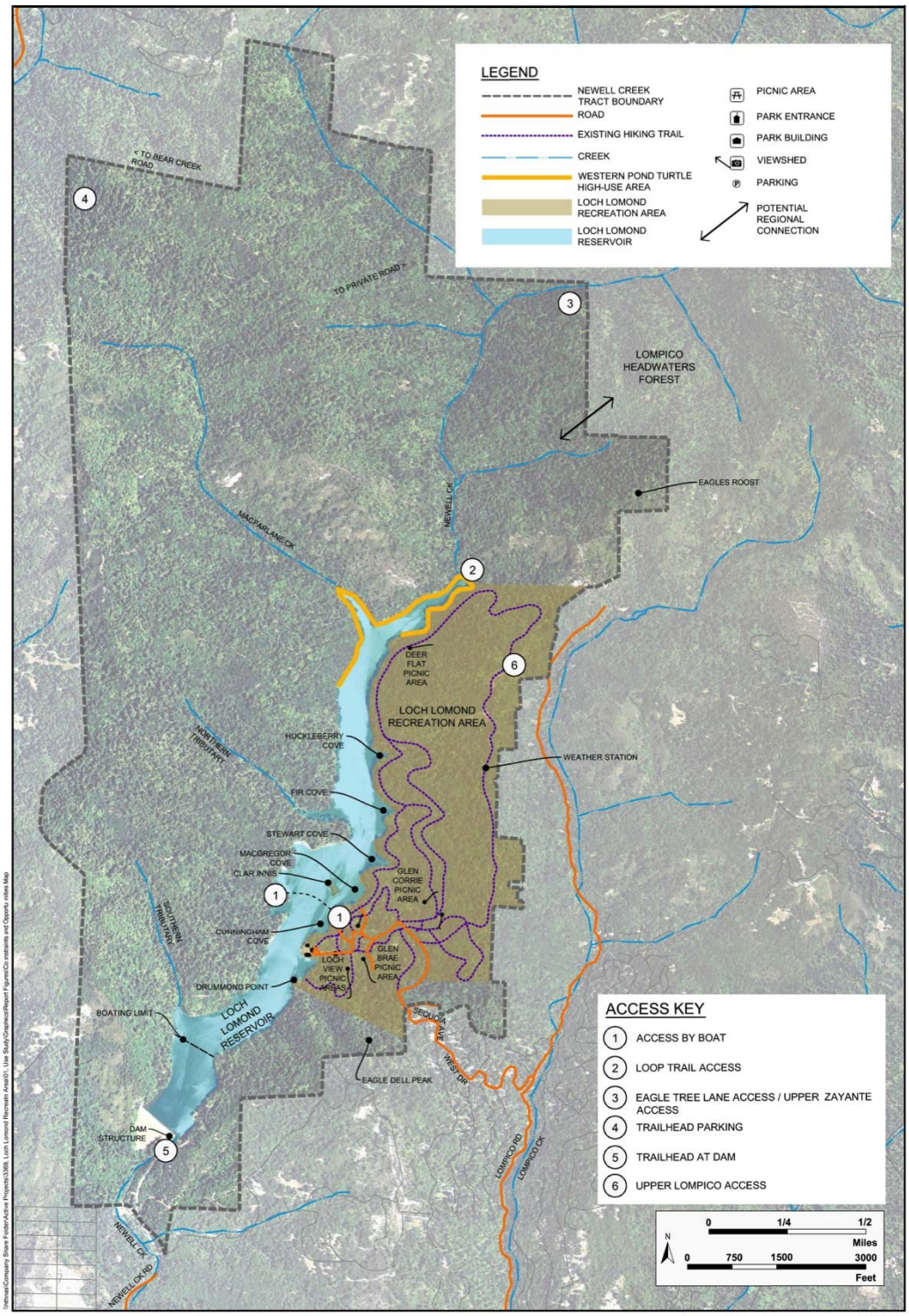
7. **Staffing Requirements:** The number of additional staff required to manage and monitor the west side including allowing for appropriate levels of emergency response is feasible within the Department's budget and allocation for the recreation area.

8. **Other Environmental Impacts:** Other environmental impacts related to biological resources and sensitive flora and fauna habitats to the west side from additional recreation use can be mitigated within reasonable costs.

Level 2 Criteria: Operation and Management of Westside

Criteria *1- inadequate* *2 - poor* *3 - neutral* *4 - good* *5 – excellent/not an issue*	Weight (Scale 1-10)	1 - Ferry	2 – Trail Extension	3- Eagle Tree Ln/ Upper Zayante	4- Bear Creek Road	5 –Dam/Newell Creek	6 - Upper Lompico
Cost Recovery Potential	10						
Trail and Facilities Improvement Costs	8						
Trail and Facilities Maintenance Costs	8						
Fire Risk	10						
Impact to Water Quality	10						
Recreational Experience	6						
Staffing Requirements	8						
Other Environmental Impacts	6						
SCORE							
Final Score							

Access Points for Evaluation



H. T. HARVEY & ASSOCIATES ECOLOGICAL CONSULTANTS

Potential Westside Access Points
Loch Lomond Recreation Area-Westside Recreation Feasibility Study
City of Santa Cruz Water Department
January 2014

Gloria Rudometkin

From: Linette A Almond
Sent: Tuesday, January 07, 2014 2:20 PM
To: Nicole B. Dennis; Gloria Rudometkin
Subject: FW: Water Commission re further EIR work

Expires: Saturday, March 08, 2014 12:00 AM

fyi

Linette Almond

From: Linette A Almond
Sent: Tuesday, January 07, 2014 2:19 PM
To: 'Rick Longinotti'
Subject: RE: Water Commission re further EIR work

yes, this will be included in the next agenda packet. Thanks

Linette Almond

From: Rick Longinotti [mailto:longinotti@baymoon.com]
Sent: Tuesday, January 07, 2014 2:11 PM
To: Linette A Almond
Cc: Martin Bernal; Tina Shull; Lynn Robinson; Don Lane; Micah Posner; dterrazzas@cityofsantacruz.com; Cynthia Mathews; Pamela Comstock; Hilary Bryant
Subject: Water Commission re further EIR work

Dear Ms. Almond,
Could you please forward this to members of the Water Commission?
Thanks,
Rick

Dear Members of the Water Commission,

I would like to offer some alternatives strategies that I think would accomplish the objectives mentioned by Commissioners as arguments for completing the EIR. Three arguments for completion of the EIR were stated in Any Schiffrin's guest editorial last September:

1. The final EIR will provide a wealth of technical and environmental information that will be useful whether the City ultimately proceeds with the project or not.

2. The final EIR will contain an analysis of all the alternatives possibly under consideration and the Council would have the basis to move forward with one or more of them should they choose.

3. The people who submitted over 400 comments deserve to receive responses to their comments and concerns, and their input respected.

In addition to these arguments, another argument was reported by the Sentinel article of 1/7/14: *Delaying work on the EIR would delay the desal project, if that is the direction the City eventually decides to approve.*

I believe it is possible for the City and Soquel Creek Water District to get answers to many of the questions raised by the comments on the draft EIR without having to pay the EIR consultant to do so. Much of the most critical information needs to be supplied by the City, not the EIR consultant. Consider, for example, the comments of the state and federal fisheries agencies.

> "Unfortunately the Alternatives Analysis does not appear to thoroughly evaluate alternatives recommended … in the development of a permitable HCP [Habitat Conservation Plan]." -National Marine Fisheries Service

> "Although the City has since updated the Tier 2/3 data set and modified rule curves for its discussion with the Agencies, it does not appear that the corrected data input files and Confluence™ model assumptions were used for the Appendix C Technical Memorandum analysis provided in the draft EIR. As such, it is unlikely that the information provided is accurate and CDFW recommends that the Technical Memorandum be revised to reflect the most recent flow proposals and modeling efforts. Without an accurate representation of the effects of the different flow proposals on the City's water supply, the analysis provided in the draft EIR may not be sufficient to support statements that the bypass flows in the HCP will have a significant impact on the City's water supply or that alternative infrastructure improvements are not sufficient to provide water reliability." -California Department of Fish & Wildlife

The EIR consultant would be powerless to respond to these comments without the City performing the modeling of the water operations recommended by the fisheries agencies.

Here are some other examples of information that can be provided without resort to spending more money on the EIR:

- yield of the water transfer program (report from John Ricker due soon)
- yield of conservation measures (Master Conservation Plan due soon)
- bypass flows for native fish (HCP negotiations are reportedly able to produce agreement in 2014)
- target for maximum tolerable curtailment in a worst-case drought (was 25% for development of the Integrated Water Plan; subsequently changed to 15% by the City Council)
- yield of the new deep well into Santa Margarita Aquifer in Live Oak (to come online in 2014)

Other alternatives recommended in comments on the dEIR by engineers, Dana Ripley, Fred Yukic, Peter Haase, and Wilson Fieberling, and geologist, Gerald Weber, would probably need engineering studies to determine their cost and feasibility. Such studies would be outside the scope of a consultant responding to comments on the dEIR.

Given that so much crucial information is available through other sources, or through engineering studies that have yet to be performed, I don't know what value an EIR consultant would offer in the way of answering comments on the draft.

The argument that delaying the completion of the EIR would delay the desal project appears to be based on a hope that an EIR could be completed expeditiously. I would rather wait to have the answers to the questions, rather than a final EIR that is not able to answer them adequately.

The whole point of the City's "reset" is to allow another look at alternatives to desalination. If we want to do justice to analyzing alternatives, we should invest our energy in the Citizens' Advisory Committee's process, which includes the option of recommending further engineering studies.

Please write back or contact me if you think that there is something that I'm missing.

Best,
Rick

From: paul gratz [mailto:pauljg45@pacbell.net]
Sent: Monday, January 27, 2014 11:50 AM
To: Donna Paul
Cc: david stearns; Don Lane; Hilary Bryant; Lynn Robinson; David Terrazas; Andy Schiffrin; Pamela Comstock; Martin Bernal; Cynthia Mathews; Micah Posner; George Mead; Donna Meyers; David Baskin; Walter Wadlow; Linette A Almond; grand jury
Subject: City Water Commission Mtg. 02.03.14: Master Water Conservation Plan & golf courses

January 27, 2014

Dear Water Commissioners,

I am writing with regard to your upcoming discussions concerning the City's Master Water Conservation Plan and proposed restrictions on the use of water for irrigation and landscaping. At this time, I urge the Water Commission to closely examine how, why, and where fresh potable water is consumed for irrigation and landscaping within the water district.

Moreover, consider helping to better inform residents, businesses, and public institutions about how many California communities already are effectively using affordable recycled water for golf courses and other public and commercial applications.

The City regularly identifies the two golf courses as their largest irrigation accounts and revenue sources. The other big users ranking far behind include UCSC, Dominican Hospital, Chaminade, the cemeteries, schools, and parks.

For your information in 1989 the City's Water Master Plan prepared by Leedshill-Herkenhoff, Inc. identified the reuse of treated waste water from Scotts Valley to be a viable and potentially cost-effective reclamation program available to the Santa Cruz Water Department. Yes, 1989 is not a typo -- and further more Bill Kocher was then the Water Department Director.

Also, the Santa Cruz Water Department's largest users of potable water for landscape irrigation are the Pasatiempo and DeLaveaga Park golf courses (dEIR 8.3-40). Together they use approximately 100 million gallons of potable water annually -- equivalent to the production of the proposed scwd2 seawater desalination plant operating at full capacity for 40 days. Pasatiempo's annual water demand is approximately 30-45M gallons and the DeLaveaga Golf Course along with the adjacent park use ranges from 40-55M gallons.

Section 4 of the City's Urban Water Plan I includes a chart of annual combined water consumption for the two golf courses expressed with for four sample periods: 2007-111M, 2008-120M, 2009-91M, and 2010

78M. Note that the City has refused to provide the public with use figures for the 2011 -2013 period.

Currently, the potable water used by the City's landscape accounts is sold exclusively by the Water Department. The two golf courses are the largest landscape accounts and constitute a major source of revenue for the Water Enterprise fund. City taxpayers, however, subsidize the entire cost of the water and associated energy used by the municipally-owned DeLaveage Park golf course and the adjacent lower park.

It should be noted that conspicuous "water feature" ponds exist at the DeLaveag golf course which are continually evaporating large quantities of potable water year round, especially during extended warm weather periods.

Finally, where is the Plan B alternative to the problem plagued and expensive desalination project now that we need it?

Thank you,

Paul Gratz

Related
http://www.santacruzsentinel.com/santacruz/ci_24997970/drought-underlines-need-recycled-water-at-santa-cruz
*See News Article 10 – Santa Cruz Sentinel 1-26-14 ✯ (Pages 159-161)

Attachments

cc: City Council
City Manager
Water Department Director
County Grand Jury
News Media Outlets

August 9, 2013

Heidi Luckenbach, Desalination Program Coordinator
City of Santa Cruz Water Dept.
hluckenbach@cityofsantacruz.com

SUBJ. Desalination Project Draft EIR Comment and Questions

Dear Ms. Luckenbach,

My name is Paul Gratz and I reside at 501 Prospect Hts., Santa Cruz. I am a retired public health planner, educator, policy analyst, and community organizer with 35 years of experience working in diverse public and private sector settings. My master's degree is from Cal State University LA.

The DEIR does not describe and evaluate the alternative of directly using recycled water supplied from the Scotts Valley tertiary wastewater treatment plant in order to provide for the year round irrigation needs of the two golf courses located within the City's water service area.

The DEIR describes, evaluates and eliminates the use of a recycled water and potable water exchange with the Scotts Valley Water District and the City involving the Pasatiempo Golf Course (DEIR 8.2-16-77).

However, the DEIR is deficient in not identifying and evaluating as a supply alternative the conveyance of recycled water from the Scotts Valley wastewater treatment plant to the City and Soquel Creek Water District.

Since 2001, to save costs and resources the City of Scotts Valley's wastewater tertiary treatment facility has produced high-quality competitively-priced water for unrestricted landscaping and irrigation uses -- mainly parks, schools, residences, medians, cemeteries, agriculture, and businesses.

At the facility, state-of-the-art ultraviolet disinfection kills pathogens without the use of chemicals such as chlorine. Following disinfection, the tertiary treated water meets State Title 22 standards for water reuse in California and is safe for all permitted uses, including replenishment of water supplies such as rivers, groundwater basins, aquifers, and reservoirs.

Scotts Valley's 1.5 mgd (expandable) tertiary treatment plant operates at about 20% capacity. Currently, the surplus water is discharged through the ocean outfall at the City's Regional Wastewater Treatment Facility. The Scotts Valley plant management is actively seeking potential regional customers for its affordably priced recycled water.

In 1989, the City's Water Master Plan prepared by Leedshill-Herkenhoff, Inc. identified as an alternative the reuse of treated wastewater from Scotts Valley "to be a viable and

potentially cost-effective reclamation program available to the Santa Cruz Water Department."

In October 2007, Water Department Director Bill Kocher informed the Water Commission that "recycled water for irrigation purposes is recognized as a viable means of conserving water resources" and the "use of reclaim is a notable void in the City's Integrated Water Plan." With regard to the Scotts Valley tertiary treatment plant, he added "the unused portion of this valuable resource is currently being wasted to ocean disposal."

On October 1, 2007, Deputy Director Almond reported at the Water Commission meeting that "recycled water is a missing element in the IWP. It would shift the delivery of water from the summer months to the golf courses to the winter (rainy) months when the City has abundant supplies. The state is promoting regional interagency projects by providing grant funding." The Water Commissioner's comments included the following recommendations (edited):

- The City should consider providing reclaimed water to additional City facilities such as DeLaveaga Golf Course and Harvey West Park.
- It is important that this project be able to demonstrate an advantage to, or improve our system in the next five to ten years, not just trading water. It should be equal to, or exceed the Water Conservation efforts described in the IWP.
- It would be helpful to be able to make a case that our need for future increments of desalinated water may be delayed or reduced in the future.

Santa Cruz Water Department's largest users of potable water for landscape irrigation are the Pasatiempo and DeLaveaga Park golf courses (DEIR 8.3-40). Together they use approximately 100 million gallons of potable water annually -- equivalent to the production of the proposed scwd2 seawater desalination plant operating at full capacity for 40 days. Pasatiempo's annual water demand is approximately 30-45M gallons and the DeLaveaga Golf Course along with the adjacent park use ranges from 40-55M gallons.

Section 4 of the City's Urban Water Plan I includes a chart of annual combined water consumption for the two golf courses expressed with for four sample periods: 2007-111M, 2008-120M, 2009-91M, and 2010 78M.

Currently, the potable water used by the City's landscape accounts is sold exclusively by the Water Department. The two golf courses are the largest landscape accounts and constitute a major source of revenue for the Water Enterprise fund. City taxpayers, however, subsidize the entire cost of the water and associated energy used by the municipally-owned DeLaveage Park golf course and the adjacent lower park.

In 2010, the California Department of Water Resources identified and ranked eight best practices planning strategies for creating potential sources of new water supplies in diverse regions. Urban efficiency ranked first and was followed closely by recycled

water. However, desalination and cloud seeding were tied in the ranking at last place (2010 Bulletin 160-09).

Santa Cruz City landscape accounts are obvious potential customers for this highly affordable and available recycled water supply option and must be robustly and impartially evaluated.

QUESTIONS

1. Why does Bill Kocher regularly identify "recycled water for the district's two golf courses as a low priority?"
2. What would it take to achieve the conveyance of Scotts Valley recycled water to supply both golf courses?
3. What is the irrigation market demand potential for recycled water in the proximity of the City and Soquel Creek Water District's service areas?
4. How much increase in system yield and demand offset or reduction would result from both golf courses using water from the Scotts Valley tertiary treatment plant to meet their landscape irrigation needs?
5. With the Scotts Valley recycled wastewater system in place for non-potable applications, what would be the environmental, economic, social, and political impacts for the City and Soquel Creek Water District to use this alternative supply source?
6. If this recycled water supply alternative strategy was implemented, what sales pricing and revenue impacts would the Water Enterprise fund experience?

August 16, 2013

Dear Mr. Bernal,

Please review the response of August 14, 2013 provided to me by Ms. Patino along with attached August 13, 2013 memo from Linette Almond.

I am trying to understand why after over a decade of discussions concerning transferring recycled water from the Scotts Valley Wastewater Treatment plant to the Pasatiempo Golf course, the City apparently did not conduct a financial impact study of the proposed project.

Given the significance of this alternative water supply source for the community, please provide me with a timely explanation as to why such an analysis apparently was not conducted.

Thank you,

Paul Gratz
501 Prospect Hts.
Santa Cruz, CA 95065

cc: City Council

From: Nydia Patino <npatino@cityofsantacruz.com>
To: "'pauljg45@pacbell.net' (pauljg45@pacbell.net)" <pauljg45@pacbell.net>
Cc: Bren Lehr <BLehr@cityofsantacruz.com>
Sent: Wednesday, August 14, 2013 10:38 AM
Subject: Public Records Request Response

August 14, 2013
pauljg45@pacbell.net
Mr. Gratz:

This email is in response to your public records request addressed to City Clerk Administrator, Bren Lehr, requesting information from the City of Santa Cruz as detailed below. Your request was received by the City via email on July 18, 2013.

Requested Records:

"Pursuant to the California Public Records Act (CPRA), please provide all records maintained by the City of Santa Cruz, including all electronic and non-electronic written communications with regard to feasibility and desirability determination studies conducted that analyze the financial impact of supplying recycled water from the Scotts Valley Wastewater Treatment Plant to the DaLaveaga Golf Course and describe possible

effects on Water Department revenues. Please provide the requested information prior the August 12, 2013 draft desal EIR review and comment submission deadline."

No records exist. We have no disclosable public records that are responsive to your request. Please see attached memo.

Under the California Public Records Act (CPRA) you are entitled to copies of identifiable, non-exempt public records (Govt. Code section 6253). Please note that the CPRA requires the City to provide access to, or copies of, records responsive to your request which are in its possession, subject to certain exceptions. The CPRA does not require the City to provide information, answer questions, or create records which do not exist.

To the extent that any of the records you seek are attorney-client communications under the attorney-client privilege or are otherwise attorney-client privileged records, such records are exempt from disclosure under the CPRA pursuant to Government Code section 6254(k).

In addition, to the extent that any of the records you seek are drafts and notes that are not kept in the ordinary course of business for the City and which the City has determined that the public interest in withholding the record clearly outweighs the public interest in disclosure due to the particular details and nature of the records, such records are exempt from disclosure under the CPRA pursuant to Government Code section 6254(a). Also given the particular details and nature of certain records that you seek, to the extent that such records involve communications to decision makers within the City for which final decisions have not yet been made and final actions have not yet been taken and/or the City has determined that the public interest in withholding the record clearly outweighs the public interest in disclosure, such records are exempt from disclosure under the CPRA pursuant to Government Code section 6255.

If you have any questions, please contact me.

Nydia Patiño
Records Coordinator
City of Santa Cruz

improve operational efficiency, no significant increase in system yield would be expected.

7.7 ALTERNATIVE 5 - ADDITIONAL GROUNDWATER WELLS

In the last ten years, the SCWD has conducted numerous groundwater investigations in the Santa Cruz area in an attempt to develop additional groundwater supplies. Several different groundwater aquifers in the region have been studied. These include the the Purisima formation on the eastern edge of the SCWD service area, the San Lorenzo River Alluvium, and various subbasins along the North Coast. Most recently, Luhdorff and Scalmanini Consulting Engineers (L&S) conducted a groundwater investigation and exploration in several areas. Based on the results of L&S's work, SCWD staff suggested that the following groundwater projects be evaluated in this Water Master Plan study:

(A) Two wells in the Purisima formation in the vicinity of the Thurber Lane Pump Station, each capable of producing at a sustained rate of 250 GPM; these wells would likely require construction of an iron and manganese removal plant such as that in Beltz system;

(B) One well in the San Lorenzo River Alluvium near Harvey West park, also capable of producing at a sustained rate of 250 GPM.

The Thurber Lane wells and treatment plant would connect into the main distribution system in the northern portion of the Live Oak area and should assist in meeting peak demands in that area. The Harvey West well would likely divert directly into the Coast Pipeline for delivery to GHWTP.

As for the Beltz well system, an allowance of 10 percent was used for assumed down time on these wells.

7.8 ALTERNATIVE 6 - WASTEWATER RECLAMATION

The potential applications for re-use of treated wastewater are usually quite limited due to health and economic reasons. Only certain types of re-use are allowed and the cost of constructing transmission facilities to convey the treated wastewater to the point of use are usually prohibitive. Wastewater reclamation activities are regulated by the Regional Water Quality Control Board. The three different types of applications commonly identified as potential uses for reclaimed wastewater include agricultural irrigation, landscape irrigation, and recreational impoundments. For the SCWD system, the most likely application is for landscape irrigation.

Due the unique set of circumstances outlined below, there appears to be a viable and potentially cost-effective wastewater reclamation program available to the SCWD:

(1) The City of Scotts Valley ("Scotts Valley") currently treats sewage at its wastewater treatment plant (WWTP) then pumps it through a 12-inch diameter pipeline through the City of Santa Cruz to an ocean outfall. From Scotts Valley, this pipeline runs along Graham Hill Road before reaching Highway 1. There are two potential users of reclaimed wastewater along the pipeline route which currently use large quantities of potable water from the SCWD system for irrigation -- the Pasatiempo Golf Course and the Oddfellow Cemetery. Each of these potential users has expressed an interest or willingness to use reclaimed wastewater and are immediately adjacent to the Scotts Valley pipeline. Furthermore, the pipeline was constructed with "turnouts" to these two irrigation users in anticipation of a wastewater reclamation program. The golf course is also listed on Scotts Valley's permit as a potential point of use for reclaimed wastewater.

Based on discussions with the operations manager of the Scotts Valley plant, the WWTP could produce water of an acceptable quality for irrigation use. Advanced tertiary treatment works would have to be installed at the Scotts Valley WWTP to provide acceptable water quality for irrigation use at the golf course and cemetery. This additional treatment would consist of sand filter units with appurtenant piping and pumps.

(2) Scotts Valley will need to install a second parallel pipeline to transport the expected increase in sewage flows from new development. This pipeline is also likely to have a 12-inch diameter. With the availability of two parallel pipelines, one pipeline could serve as a transmission line for the reclaimed wastewater while the other line conveyed the remaining wastewater to the outfall. Because the new pipeline would essentially serve the same purpose as without the reclamation program, no cost should be allocated to the reclaimed water users. Therefore, in effect, the required transmission pipeline for reclaimed water, usually the most costly element of a wastewater reclamation program, will already be installed by Scotts Valley.

(3) The Scotts Valley Water District (SVWD) is currently pursuing a similar wastewater reclamation program in Scotts Valley. A reclaimed wastewater transmission line is being installed as part of the Scotts Valley Drive Project in anticipation of using the water on a proposed golf course and park in the northern end of Scotts Valley. This program could help reduce the unit cost of a potential joint program with SCWD.

(4) The Scotts Valley WWTP currently treats about 20 MG per month, which would provide adequate quantities for irrigation at the proposed points of use. Based on compilation of recent meter

records, the peak combined use for Pasatiempo Golf Course and the Oddfellow Cemetery is about 12 MG per month in summer.

(5) Because most of the irrigation demand is at night and most wastewater production is in the day, a sufficient amount of storage must be available for the program to work. Although Scotts Valley has reserved a site along Graham Hill Road for such a storage reservoir, the use of one of the SCWD's existing Pasatiempo tanks would appear to present a more cost-effective plan. The smaller Pasatiempo tank (0.30 MG) appears to be a suitable size.

To implement the plan, the existing 0.30 MG tank would be physically disconnected from the SCWD distribution system and reconnected to the new reclaimed water pipeline as shown on Figure 7-2. However, a new, separate connection to the SCWD distribution system would also be installed to feed the tank "over the top" (i.e., with an air gap at the tank to prevent cross connection). In the winter, the minimal irrigation demands would be delivered to this tank through this connection to the SCWD distribution system since the irrigation demand would be insufficient to tie up use of the second wastewater pipeline. Because this tank would serve essentially the same purpose (i.e., providing regulation of local demands) as it currently does, the SCWD would not lose the use of this facility.

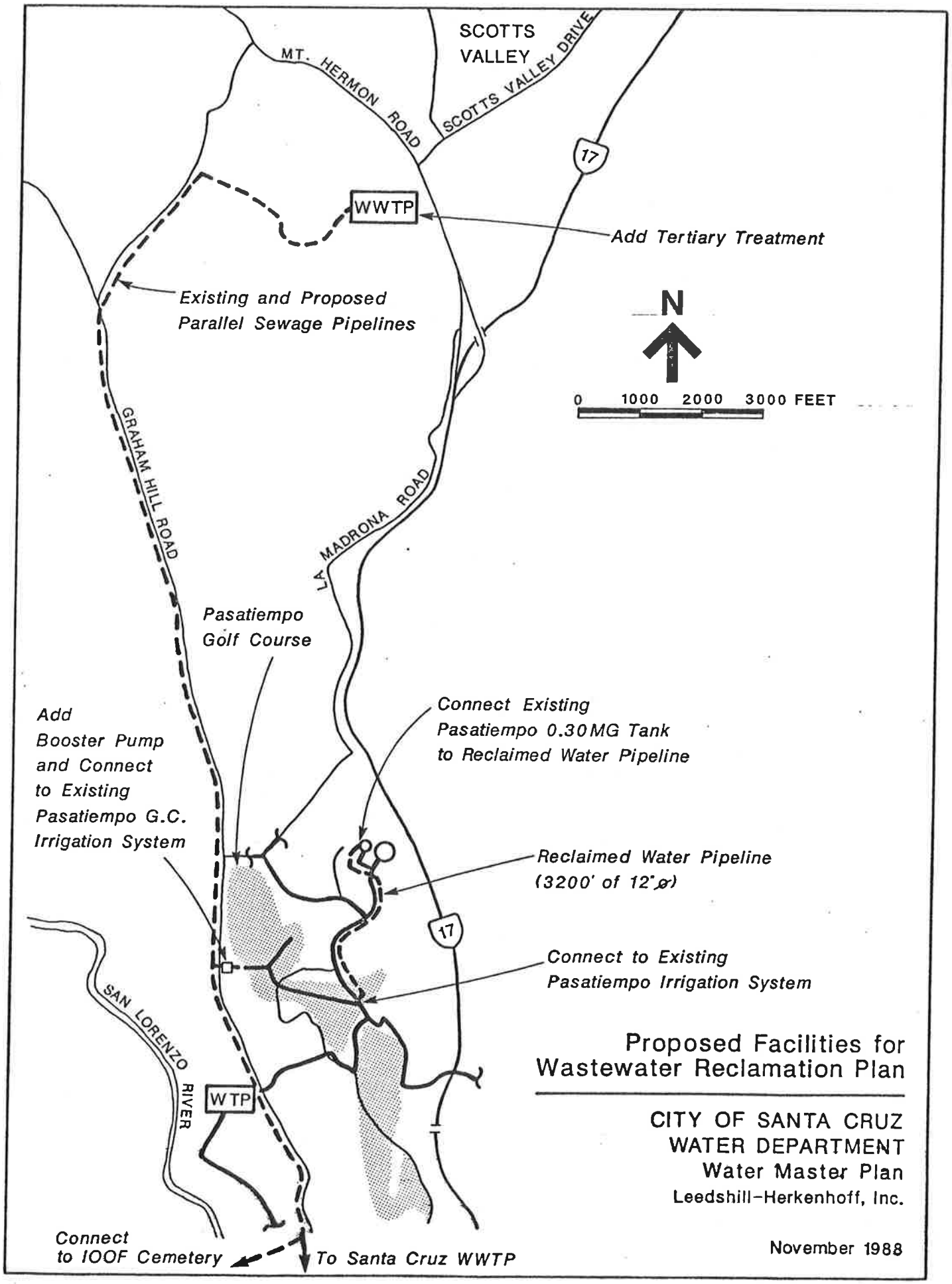
Although the above reasons appear to present a low-cost reclamation program, there is one potentially major drawback to this plan. Due to large potential cost savings, Scotts Valley is currently contemplating a plan whereby the existing WWTP would be shut down and only serve as a raw sewage pump station. All of Scotts Valley's raw sewage would be conveyed to the City of Santa Cruz's WWTP for treatment. Scotts Valley's share of the operation costs at the Santa Cruz WWTP may be significantly less than their current treatment cost due to economies of scale. If the Scotts Valley WWTP were to be shut down, the reclaimed wastewater users would have to pay the entire O&M cost of running the plant solely to produce reclaimed wastewater. This additional cost could render the wastewater reclamation program infeasible.

A schematic drawing of the proposed wastewater reclamation program is shown on Figure 7-2.

7.9 ALTERNATIVE 7A - ENLARGE LOCH LOMOND RESERVOIR BY 260 MG

The limited storage available in the SCWD system severely impacts the ability of the system to meet demands in critically dry years. Additional storage would be very effective in increasing the system's yield during drought periods. Rather than constructing new facilities, it is possible to expand the existing Loch Lomond Reservoir by raising the dam and spillway. Because of high natural runoff relative to the size of the reservoir (Loch Lomond spills frequently), the additional storage would be of value.

FIGURE 7-2



Proposed Facilities for Wastewater Reclamation Plan

CITY OF SANTA CRUZ
WATER DEPARTMENT
Water Master Plan
Leedshill-Herkenhoff, Inc.

November 1988

Water Commission Minutes
Monday, March 5, 2007
Council Chambers
809 Center Street Santa Cruz

Minutes of a Water Commission meeting.

Call to Order Chair A. Schiffrin called the meeting to order at 7:00 p.m. in Council Chambers.

Roll Call

Present: B. Fouse, C. Keutmann, B. Malone, M. McClellan, S. O'Hara and A. Schiffrin, Chair.
Absent: Bill Cox, absent without notice.
Staff: T. Goddard, Water Conservation Manager; B. Kocher, Water Director; and D. Paul, Administrative Assistant.

Presentation There were no presentations.

Statements of Disqualification There were no statements of disqualification.

Oral Communications There were no oral communications.

Announcements There were no announcements.

Approval of Minutes

Commissioner B. Fouse moved to approve the February 5, 2007 Water Commission minutes as submitted. Commissioner B. Malone seconded.
VOICE VOTE MOTION CARRIED
AYES: B. Fouse, B. Malone, M. McClellan, S. O'Hara and A. Schiffrin.
NOES: None.
ABSENT: B. Cox.
ABSTAIN: C. Keutmann.

Consent Agenda

Commission M. McClellan removed item #2 City Council Actions Affecting Water.

Commissioner C. Keutmann moved to approve the Consent Agenda as amended. Commissioner M. McClellan seconded.
VOICE VOTE MOTION CARRIED
AYES: B. Fouse, C. Keutmann, B. Malone, M. McClellan, S. O'Hara and A. Schiffrin.
NOES: None.
ABSENT: B. Cox.

Items Removed from the Consent Agenda

2. City Council Action Affecting Water

Commissioner M. McClellan requested information on the cost of Change Order #6 on the Bay Street Reservoir and System Transmission Main Project.

Commissioner M. McClellan moved to approve the Consent Agenda Item #2 City Council Action Affecting Water. Commissioner C. Keutmann seconded.
VOICE VOTE MOTION CARRIED
AYES: B. Fouse, C. Keutmann, B. Malone, M. McClellan, S. O'Hara and A. Schiffrin.
NOES: None.
ABSENT: B. Cox.

General Business

1. Water Shortage Contingency Plan: Continued Deliberation of Task 5, Allocation of Water

Water Conservation Manager Goddard introduced this item and provided background information.

Public Comments

Ed Newman, Chair of Pasatiempo Golf Club Board of Directors stated that he is disappointed with the staff recommendation and would like to provide further information. The Water Shortage Contingency Plan update has attempted to make a social judgment against golf courses, but not other recreational businesses such as bars, tattoo parlors or the Boardwalk. Pasatiempo is a business and should be treated as one.

John Zuderquist, Pasatiempo Golf Club Board of Directors stated that it is a misconception that club members are rich, most shareholders are average people.

Phil Howard, Pasatiempo Golf Club Board of Directors stated that the current issue is a consequence of growth in outlying areas. Old business such as Pasatiempo should be differentiated from new businesses and should be given incentives to lower water use by upgrading to new technology. It is important that the city develop a new water supply.

Miles Hicks, Delaveaga Golf Course Superintendent stated that the proposed plan would affect all areas of the golf course and would require substantial effort to recover.

Commission Comments/Questions

The Commission requested that staff research how golf courses were allocated water during the 1976/77 drought.

Water Commission Minutes
7:00 p.m. – Monday, April 9, 2007
Council Chambers
809 Center Street Santa Cruz

Minutes of a Water Commission meeting

Call to Order Chair C. Keutmann called the meeting to order at 7:00 p.m. in Council Chambers.

Roll Call

Present: B. Cox, B. Fouse, C. Keutmann (Chair), B. Malone, M. McClellan, S. O'Hara and A. Schiffrin.
Absent: None.
Staff: L. Almond, Deputy Director/Engineering Mgr; T. Goddard, Water Conservation Manager; B. Kocher, Water Director; H. Luckenbach, Associate Civil Engineer and D. Paul, Administrative Assistant.

Presentation There were no presentations.

Statements of Disqualification There were no statements of disqualification.

Oral Communications There were no oral communications.

Announcements There were no announcements.

Approval of Minutes

Commissioner B Malone moved to approve the March 5, 2007 Water Commission minutes as submitted. Commissioner B. Fouse seconded.
VOICE VOTE MOTION CARRIED
AYES: B. Fouse, C. Keutmann, B. Malone, M. McClellan and S. O'Hara.
NOES: None.
ABSENT: B. Cox and A. Schiffrin.

Consent Agenda

Commissioner M. McClellan pulled item 2. City Council Action Affecting Water; and 3. Written correspondence from Ed Silveria dated March 28, 2007 for discussion.

Commissioner B. Fouse moved to approve the Consent Agenda as amended. Commissioner M. McClellan seconded.
VOICE VOTE MOTION CARRIED
AYES: B. Fouse, C. Keutmann, B. Malone, M. McClellan and S. O'Hara.
NOES: None.
ABSENT: B. Cox and A. Schiffrin.

VOICE VOTE MOTION CARRIED
AYES: B. Fouse, B. Cox, C. Keutmann, B. Malone, M. McClellan, S. O'Hara and A. Schiffrin.
NOES: None.
ABSENT: None.

General Business

1. Water Use Restrictions for summer 2007

Director Kocher reported that we are not in a water shortage emergency, but if no action is taken to recognize that it is a dry year it could result in a severe shortage emergency next year.

Water Conservation Manager Goddard provided charts on rainfall in the Newell Creek watershed, stream flows in the San Lorenzo River, water year classification, and a revised production forecast.

Comments

The commission requested that staff provide a report on the process by which Santa Barbara was able to streamline the permitting process and get a desalination facility built quickly.

The commission requested that the drought restriction ordinance be provided for review at the next commission meeting.

The commission requested that posters be made of the "No Watering Clock" graphic for distribution at local garden centers.

2. Water Shortage Contingency Plan Update - Task 5 Allocation of Water - Golf Course Allocation Method

Water Conservation Manager Goddard reported that the commission requested that staff develop allocations of 50/50, 40/60 and 30/70 for the golf course category. Staff met with both of the Golf Courses but could not agree on an allocation.

Public Comment

Dean Gump, Superintendent of Pasatiempo Golf Club thanked the commission and spoke in support of a 50% allocation and further stated that Pasatiempo will continue to use all management tools available to conserve water.

Miles Hicks, Superintendent of DeLaveaga Golf Course spoke in support of a 50 percent allocation.

Commissioner A. Schiffrin moved to recommend to City Council that the Golf Category be apportioned as 30% business and 70% irrigation in the Water Shortage Contingency Plan

Update. It was further moved that at a future date based upon significant water reduction by the Golf Courses the Water Commission would reconsider the allocation. Commissioner S. O'Hara seconded.
VOICE VOTE MOTION CARRIED
AYES: B. Fouse, C. Keutmann, B. Malone, M. McClellan, S. O'Hara and A. Schiffrin.
NOES: None.
ABSENT: B. Cox.

3. Presentation on Desalination

Associate Civil Engineer H. Luckenbach presented the Desalination Pilot Test Program and Deputy Director/Engineering Manager L Almond presented the Significant Issues of the Desalination Program.

Comments

City staff has become "experts" on this project and it may be detrimental to hire an independent project manager that would have to catch up. No one is better qualified and it may be preferable to add City staff rather than hire an independent project manager.

It is important to keep the process moving in light of the rising construction costs.

4. Draft Desalination Work Plan

Deputy Director/Engineering Manager L. Almond reported that the work plan is provided for review and comment.

Comments

- Include tentative start dates and a legend.
- Provide a copy of solar energy feasibility study.
- Include a description of the plant site acquisition process.
- Include a description of the design of the pipeline process.
- Include a public review period of the Intake Study by the Commission and City Council.
- Include permitting start dates and list in order of approval process first, second, etc.
- Begin work on the operational agreement sooner than November 2007.
- Recommend that Soquel Creek Water District pursue a solar energy feasibility project.
- Request that Soquel Creek Water District share information about the work that they are doing on the project.

5. Cost/Benefit Analysis of Harvesting Rain Proposal

Public Comment

Bobby Markovic a local landscape architect stated that the City should support and encourage rainwater harvesting.

WATER DEPARTMENT
MEMORANDUM

DATE: October 1, 2007

TO: Water Commission

FROM: Water Director

SUBJECT: Conjunctive Use Proposal with Scotts Valley Water District

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RECOMMENDATION: Begin to formulate recommendations to Council on the Conjunctive Use Proposal with Scotts Valley Water District and, if appropriate, begin to state terms under which the City would participate.

BACKGROUND: Council considered an item on its September 11, 2007 agenda for participation in a conjunctive use project with the Scotts Valley Water District (SVWD). As presented by Charles McNiesh, General Manager SVWD, his District proposed a co-operative water conservation project which would allow utilization of SVWD recycled water for golf course irrigation at Pasatiempo Golf Club (Pasatiempo). The golf course is served by the City and currently utilizes potable water for irrigation. SVWD has estimated that this plan would reduce the golf course's use of potable water by up to 60 million gallons (184 acre-feet) annually. The majority of this water reduction would occur in the summer months when demands on the City's system are the highest.

The proposal calls for SVWD to construct transmission and storage facilities required to deliver tertiary-treated water produced at the Scotts Valley Wastewater Treatment Plant to the golf course. In exchange for the recycled water, the City would allocate an equivalent annual volume of potable water to SVWD for its use. This water would be transferred to the SVWD during low-demand months (November through May), and SVWD would construct and operate all facilities necessary to transport the water to its system. SVWD has indicated a willingness to consider reducing or eliminating the delivery of City water to them in an extremely dry year, if necessary. The exchange agreement between the City and SVWD could be structured in any of a number of ways, but the fundamental concept is that there would be no net cost to the Water Department, meaning no loss of revenue to the Water fund from meter sales to the golf course.

The benefit of this plan to SVWD is that it allows them to reduce the current level of groundwater extractions during winter months, thereby preserving water in storage in the Santa Margarita groundwater basin. The Pasatiempo Golf Club's board and management have expressed support for the project, seeing that the benefit to them is a means to avoid water supply interruptions that could occur under the City's Use Curtailment plan dealing with supply priorities in drought years. The benefit to the City is the possibility of reducing the deliveries to

SVWD in drought years. Additionally, the golf course irrigation would make beneficial use of recycled water that is currently being discharged through the ocean outfall at the City's Regional Wastewater Treatment Facility. The use of reclaim is a notable void in the City's Integrated Water Plan.

DISCUSSION: Use of recycled water for irrigation purposes is recognized as a viable means of conserving water resources. The SVWD presently delivers some 130 acre-feet per year of recycled water for irrigation of landscaping in parks, schools, businesses and residential developments in the Scotts Valley area. The Scotts Valley Wastewater Treatment Plant currently runs at half capacity, but even so produces more tertiary-level recycled water than is being used in the Scotts Valley area. The unused portion of this valuable resource is currently being wasted to ocean disposal.

The use of treated wastewater effluent for irrigation of the Pasatiempo golf course has long been considered a desirable goal, with provisions for its eventuality having been included in both the Scotts Valley treatment plant and the land outfall line to the City's wastewater facility. In the City's 1989 Water "Master" Plan by Leedshill Herkenhoff, Inc., one of the supply options critically evaluated was to use the Scotts Valley reclaim for the Pasatiempo Golf Course and the Odd Fellows Cemetery. For a variety of reasons, implementation of a recycled water program at the golf course never occurred. However, recent events now make recycled water usage highly attractive. Among these favorable conditions are:

1. In 1998 the SVWD funded the construction of a 1 MGD tertiary treatment facility at the Scotts Valley Wastewater Treatment Plant; making available a supply of recycled water meeting all state and federal irrigation standards. This facility was completed in 2002 and is operated seasonally as needed to meet recycled water customer demand.

2. The SVWD has aggressively promoted and implemented recycled water projects within its boundaries and now serves the majority of potential recycled water customers in the immediate Scotts Valley area. The Water District is seeking to serve these remaining potential customers, while at the same time exploring other opportunities for project expansion. The District has made full utilization of the available recycled water a major priority of its long-term water management planning.

3. The City Council's direction to staff regarding the priority of use in droughts caused the Pasatiempo Golf Club to evaluate its options for developing an irrigation supply that is less vulnerable to interruption drought periods. The golf club is in the process of redesigning its on-site irrigation systems and has communicated with the SVWD about it the desire to pursue the use of recycled water for the bulk of its irrigation needs.

The SVWD is interested in actively pursuing this water conservation initiative and has requested that the City enter into negotiations for an agreement that would provide for its implementation. The Water District would like to initiate recycled water service to Pasatiempo within two years. To achieve this schedule, agreement between the two agencies would need to be finalized as soon as possible, but no later than this fall.

One of the issues with which the City must deal is the question of whether or not the City's current water rights on its various sources would allow the delivery of water to a place of use that

may not be specified in its water rights. Staff has requested some cursory analysis of this question by the City's water rights attorney. The questions that need to be answered are whether or not a change to the water rights is necessary; if so, what is the change that is necessary; does the pursuit of any such required change put the City's right in any jeopardy. If Council wishes to refer this matter to the Water Commission, the water rights issue is one that will need to be addressed early in the process.

FISCAL IMPACT: In discussions between staff of the City and SVWD, we have consistently maintained that while we recognize the significant overall benefits of such a project, the direct value to the City is somewhat limited, allowing perhaps some reduction in use during a drought (though the amount delivered to the Golf Course would already have been significantly reduced). For that reason, we have maintained that from a staff perspective, this project needs to be cost-neutral to the City in four ways:

1. The City would not be expected to participate in financing any of the infrastructure costs necessary to bring the reclaim water into the City's water service area.
2. The City would not be expected to bear any of the costs of permitting such a project, e.g. LAFCO, CEQA, RWQCB, etc.
3. The City would not be expected to bear any of the costs of the infrastructure to move City water to the SVWD service area.
4. Any water delivered by the City to Scotts Valley would be paid for at a rate identical to the rate that the Pasatiempo Golf Course would have paid the City.

CITY COUNCIL DIRECTION: City Council indicated to representatives of SVWD that it was interested in pursuing this project and that it wanted the Water Commission to consider the terms that should be included in an MOA between the agencies. Staff suggests that the Commission may want to discuss the general concepts that it considers should be included in an agreement that states the qualifications under which the City would be interested in participating in this project. Staff could take those suggestions and draft a Council resolution for Commission review and recommendation at its November meeting.

Suggested terms for consideration would include but not be limited to:

- Cost neutrality
- Cost participation
- Timing of deliveries
- Delivery allocations/ curtailment in drought years
- Pasatiempo to be required to commit to recycled water use
- City to maintain Pasatiempo service connection for irrigating greens and for emergency deliveries
- SVWD to be responsible for recycled water distribution, meeting water quality standards, quarterly/annual reporting to state regulators
- Agreement terms to be interpreted flexibly for mutual benefit of both parties

CITY OF SANTA CRUZ

WATER DEPARTMENT
MEMORANDUM

DATE: November 5, 2007

TO: Water Commission

FROM: Water Director

SUBJECT: Conjunctive Use Proposal (Recycled/Potable Water Exchange Arrangement) with Scotts Valley Water District

RECOMMENDATION: Review and comment on draft Council resolution regarding a Recycled/Potable Water Exchange Arrangement with the Scotts Valley Water District (SVWD) and make recommendations to Council.

Background: At its October 1, 2007 meeting, the Water Commission considered a staff proposal regarding a Recycled/Potable Water Exchange Arrangement between the City and SVWD that would involve SVWD delivering reclaim water to one of the City's current irrigation customers (Pasatiempo Golf Course) and the City delivering an equal amount of potable water to SVWD during winter months.

The Water Commission offered comments that are summarized the in the minutes of that meeting enclosed elsewhere in this agenda packet. The matter that the Commission appeared to focus on most closely was the matter of deliveries of City potable supplies to SVWD in drought conditions and the matter of demonstrating benefit to the City of entering into this Recycled/Potable Water Exchange Arrangement.

Discussion: Staff is proposing that the Council resolution include language that will address the above-mentioned issues. The matter of how this arrangement benefits the City will be included in the section of the resolution that recites the "Whereas." The details of the deliveries to SVWD in drought conditions will be listed in the proposed conditions.

In general, the City is not the primary beneficiary of this arrangement, but there are most certainly some benefits to the City including:

1. Recycled water is a missing element from the City's Integrated Water Plan, and having a component in the City's overall water portfolio is an advantage to the City in any grant applications. It is also true that any water strategy that joins the resources of multiple water agencies is looked upon very favorably by the Department of Water Resources, who administers most water related grants.

2. The proposal calls for the Pasatiempo Golf Course to receive SVWD reclaim water for a large part of its irrigation needs, and the City delivering a like amount of potable water in the following winter. Such an arrangement effectively shifts some of the peak summer demand to winter demand when the City has no difficulty in meeting demands, even in drought years.

3. The lowering of the groundwater levels in the Santa Margarita have resulted in lower base flows in the San Lorenzo River System. This Recycled/Potable Water Exchange Arrangement is intended to restore those groundwater levels. While the benefit to the surface water system is not direct enough to be predictable, it is anticipated that there will be some increase in river flows if groundwater levels can be restored.

4. One of the projects that would be required of this arrangement would be to establish an intertie between SVWD and the City water system. Such an intertie would establish a link between the two water agencies that does not now exist, and would afford a means by which the agencies could modify their systems to provide help to each other in water emergencies.

Regarding the matter of operations in drought conditions, it is generally true that the Confluence model did not reveal supply problems in winter months during droughts, even into the future when demand is expected to grow. When staff from the two agencies first began discussing this project, the City initially indicated to SVWD that it would need to reduce or discontinue deliveries of potable water in drought conditions. The compromise offer was that the City could make the deliveries of potable water at any time during the winter, allowing the City to not send water to SVWD when it was using water stored in the Newell Creek Reservoir. This arrangement, if acceptable to both parties makes deliveries of City water to SVWD equivalent to reducing demands from the lake in all years by as much as 30-45 million gallons. For that reason, the City could protect itself from losing the benefit of this off-season demand by including a provision in the conditions that the City would not make deliveries of potable water to SVWD at any time that water was being withdrawn from Newell Creek Dam to meet demands in the City service area. An eventual operational agreement could also contain a clause that should the City experience a drought condition more severe than the historic droughts, there could be some form of "banking" that would excuse the City from deliveries in such a condition.

Remaining as an issue that is not yet resolved and potentially may not be without a fair amount of additional work is the question of what would have to be done, if anything, to the City's water rights to allow Scotts Valley Water District as a place of use. Since the last time staff reported to the Commission on this matter, staff has learned that it appears very unlikely that such a water transfer of equal volumes of reclaim/potable water would be exempted from the water rights process. Any resolution that Council adopted at this time stating its interest in this project would necessarily need to be qualified with the provision that the water rights changes required could be resolved without compromising the City's current water rights.

RESOLUTION NO. NS-

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SANTA CRUZ DECLARING ITS INTEREST IN PURSUING A RECYCLED/POTABLE WATER EXCHANGE ARRANGEMENT WITH THE SCOTTS VALLEY WATER DISTRICT

WHEREAS, the Scotts Valley Water District has proposed a recycled/potable water exchange arrangement with the City involving reclaimed water, and;

WHEREAS, recycled water is a missing element from the City's Integrated Water Plan, and having a recycled water component in the City's overall water portfolio is advantageous to the City for the purpose of making any grant applications, and;

WHEREAS, Such an arrangement effectively shifts some of the peak summer demand to winter when the City is not drawing from surface storage and has no difficulty in meeting demands, even in drought years no more severe than the City has seen historically, and;

WHEREAS, this project is intended to increase water levels in the Santa Margarita aquifer and it is anticipated that there would be an increase in river flows if groundwater levels can be restored, and;

WHEREAS, an intertie would establish a link between the two water agencies that does not now exist, and would afford a means by which the agencies could modify their systems to provide help to each other in water emergencies, and;

WHEREAS, the capital components will be at no cost to the City and the operational agreement will be revenue-neutral to the City;

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Santa Cruz that the City is interested in pursuing this project including:

1. Working together immediately to resolve questions regarding any required changes to the City's water rights, and;

2. Providing information on the City system that is necessary for Scotts Valley Water District to design the necessary facilities, and;

3. Working to structure an operational agreement for recycled/potable water exchange with Scotts Valley Water District that is agreeable to both agencies.

PASSED AND ADOPTED this 27th day of November, 2007, by the following vote:

AYES:

Water Commission Minutes
7:00 p.m. – Monday, October 1 , 2007
Council Chambers
809 Center Street Santa Cruz

Minutes of a Water Commission Meeting

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

Roll Call

Present: B. Fouse, C. Keutmann, B. Malone (left at 10:00 p.m.), M. McClellan and S. O'Hara.
Absent: B. Cox, absent without notice and A. Schiffrin absent with notice.
Staff: L. Almond, Deputy Director/Engineering Manger; T. Goddard, Water Conservation Manager and D. Paul, Administrative Assistant.

Presentation There were no presentations.

Statements of Disqualification There were no statements of disqualifications.

Oral Communications There were no oral communications.

Announcements There were no announcements.

Approval of Minutes

Commissioner M. McClellan moved to approve the July 2, 2007 Water Commission minutes as submitted. Commissioner B. Fouse seconded.

VOICE VOTE MOTION CARRIED
AYES: B. Fouse, C. Keutmann, B. Malone, M. McClellan and S. O'Hara.
NOES: None.
ABSENT: B. Cox and A. Schiffrin.

Consent Agenda

Item 5-Correspondence dated July 19, 2007 and September 26, 2007 from Ed Silveira re: Belvedere Terrace was removed from the Consent Agenda for discussion.

Commissioner S. O'Hara moved to approve the Consent Agenda as amended. Commissioner B. Fouse seconded.

VOICE VOTE MOTION CARRIED
AYES: B. Fouse, C. Keutmann, B. Malone, M. McClellan and S. O'Hara.
NOES: None.
ABSENT: B. Cox and A. Schiffrin.

Items Removed from the Consent Agenda

5. Correspondence dated July 19, 2007 and September 26, 2007 from Ed Silveira re: Belvedere Terrace

Chair Keutmann stated that the Water Commission has received information from Mr. Silveira on several occasions and has discussed this item several times. He asked that Mr. Silveria provide only new information that he would like the Commission to consider and explained that Commission may ask questions of him, but will not engage in a back and forth dialogue or discussion at any time. He further stated that any Commissioner may request that this item be included on a future agenda.

Ed Silveira, representing Belvedere Terrace, stated that he feels that the Commission has not addressed the issue of protecting the 200 year old historic adobe foundations from damage if a break should occur on the 2 inch water main on Belvedere Terrace. He would like to have the pipe provided and to have a dialogue with the Commission regarding the determinations made.

Chair Keutmann reported that that the Commission has responded to Mr. Silveira's request by adding archeological significance as a main replacement criteria. He further stated that he is satisfied with the determination made by staff that this pipe is not a critical concern or an eminent danger.

Deputy Director Almond added that the hydraulic model is currently being updated and that a new water main replacement list would be generated and provided to the Water Commission at a future meeting.

The Commission requested that Mr. Silveira be notified when new water main replacement list is provided to the Water Commission.

Mr. Silveira asked to speak about the water quality concerns of residents on Belvedere Terrace. He stated that water quality testing was done on a house on the side of the street on the new water main not the old main and does not represent the actual water being delivered.

The Commission requested that information be provided on the next Consent Agenda of the testing that was done.

General Business

1. Conjunctive Water Use Project with Scotts Valley Water District (SVWD)

Deputy Director Almond reported that Council referred this item to the Water Commission. Council has requested that the Water Commission develop the terms and conditions by which the City would enter into an agreement with the SVWD to participate in this project. It is suggested that the Commission develop a number of issues for staff to prepare a resolution of intent for Council that would initiate the preliminary engineering phase of this project.

Charlie McNiesh, General Manager of the Scotts Valley Water District (SVWD) reported that it is concerned about the groundwater basin and its limitations. This project is an important part of a plan to utilize full use of reclaimed water that is being produced at the Scotts Valley Reclamation Facility. The district is looking for a commitment in order to continue with the engineering studies.

Commission Comments/Questions

- The commission requested specific information on how the City would benefit from this project especially is the current situation.

Deputy Director Almond reported that recycled water is a missing element from the Integrated Water Plan. It would shift the delivery of water from the summer months to the golf course to the winter (rainy) months when the City has abundant supplies. The State is promoting regional interagency projects by providing grant funding.

- The City should consider providing reclaim water to additional City facilities such as Delaveaga Golf Course or Harvey West Park.

- The agreement must include language about curtailment of delivery to SVWD during drought conditions.

- The agreement should provide for unpredictability of future deliveries because of constraints on streamflows that may be imposed by regulatory agencies such as Department of Fish & Game.

- The agreement should acknowledge that SVWD intends to provide reclaim water to Pasatiempo Golf Club in the future. If future golf course demand is reduced due to conservation efforts the City would reduce deliveries to SVWD.

- The agreement should be set up to track periods of curtailment imposed upon City of Santa Cruz customers and deliveries to SVWD should be curtailed by the same amount in order for the City to achieve real savings.

- The role of the Water Commission is to ensure the adequacy of the City's future water supply. It is important that this project be able to demonstrate an advantage to, or improve our system in the next five to ten years, not just trading water. It should be equal to, or exceed the Water Conservation efforts described in the Integrated Water Plan.

- It would be helpful to be able to make a case that our need for future increments of desalinated water may be delayed or reduced in the future.

- Requested that Commissioner Schiffrin be emailed and asked if he has any comments.

2. Water Shortage Contingency Plan Update, Task 6, Allocation Method

Water Conservation Manager Goddard provided information on the work completed on this project to date. He led the discussion on the recommended water allotment methods for the various customer categories.

Commission Comments

Single Family Residential

Per capital method was approach used in 70's and again in the 1990's.

The straight percentage reduction method penalizes single family residential customers who have made the effort to conserve water and rewards large users.

Several Commissioners expressed an interest in a hybrid method but recognized that the utility billing system is not robust enough to accommodate this method at this time.

Other commissioners preferred the straight per capita method.

There was general agreement that the per capita method is the preferred approach.

Multi-Residential

The Commission agreed with the staff recommendation on the per capita method for two unit multi-residential units.

The Commission requested that examples be provided of how the different methods for multi-residential units of three or more would be allocated.

Business/Industrial

Staff discussed group cutbacks at Stage 3 and individual cutbacks beginning at Stage 4.

The Commission discussed the impacts of commercial cutbacks on business, but agreed with the staff recommendation of percent of prior use at Stage 4.

University

It is important that the City work cooperatively with the University to achieve consumption reduction goals.

Municipal

The Commission agreed with the staff recommendation to divide municipal accounts as buildings and parks. Buildings will be treated as business and parks the as irrigation.

Irrigation

The Commission agreed with the staff recommendation of percent reduction based on prior use until such time that the water budget method is feasible.

Coast Irrigation

The commission agreed with the staff recommendation to treat the same as business.

Subcommittee/Advisory Body Oral Reports

1. City of Santa Cruz/Soquel Creek Water District Joint Desalination Task Force

Deputy Director Almond reported that the task force met on September 19, 2007. An evaluation of the project schedule and the request for proposals for Technical Advisor were discussed.

Director's Oral Report

1. Monthly Status of Water Supplies

Water Conservation Manager Goddard reported that today begins a new water year. Last year is considered a critically dry (red) year. The San Lorenzo River flows are low and will need good rains to restore. The lake is at 84% of capacity and that demand has been reduced.

2. Bay Street Reservoir Reconstruction Project

Deputy Director Almond reported on contact made with the inflatable roof company. After discussions with that company, it was determined that the roof would not be feasible. In order to securely anchor an inflatable roof would require the condemnation of homes and businessrs on two sides of the reservoir. She further reported that since the partial roof failure in December 2006, the project has been discussed publicly at nine different meetings.

3. Desalination Plant Project Schedule

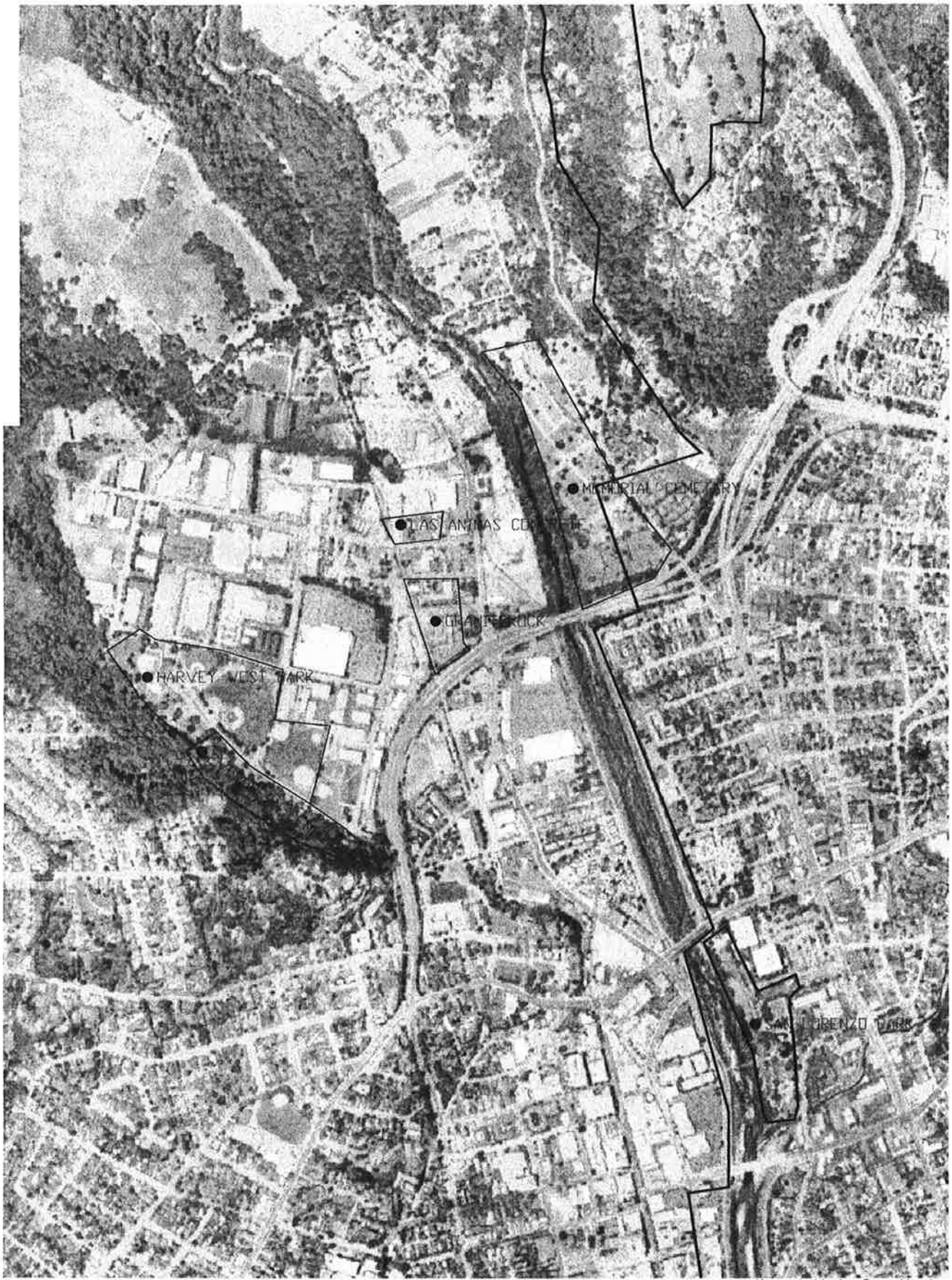
Deputy Director Almond reported that the building for the Pilot Plant is complete and the equipment is being delivered. Mark you calendars the grand opening event is tentatively scheduled for November 29, 2007 at 3:00 p.m. in the La Feliz Room at the Seymour Discovery Center.

Items Initiated by Members for Future Agendas No items were initiated.

Adjournment The meeting was adjourned at 10:29 p.m. until the next Water Commission meeting scheduled for Monday, November 5, 2007, at 7:00 p.m. in Council Chambers.

Respectfully submitted,

s/Donna Paul
Staff



Kennedy/Jenks Consultants

POTENTIAL SITES
SANTA CRUZ MEMORIAL CEMETARY
LAS ANIMAS CONCRETE (INUDSTRIAL)
GRANITEROCK (INDUSTRIAL
HARVEY WEST PARK
EVERGREEN CEMETARY
SAN LORENZO PARK

SCOTTS VALLEY WATER DISTRICT
SCOTTS VALLEY, CA

POTENTIAL RECYCLED WATER CUSTOMERS IN SANTA CRUZ-SOUTH

0788020
JUNE 2008

Piret Harmon
pharmon@cityofsantacruz.com

Please note the new e-mail address

From: Charles McNiesh [mailto:CMcNiesh@svwd.org]
Sent: Wednesday, April 06, 2011 12:17 PM
To: Bill Kocher
Cc: Piret Harmon
Subject: RE: Pasatiempo Water Exchange

Bill, I read the Sentinel, so I know you have a lot on your plate! I think the initial discussion should be about how the numbers were generated or, rather, should be generated. Piret, would you have some time next week? I am available Wednesday (4/13) or Thursday (4/14) mornings or Friday (4/15).

Charles McNiesh
General Manager
Scotts Valley Water District
Tel. (831) 438-2363
Fax (831) 438-6235

From: Bill Kocher [mailto:bkocher@cityofsantacruz.com]
Sent: Wednesday, April 06, 2011 10:51 AM
To: Charles McNiesh
Cc: Piret Harmon
Subject: RE: Pasatiempo Water Exchange

Sorry to be so long to respond. If you are questioning how the numbers were generated or you want to propose an alternative, I am thinking you might want to speak directly with Piret Harmon, our finance person. If you want to talk about an alternative strategy, then let's set up a time for you and I to talk. I'm going to copy Piret on this email so you can contact her directly if your question is the former rather than the latter.

Bill Kocher, Director
Santa Cruz Water Department
(831) 420-5205
bkocher@cityofsantacruz.com
(please note City email addresses have changed. Please update your records)

From: Charles McNiesh [mailto:CMcNiesh@svwd.org]
Sent: Friday, March 18, 2011 4:49 PM
To: Bill Kocher
Subject: Pasatiempo Water Exchange

Bill, I've reviewed the water cost analysis you shared last week. I think more discussion is needed on a couple of technical points. Can we meet next week, or maybe I should meet with your analyst to hash these items out?
--Charlie

Bill Kocher

From: Piret Harmon
Sent: Tuesday, April 19, 2011 4:12 PM
To: Charles McNiesh
Cc: Bill Kocher
Subject: RE: Pasatiempo Water Exchange
Attachments: Pasatiempo Sales.xls

Hi Charlie,

I revised the pricing sheets based on our discussion last week.
I developed two version of it – one based on annual consumption of 30MG and the other 50MG. As you can see it did not affect the pricing. In each version I used 2 scenarios:
1) the 20% loss attributed to treatment of reclaim to useable water by Pasatiempo is beared by Santa Cruz WD i.e. if Pasatiempo's need is 30MG, we are supplying 38MG to Scotts Valley
2) the 20% loss is beared by Scotts Valley WD i.e. if Pasatiempo's need is 30MG, we are supplying 30MG to Scotts Valley
Each version yields in a slightly different rate.
Please review the attached spreadsheet and let me know if you have any questions. Thanks,

Piret

Piret Harmon
pharmon@cityofsantacruz.com

Please note the new e-mail address

From: Charles McNiesh [mailto:CMcNiesh@svwd.org]
Sent: Wednesday, April 06, 2011 2:07 PM
To: Piret Harmon
Cc: Bill Kocher
Subject: RE: Pasatiempo Water Exchange

That's perfect. I'll see you 8 am next Wednesday.
--Charlie

From: Piret Harmon [mailto:pharmon@cityofsantacruz.com]
Sent: Wednesday, April 06, 2011 1:10 PM
To: Charles McNiesh
Cc: Bill Kocher
Subject: RE: Pasatiempo Water Exchange

Charlie,

Wednesday morning works for me. Would you like to come to down to Santa Cruz for the meeting? You can start with me at 8am and if there is anything you need to discuss with Bill he is available until 9am. Let me know if that works for you.

P/

PASATIEMPO
GOLF CLUB

September 12, 2011

Mr. Bill Kocher, Water Director

Mr. Toby Goddard, Water Conservation Manager

City of Santa Cruz

809 Center Street #102

Santa Cruz, CA 95060

Dear Mr. Kocher & Mr. Goddard,

Thank you (as well as those "cc'd on this correspondence) very much for our meetings with Jerry Maurer and myself. We were very excited about the opportunity to discuss Pasatiempo Golf Club and its history with you. As you may remember, Jerry Maurer, Advisor to the Board, is helping Pasatiempo to rationalize their strategy, business model and utilization of scarce capital over the next ten years.

Over the last year, Pasatiempo was strongly considering the construction of a water treatment plant in conjunction with Scotts Valley to ensure water availability during periods of drought. It became clear in the early review steps that Pasatiempo was unclear of the many facts and strategies of the City of Santa Cruz. After our meetings, we were much more confident about the goals and objectives of the City and the current and proposed water strategy.

We met with our Board on August 31st to report on our progress to date and communicated our realization that we share many of the same goals and objectives. The Pasatiempo Board was very impressed and pleased with the receptive nature of the City and County staff members to meet with us.

The Board raised one major concern as we explained the different categories that have been established by the City for assignment of their customers. The main issue was "What happens to our water supply if we approach a Stage Three drought?" We explained the current water conservation plan enacted under drought conditions. Our reduced budget would be based on our historical usage (55 million gallons per year). The published plan is to be in place for the next 5 years according to the Water Department. Given our current conservation efforts, our reduced (irrigated) acreage and our two million dollar irrigation system, Pasatiempo would be okay. Jerry and I

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could not explain satisfactorily why during drought conditions we had been assigned to the Golf/Irrigation category vs. the Business category.

In summary, we could not explain how a "for-profit" corporation with 400 shareholders, 100+ employees, global customers, and revenues in the range of 6 to 7 million dollars would not be assigned to the business category. We assured them that we were working on resolving the designation and that we would report back to them on our progress.

We certainly feel that we are running a very viable business, not only for Pasatiempo shareholders, but for the numerous guests that we are attracting to the Santa Cruz area that are supporting other local businesses.

We look forward to working with you to establish a Business Designation for Pasatiempo.

Sincerely,

D. Scott Hoyt

D. Scott Hoyt

PASATIEMPO, INC.

General Manager

cc: Martin Bernal, City Manager, City of Santa Cruz

Bonnie Lipscomb, Executive Director, Redevelopment, City of Santa Cruz

Tina Shull, Assistant City Manager, City of Santa Cruz

Maggie Ivy, CEO, Santa Cruz CVC

Jennifer Karno, Special Projects, City of Santa Cruz

MEMORANDUM OF AGREEMENT BETWEEN PASATIEMPO GOLF CLUB AND SCOTTS VALLEY WATER DISTRICT EXPRESSING INTENT TO IMPLEMENT "PASATIEMPO WATER CONSERVATION INITIATIVE" IN COOPERATION WITH CITY OF SANTA CRUZ

WHEREAS, the Pasatiempo Golf Club ("Golf Club") seeks to ensure the availability of its golf course irrigation water supply, currently obtained from the City of Santa Cruz ("City"); and,

WHEREAS, the Scotts Valley Water District ("District") operates a recycled water program with the objective to supplement its local groundwater supply, which program has the production capability to meet the Golf Club's irrigation needs consistently, even during periods of drought; and,

WHEREAS, the City Council by its approval of Resolution NS-27,653 on November 27, 2007, has expressed the City's desire to participate jointly in a Pasatiempo Water Conservation Initiative ("Project") by providing potable water to the District when it is available from surface sources in exchange for an equal volume of recycled water provided by the District to the Golf Club to meet the Golf Club's irrigation needs; and

WHEREAS, the Golf Club and the District (the "Parties") recognize the potential for multiple and mutual Project benefits, including but not limited to improved Golf Club water supply reliability and price stability, reduced District groundwater demand as a result of the potable exchange with the City, lesser peak irrigation season demand on the City potable water system, and overall more efficient use of regional water supplies for long-term sustainability and environmental enhancement.

NOW, THEREFORE, the Parties do hereby enter into this Memorandum of Agreement and do hereby agree as follows:

1. The District shall be responsible for design, engineering, environmental approvals, permits, construction, and other elements of Project implementation for the overall Project and for all Project components except those located on the Golf Club property. The Golf Club shall be responsible for constructing any and all Project-related irrigation system or other improvements on the Golf Club property.

2. Each Party shall bear construction and related costs for those Project components for which it has implementation responsibility, except the Parties may subsequently agree that the Golf Club shall bear some of the District's share of the costs, e.g., for siting and constructing a water storage tank on or near the Golf Club property.

3. The Parties shall agree on a minimum volume of recycled water to be purchased each year for a specified period of time by the Golf Club and on water quality standards acceptable for the Golf Club's irrigation use. The Golf Club shall be obligated to purchase the agreed-upon minimum volume, whether or not it is delivered, provided that

the District has recycled supply available that meets or exceeds the agreed-upon water quality standards.

4. The Parties understand that the Golf Club intends to rely upon other sources of water, including City water service, for the purposes of meeting potable water needs, irrigating greens and tee areas, and providing backup to the District's recycled supply in case of short-term unavailability.

5. The Parties shall agree on a long-term price schedule to be paid by the Golf Club to the District for delivered recycled water, which schedule shall take into account the sharing of Project construction and related costs, the District's regular recycled water rates, the City's regular commercial potable water rates, and other factors as agreed to by the Parties.

6. The Golf Club understands that it shall receive and use recycled water from the District only in full compliance with all relevant Federal, State, and District rules and regulations.

7. The Parties shall cooperate diligently and in good faith by communicating timely; sharing information; meeting together and with the City as necessary; mutually supporting public outreach, grant funding, and regulatory approval efforts; and otherwise collaborating to implement the Project as expeditiously and economically as possible.

8. The Parties understand and accept that, despite their diligent and best efforts, the Project may prove infeasible for reasons of cost, regulatory approval, public acceptance, or other factors unanticipated at present.

Signed:

PASATIEMPO GOLF CLUB

Edward W. Newman
President, Board of Directors

Date: 5-28-08

SCOTTS VALLEY WATER DISTRICT

Margo Hobey
President, Board of Directors

Date: 6-10-08

PROPOSAL:

1. The City currently serves approximately 30-50 million gallons per year of potable water to the Pasatiempo Golf Club (PGC) for irrigating its fairways, greens, and tees. The PGC is within the City's service area.
2. The great majority of this irrigation demand occurs during the time of peak water use elsewhere in the City water system (June-October).
3. Scotts Valley Water District (SVWD) has surplus reclaim water and is seeking irrigation customers for that surplus.
4. SVWD, with City concurrence, has approached the PGC and has confirmed its interest in using reclaim to offset some portion of its irrigation needs.
5. The City and SVWD are considering an exchange to enable use of recycled water for PGC irrigation, thus decreasing potable water demand, and moving the remaining potable water demand (approximately X% of the volume of recycled water to be used) from the high demand summer season to the winter. This would entail the City selling potable water to SVWD in amounts equal to the volume of recycled water that SVWD sells to PGC. [*not selling to City for service to PGC? Is City concerned about liability of serving recycled water, what is the thinking here? How does this square with service areas, duplication of service, etc?*]The potable water would be treated by the City and delivered to SVWD during non-peak demand periods (November-May) at times and rates of flow to be determined.

GOAL OF THE PROJECT AS ENVISIONED BY THE CITY:

The City is engaged in discussions with regulatory agencies to improve fish habitat in some of the streams from which the City draws its water supplies. In order to improve habitat, the regulatory agencies are requesting that the City draw less water from the streams. In peak water use periods, it is very difficult for the City to reduce any stream withdrawals. The City has a very limited water supply, and had undertaken extensive water conservation programs to reduce demand. City demand is presently <70gpcd, with attendant demand hardening. The City cannot afford any loss of supply for municipal demands; to the contrary, the City needs to augment those supplies. This is particularly true during the peak demand summer months. In addition to the need to increase municipal water supply for reliability purposes, the City is looking for ways to augment water supply to enable it to reduce demand on certain coastal streams where fishery benefits could result.

The proposed recycled water exchange program with SVWD would have the effect of increasing supply in the peak use period in order to allow the City to leave an equivalent amount in the streams for fisheries enhancement.
[If 1:1(or1:75 or whatever) exchange, can City really leave equal amount instream? I don't get the math. Does the City have excess winter supply it does not use? In all year types? Even if math works, don't commit here to volume to be left instream.]

GOAL OF THE PROJECT AS DEFINED BY SVWD:

SVWD relies on groundwater for all of its water production and the aquifers from which that water is drawn are showing declining water levels. In an attempt to offset some of the withdrawal from these aquifers, SVWD financed an addition to the City of Scotts Valley wastewater plant to treat a portion of the effluent to a level that would allow it to be permitted for use as irrigation water. There is still capacity left in this reclaim operation for other irrigation applications, but unless it is used within SVWD to replace current irrigation uses, it does not accomplish the goal of restoring the aquifer. SVWD has offered to explore exporting some of this reclaim into the City water system for use at PCG with the condition that the City would return a like amount of treated water for use it their system in order to provide an opportunity to rest wells and achieve "in-lieu" recharge of the basin.

DETAILS OF THE TENTATIVE AGREEMENT:

1. SVWD is in the process of negotiating PGC the terms under which it would deliver water to them, e.g. rates, flow regime, etc.
2. SVWD is in the process of preliminary design for the infrastructure that would be needed to transport recycled water to PGC and the infrastructure needed to transport City treated water from the Rollingwoods area to its service area.

During the peak use period of the year (June-October) SVWD would deliver recycled water to PGC for at least part of its irrigation needs, e.g. rough areas, fairways. The amount of recycled water sold to PGC is expected to be in the range of 30 to 50 million gallons.

VOICE VOTE MOTION CARRIED
AYES: B. Fouse, Chair C. Keutmann, B. Malone; M. McClellan and A. Schiffrin.
NOES: None.
ABSENT: S. O'Hara.

Items Removed from the Consent Agenda

3. Belvedere Terrace Water Quality Testing Information

Commissioner B. Malone asked if the tuberculation inside the pipe could cause any harm and if connecting the two inch main to the six inch main could cause problems related to pressure.

Bill Kocher reported that tuberculation on a pipe this age is common and the water quality sampling done on the 2 inch main shows that the water meets all water quality standards. The water quality is greatly improved by no longer having a dead-end main on Belvedere Terrace.

Commissioner A. Schiffrin moved to approve the Belvedere Terrace Water Quality Testing Information. Commissioner M. McClellan seconded.

VOICE VOTE MOTION CARRIED
AYES: B. Fouse, Chair C. Keutmann, B. Malone; M. McClellan and A. Schiffrin.
NOES: None.
ABSENT: S. O'Hara.

General Business

1. Conjunctive Water Use Project with Scotts Valley Water District

Director Kocher reported that he prepared the draft resolution based upon comments from the last Water Commission meeting.

Public Comment

John Golder offered his comments on the Conjunctive Water Use Project with the Scotts Valley Water District.

Commissioner A. Schiffrin moved to recommend that Council adopt the Resolution of Intent for a conjunctive water use project with the Scotts Valley Water District with the following modifications:

1st WHEREAS, the Scotts Valley Water District has proposed a recycled/potable water exchange arrangement with the City involving ~~reclaimed water~~ an exchange of Scotts Valley Water District reclaim water to the City in its summer high delivery period for the City of Santa Cruz delivery of potable water to Scotts Valley Water District in winter non-peak periods, and;

4th WHEREAS, this project is intended to increase water levels in the Santa Margarita aquifer and ~~it is anticipated~~ that there would be an increase in river flows if groundwater levels can be restored, and;
Commissioner B. Malone seconded.

VOICE VOTE MOTION CARRIED
AYES: B. Fouse, Chair C. Keutmann, B. Malone; M. McClellan and A. Schiffrin.
NOES: None.
ABSENT: S. O'Hara.

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

1. City of Santa Cruz/Soquel Creek Water District Joint Desalination Task Force

Commissioner A. Schiffrin reported that on November 1st he attended a training session presented by Carollo Engineers on Seawater Reverse Osmosis. The pilot plant is close to being operational. The Grand Opening Event has been rescheduled for January 10, 2008.

Director's Oral Report

1. Monthly Status of Water Supplies

Director Kocher reported that the conservation efforts last summer were effective. It was anticipated that the reservoir would end the water year at 554.0ft, but ended much higher at 566.2ft. This could be very important if we have another dry winter. The water restrictions have not been lifted.

2. Bay Street Reservoir Reconstruction Project

Director Kocher reported that demolition has begun. Most of the materials being removed are being reused or recycled by the demolition contractor.

3. Desalination Plant Project Schedule

Director Kocher reported that the pilot plant should be producing water by the end of month.

Items Initiated by Members for Future Agendas

Commissioner M. McClellan provided several news articles for the next commission agenda.

The meeting was adjourned at 8:25 p.m. until the next meeting of the Water Commission scheduled for Monday December 3, 2007, at 7:00 p.m. in Council Chambers.

State of California—Health and Human Services Agency
California Department of Public Health

Northern California Drinking Water Field Operations Branch
Monterey District

RON CHAPMAN, MD, MPH
Director & State Health Officer

EDMUND G. BROWN JR.
Governor

July 2, 2012

Mr. Michael Higgins
Central Coast Regional Water Quality Control Board
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401

Dear Mr. Higgins:

Scotts Valley Water District Recycled Water Program – System No. 4490001
Pasatiempo Golf Course – Dual Use Pipeline

The California Department of Public Health (CDPH) has reviewed the *Supplemental Engineering Report for the Scotts Valley Outfall Pipeline, Dual Use for Secondary and Tertiary Effluent, April 2012* (Report), prepared by Ripley Pacific Company and has the following comments:

1. Any tertiary recycled water use, other than the Pasatiempo Golf Club's (PGC) landscape irrigation outlined in the Report, from the Dual Use Outfall pipeline shall be approved by CDPH through submittal of an addendum to the Report.

2. Report, Page 12: Title 22, Section 60310(a) sets a minimum distance between irrigation with tertiary recycled water and any domestic water supply well at 50-feet. The two wells (one is just a hole and the other has been inactive for more than 10-years) located on the PGC property shall not be converted to domestic water supply wells in the future unless they meet the conditions listed in Title 22, Section 60310(a)(1-5). Additionally, the PGC uncompleted well that is only a hole must be filled and capped or have well equipment installed immediately to prevent contamination of the groundwater aquifer from surface runoff.

3. Report, Page 12: Title 22, Section 60310(a) sets a minimum distance between irrigation with tertiary recycled water and any domestic water supply well at 50-feet. Two private wells (Anzalone and Bendict) adjacent to PGC property are located within 50 feet of the irrigated turf of PGC. The use of tertiary recycled water for irrigation within 50 feet of these wells is prohibited unless the conditions listed in Title 22, Section 60310(a)(1-5) are met and reviewed by CDPH.

4. Report, Page 15 states that additional details of the cross connection control tests are located in Sections 6.1-6.6 of Attachment #7. However, Attachment #7 only contained 3 drawings of pipeline profiles. The testing description as required in Title 22, Section 60314(a)(3) must be included for review by CDPH.

5. Report, Pages 19 and 21: A minimum fluid velocity during flushing that will ensure scouring and turbulent flow throughout the Dual Use Outfall pipeline must be proposed for CDPH review.

1 Lower Ragsdale, Building 1, Suite 120, Monterey, CA 93940-5741
(831) 655-6939; Fax (831) 655-6944
Internet Address: http:www.cdph.ca.gov

6. Report, Page 21: The Report procedure for flushing the Dual Use Outfall pipeline with two pipe volumes needs more detail. Does the flushed water go to the outfall or the Pasatiempo storage tank? It is not clear if the flushing will be done with all surfaces of the pipe wetted, as is specified during the disinfection procedure. CDPH recommends all surfaces of the pipe be wetted during flushing and a minimum fluid velocity as discussed in Comment No. 5 above be maintained.

7. Following a change over, the project shall collect daily TC samples from the PGC (Sims Road) use-area turnout for at least 3 consecutive days following a successful flushing/disinfection procedure to ensure adequate water quality after placing the PCG use-area online. Following the first TC sample <2.2 MPN, the project may place the use-area in service, but please provide a procedure for isolating the PGC storage tank and reflushing the Dual-Use Outfall pipeline if a follow up TC sample is >2.2 MPN.

8. The Report needs to describe how the turnout pipeline between the Dual-Use Outfall pipe and the Pasatiempo storage tank will be flushed and/or disinfected if only the Dual-Use Outfall flushing procedure is done. Currently from the Report, the turnout pipeline will only be flushed and disinfected when the Pipeline Disinfection Protocol is performed.

9. Report, Appendix B: Please provide locations of signage required per Title 22, Section 60310(g).

10. Report, Appendix C: Describe what will be done with the flushed water accumulating in the Pasatiempo storage tank if the TC samples are greater than 2.2 MPN.

11. The Report does not discuss the effect on operations at the City of Scotts Valley Wastewater and RW Facilities during the period of time that the Dual Use Outfall will be out of service during conversions. The Report must provide a detailed discussion on the disposal, storage and/or tertiary treatment/distribution of the secondary effluent of the wastewater facility during the period of time that the pipeline will be out of service each year for the conversion process.

If you have any questions regarding this memo, please contact me at (831) 655-6934 or Randy Barnard at (619) 525-4022.

Sincerely,

Jan Sweigert

Jan Sweigert, P.E.
District Engineer, Monterey District
Drinking Water Field Operations Branch

cc: Santa Cruz County EHD

cc (by email): Charles McNiesh/Scotts Valley Water District

State of California—Health and Human Services Agency
California Department of Public Health

Northern California Drinking Water Field Operations Branch
Monterey District

RON CHAPMAN, MD, MPH
Director & State Health Officer

EDMUND G. BROWN JR.
Governor

September 5, 2012

Mr. Michael Higgins
Central Coast Regional Water Quality Control Board
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401

Dear Mr. Higgins:

Scotts Valley Water District Recycled Water Program – System No. 4490001
Pasatiempo Golf Course – Dual Use Pipeline

The California Department of Public Health (CDPH) previously reviewed the *Supplemental Engineering Report for the Scotts Valley Outfall Pipeline, Dual Use for Secondary and Tertiary Effluent, April 2012*, prepared by Ripley Pacific Company (RPC) on behalf of Scotts Valley Water District (SVWD), and submitted comments to the Regional Water Quality Control Board (RWQCB) by letter dated July 2, 2012. RPC provided additional information on July 19, 2012 in response to CDPH's comments.

CDPH has reviewed the additional information submitted July 19, 2012 and has the following comments (item numbers in RPC's July 19 letter correspond to the comment numbers in CDPH's July 2 letter):

Items No. 1, 3, 4, 5, 6, 8, 9, and 11 have been satisfactorily addressed.

Item 2: It is recommended that the uncompleted well hole be protected immediately by either filling and capping the hole or having well equipment installed to prevent contamination of the groundwater aquifer from any type of surface runoff.

Items 7 and 10: It is recommended that the engineering report be updated with the referenced responses, including a requirement that the storage tank contents during changeover shall not be used for irrigation of the temporary 'restricted access golf course' if the total coliform sample results are greater than an MPN of 23 per 100 milliliters. Further disinfection and sampling of the storage tank must be completed if the contents are to be used for the stated irrigation area.

In addition, the July 19, 2012 letter included three assumptions regarding CDPH's "acceptance" of project components. CDPH does not have the authority to approve or accept projects, but provides conditions of approval for consideration by the applicable RWQCB. The RWQCB, through their permitting process, formally approves projects. CDPH has the following comments on these assumptions:

a. *Dual use of the ocean outfall is acceptable to CDPH.*

   CDPH recommends the RWQCB approve the dual use of the ocean outfall based on the conditions detailed in this letter.

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(831) 655-6939; Fax (831) 655-6944
Internet Address: http:www.cdph.ca.gov

b. *Use of mixed effluent flushed from pipe for irrigation is acceptable to CDPH.*

CDPH recommends the RWQCB approve this use based on the conditions detailed above in this letter.

c. *Use of paracetic acid for disinfection of the pipe and new storage tank is acceptable to CDPH.*

CDPH recommends the RWQCB approve the use of paracetic acid if applicable AWWA procedures are followed.

The SVWD engineering report should be updated to include the above comments and responses and a final version provided for CDPH review.

If you have any questions regarding this memo, please contact me at (831) 655-6934 or Randy Barnard at (619) 525-4022.

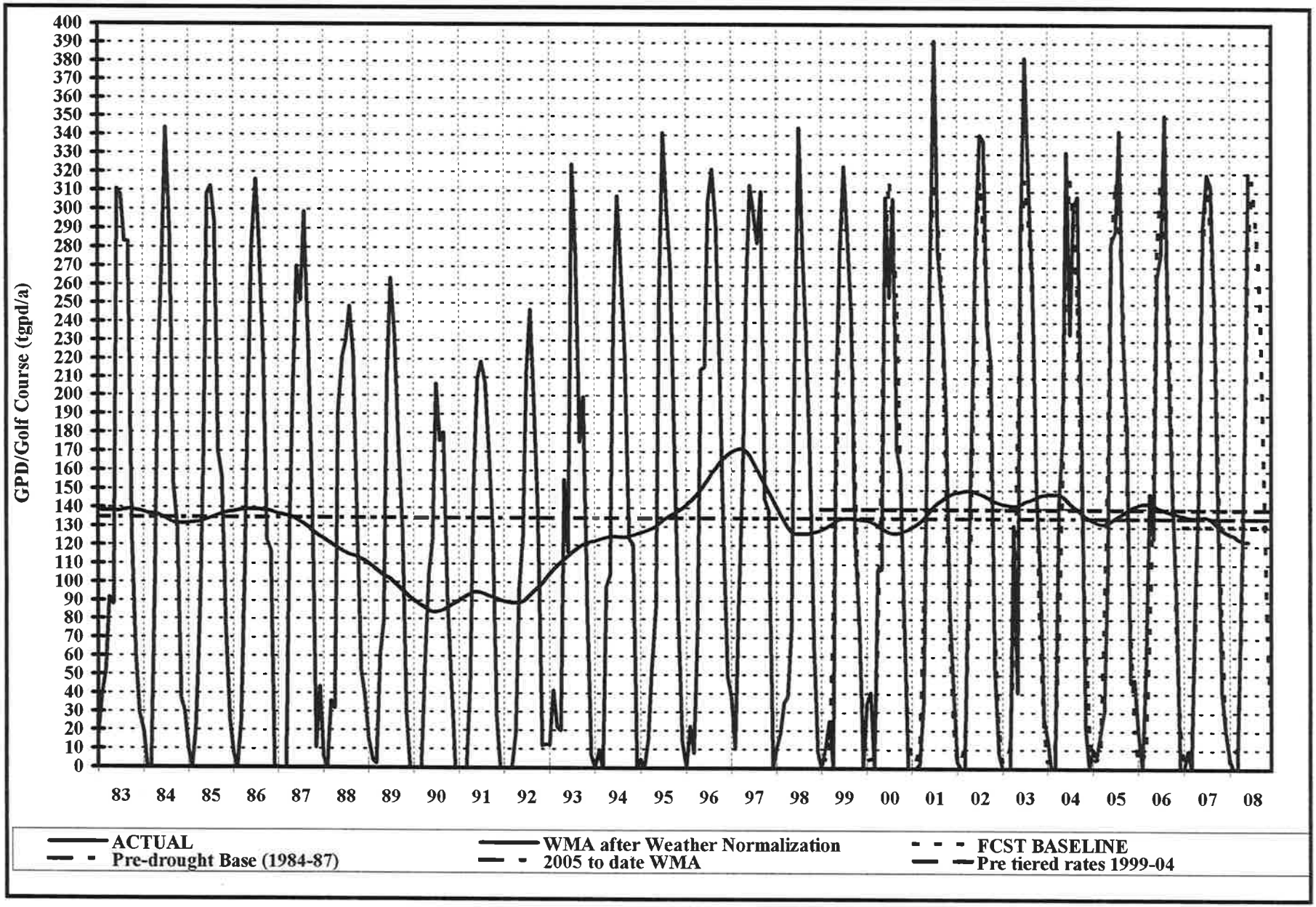
Sincerely,

Jan Sweigert

Jan Sweigert, P.E.
District Engineer, Monterey District
Drinking Water Field Operations Branch

cc: Santa Cruz County EHD

cc (by email): Charles McNiesh / Scotts Valley Water District
Dana Ripley / Ripley Pacific Company
Jeff Stone / Water Resources Consultant


GPD/Golf Course (tgpd/a)
400
390
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370
360
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340
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260
250
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83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00 01 02 03 04 05 06 07 08
ACTUAL
Pre-drought Base (1984-87)
WMA after Weather Normalization
2005 to date WMA
FCST BASELINE
Pre tiered rates 1999-04

Table 3-6. Water Supply Allocation and Customer Reduction Goals

Normal Peak Season Demand = 2,473 mg	No Deficiency		Stage 2 15% Deficiency		Stage 3 25% Deficiency		Stage 4 35% Deficiency		Stage 5 50% Deficiency	
	Delivery		Delivery		Delivery		Delivery		Delivery	
	%	Volume (mil gal)	%	Volume (mil gal)	%	Volume (mil gal)	%	Volume (mil gal)	%	Volume (mil gal)
Single Family Residential	100	1,031	84%	864	73%	753	62%	639	48%	495
Multiple Residential	100	524	87%	454	78%	411	69%	361	55%	287
Business	100	438	95%	416	92%	402	87%	381	70%	307
UC Santa Cruz	100	132	85%	113	76%	100	66%	87	52%	68
Other Industrial	100	23	95%	22	90%	21	85%	20	67%	15
Municipal	100	48	76%	36	57%	27	41%	20	28%	14
Irrigation	100	110	64%	70	34%	37	12%	13	0%	0
Golf Course Irrigation	100	106	73%	78	51%	54	34%	36	20%	21
Coast Irrigation	100	59	95%	56	90%	53	85%	50	67%	40
Other	100	2	95%	2	90%	2	50%	1	50%	1
Total	**100**	**2,473**	**85%**	**2,111**	**75%**	**1,861**	**65%**	**1,607**	**50%**	**1,247**
Demand Reduction %, Million gallons	**0**	**0**	**15%**	**-362**	**25%**	**-612**	**35%**	**-866**	**50%**	**-1,226**

Year 2015 Scenario				ESTIMATED REVENUE LOSS			PROPOSED SOLUTION			
Transmission Loss beared by Santa Cruz WD				SC TO PASATIEMPO			PASATIEMPO FROM SV		SC TO SV	
	Magnitude of Shortage	No Yrs out of 59	Reduction Goal	Annual Est Sales (MGY)	Annual Net Sales (MGY)	Total Sales	Pasatiempo Consumption	From SV to Pasatiempo	Sold to SV	Total Sales
							20%	*loss*		
No Curtailment	0%	35	0%	30	30	-1,050	30	38	**38**	1,313
Stage 1	5%	16	5%	30	29	-456	30	38	**38**	600
Stage 2	15%	7	27%	30	22	-153	30	38	**38**	263
Stage 3	25%	0	49%	30	15	0	30	38	**38**	0
Stage (4-)5	50%	1	80%	30	6	-6	30	38	**38**	38
System Total over 59 yrs (MG)		59				-1,665				2,213
System Total over 59 yrs (CCF)						-2,226,337				2,957,888
Water Rate (per CCF)						$5.10				**$3.84**
Total Revenue						-$11,354,318				$11,354,318

Year 2030 Scenario				ESTIMATED REVENUE LOSS			PROPOSED SOLUTION			
Transmission Loss beared by Santa Cruz WD				SC TO PASATIEMPO			PASATIEMPO FROM SV		SC TO SV	
	Magnitude of Shortage	No Yrs out of 59	Reduction Goal	PT Avr Annual Sales (MGY)	Annual Net Sales (MGY)	Total Sales (MGY)	Pasatiempo Consumption	From SV to Pasatiempo	Supplied by SVWD	Total Net Added Sales (MGY)
							20%	*loss*		
No Curtailment	0%	4	0%	30	30	-120	30	38	**38**	150
Stage 1	5%	44	5%	30	29	-1,254	30	38	**38**	1,650
Stage 2	15%	5	27%	30	22	-110	30	38	**38**	188
Stage 3	25%	5	49%	30	15	-77	30	38	**38**	188
Stage (4-)5	50%	1	80%	30	6	-6	30	38	**38**	38
Net to System over 59 yrs (MG)		59				-1,566				2,213
Net to System over 59 yrs (CCF)						-2,093,583				2,957,888
Water Rate (per CCF)						$5.10				**$3.61**
Total Revenue						-$10,677,273				$10,677,273

Year 2015 Scenario				ESTIMATED REVENUE LOSS			PROPOSED SOLUTION			
Transmission Loss beared by Scotts Valley WD				SC TO PASATIEMPO			PASATIEMPO FROM SV		SC TO SV	
	Magnitude of Shortage	No Yrs out of 59	Reduction Goal	Annual Est Sales (MGY)	Annual Net Sales (MGY)	Total Sales	Pasatiempo Consumption	From SV to Pasatiempo	Sold to SV	Total Sales
							20%	*loss*		
No Curtailment	0%	35	0%	50	50	-1,750	50	63	**50**	1,750
Stage 1	5%	16	5%	50	48	-760	50	63	**50**	800
Stage 2	15%	7	27%	50	37	-256	50	63	**50**	350
Stage 3	25%	0	49%	50	26	0	50	63	**50**	0
Stage (4-)5	50%	1	80%	50	10	-10	50	63	**50**	50
System Total over 59 yrs (MG)		59				-2,776				2,950
System Total over 59 yrs (CCF)						-3,710,561				3,943,850
Water Rate (per CCF)						$5.10				**$4.80**
Total Revenue						-$18,923,864				$18,923,864

Year 2030 Scenario				ESTIMATED REVENUE LOSS			PROPOSED SOLUTION			
Transmission Loss beared by Scotts Valley WD				SC TO PASATIEMPO			PASATIEMPO FROM SV		SC TO SV	
	Magnitude of Shortage	No Yrs out of 59	Reduction Goal	Annual Est Sales (MGY)	Annual Net Sales (MGY)	Total Sales	Pasatiempo Consumption	From SV to Pasatiempo	Sold to SV	Total Sales
							20%	*loss*		
No Curtailment	0%	4	0%	50	50	-200	50	63	**50**	200
Stage 1	5%	44	5%	50	48	-2,090	50	63	**50**	2,200
Stage 2	15%	5	27%	50	37	-183	50	63	**50**	250
Stage 3	25%	5	49%	50	26	-128	50	63	**50**	250
Stage (4-)5	50%	1	80%	50	10	-10	50	63	**50**	50
Net to System over 59 yrs (MG)		59				-2,610				2,950
Net to System over 59 yrs (CCF)						-3,489,305				3,943,850
Water Rate (per CCF)						$5.10				**$4.51**
Total Revenue						-$17,795,455				$17,795,455

Year 2015 Scenario				CURRENT SITUATION			PROPOSED SOLUTION			
Reduction Goal applied to SCWD Sales Only				PASATIEMPO SALES			SCWD SALES		SVWD SALES	
	Magnitude of Shortage	No Yrs out of 59	Reduction Goal	PT Avr Annual Sales (MGY)	Annual Net Sales (MGY)	Total Sales (MGY)	Supplied by SCWD	Total Net Sold (MGY)	Supplied by SVWD	Total Net Added Sales (MGY)
No Curtailment	0%	35	0%	50	50	-1,750	15.6	546	34.4	1,204
Stage 1	5%	16	5%	50	48	-760	14.8	237	34.4	550
Stage 2	15%	7	27%	50	37	-256	11.4	80	34.4	241
Stage 3	25%	0	49%	50	26	0	8.0	0	34.4	0
Stage (4-)5	50%	1	80%	50	10	-10	3.1	3	34.4	34
System Total over 59 yrs (MG)		59				-2,776		866		2,030
System Total over 59 yrs (CCF)						-3,710,561		1,157,695		2,713,369
Water Rate (per CCF)						$5.10		$5.10		$4.80
Total Revenue						-$18,923,864		$5,904,245		$13,019,618
Year 2030 Scenario				CURRENT SITUATION			PROPOSED SOLUTION			
Reduction Goal applied to SCWD Sales Only				PASATIEMPO SALES			SCWD SALES		SVWD SALES	
	Magnitude of Shortage	No Yrs out of 59	Reduction Goal	PT Avr Annual Sales (MGY)	Annual Net Sales (MGY)	Total Sales (MGY)	Supplied by SCWD	Total Net Sold (MGY)	Supplied by SVWD	Total Net Added Sales (MGY)
No Curtailment	0%	4	0%	50	50	-200	15.6	62	34.4	138
Stage 1	5%	44	5%	50	48	-2,090	14.8	652	34.4	1,514
Stage 2	15%	5	27%	50	37	-183	11.4	57	34.4	172
Stage 3	25%	5	49%	50	26	-128	8.0	40	34.4	172
Stage (4-)5	50%	1	80%	50	10	-10	3.1	3	34.4	34
Net to System over 59 yrs (MG)		59				-2,610		814		2,030
Net to System over 59 yrs (CCF)						-3,489,305		1,088,663		2,713,369
Water Rate (per CCF)						$5.10		$5.10		$4.51
Total Revenue						-$17,795,455		$5,552,182		$12,243,273
Year 2015 Scenario				CURRENT SITUATION			PROPOSED SOLUTION			
Reduction Goal applied to Total Pasatiempo Demand Level				PASATIEMPO SALES			SCWD SALES		SVWD SALES	
	Magnitude of Shortage	No Yrs out of 59	Reduction Goal	PT Avr Annual Sales (MGY)	Annual Net Sales (MGY)	Total Sales (MGY)	Supplied by SCWD	Total Net Sold (MGY)	Supplied by SVWD	Total Net Added Sales (MGY)
No Curtailment	0%	35	0%	50	50	-1,750	15.6	546	34.4	1,204
Stage 1	5%	16	5%	50	48	-760	13.1	210	34.4	550
Stage 2	15%	7	27%	50	37	-256	2.1	15	34.4	241
Stage 3	25%	0	49%	50	26	0	0.0	0	34.4	0
Stage (4-)5	50%	1	80%	50	10	-10	0.0	0	34.4	34
System Total over 59 yrs (MG)		59				-2,776		770		2,030
System Total over 59 yrs (CCF)						-3,710,561		1,029,813		2,713,369
Water Rate (per CCF)						$5.10		$5.10		$5.04
Total Revenue						-$18,923,864		$5,252,045		$13,671,818
Year 2030 Scenario				CURRENT SITUATION			PROPOSED SOLUTION			
Reduction Goal applied to SCWD Sales Only				PASATIEMPO SALES			SCWD SALES		SVWD SALES	
	Magnitude of Shortage	No Yrs out of 59	Reduction Goal	PT Avr Annual Sales (MGY)	Annual Net Sales (MGY)	Total Sales (MGY)	Supplied by SCWD	Total Net Sold (MGY)	Supplied by SVWD	Total Net Added Sales (MGY)
No Curtailment	0%	4	0%	50	50	-200	15.6	62	34.4	138
Stage 1	5%	44	5%	50	48	-2,090	13.1	576	34.4	1,514
Stage 2	15%	5	27%	50	37	-183	2.1	11	34.4	172
Stage 3	25%	5	49%	50	26	-128	0.0	0	34.4	172
Stage (4-)5	50%	1	80%	50	10	-10	0.0	0	34.4	34
Net to System over 59 yrs (MG)		59				-2,610		649		2,030
Net to System over 59 yrs (CCF)						-3,489,305		868,048		2,713,369

Water Rate (per CCF)					$5.10	$5.10		$4.93
Total Revenue					-$17,795,455	$4,427,045		$13,368,409

WATER DEPARTMENT MEMORANDUM

DATE: January 27, 2014

TO: Water Commission

FROM: Toby Goddard, Administrative Services Manager

SUBJECT: Initial Water Supply Outlook for 2014

RECOMMENDATION: For information and deliberation by the Water Commission.

This report provides an overview of current water conditions and presents the Water Department's first formal outlook covering the City's water supply situation for water year 2014. It will be updated at the end of February as the season progresses and a final water supply outlook will be prepared in the month of March, when the bulk of the winter wet season has passed and the water supply situation becomes more certain.

Given the extraordinary and very serious circumstances that the City potentially faces this year, we begin with a summary of recent actions at the state level.

On Friday, January 17, 2014, Governor Brown officially declared a drought emergency in California. He asked California residents and businesses to voluntarily reduce their water consumption 20 percent and directed state agencies to take a range of steps to ease the effects of water shortages on agriculture, communities, fish and wildlife. Earlier in December, the Governor convened an Interagency Drought Task Force to coordinate state efforts with Federal and local agencies. These actions follow the designation of 2013 as being the driest calendar year on record, which has left many of the state's largest reservoirs, river systems, and Sierra snowpack at dangerously low levels and has contributed to unseasonable winter wildfires. The U.S. Drought Monitor, as of January 21, 2014, now classifies over 60 percent of California, including all of the San Francisco Bay Area and Central Coast regions, in a condition of "extreme drought", one stage below the most severe designation, "exceptional".

Rainfall

At roughly halfway through the winter "wet" season, the City of Santa Cruz, like the rest of California, is experiencing unprecedented dry conditions. It would be an understatement to say that 2014 is shaping up to be the third straight dry year. Normal rainfall for this time of year is about **16.4** inches. So far this year, the Santa Cruz area has received only **1.3** inches of rain, scarcely eight percent of average. Most notably, there has been no measureable rainfall detected

this January, which is historically the wettest month of the year. During the 1976-77 drought, the worst drought on record for the City, rainfall totals, by comparison, measured 8.6 inches at the end of January 1977. The extraordinary lack of rain this year is being attributed to persistent high atmospheric pressure centered over the eastern Pacific Ocean, which has forced weather systems far to the north and shows no signs of abating in the near future.

In the Newell Creek watershed, only **2.26** inches of rain has been recorded this year, and, like the City, there has been no measureable rainfall so far in January. Normal rainfall for this time of year in the watershed is about 24 inches. In 1977, the Ben Lomond area had received about 10 inches of rain by the end of January.

The short-term weather outlook indicates a chance of rain later this week, the first possibility of rain since December 7, 2013. Long-term, the National Weather Service Climate Prediction Center is showing the probability of below normal precipitation and above normal temperatures across California in its winter outlook over next three months.

Figure 1 shows monthly rainfall amounts in Santa Cruz for the year to date through January 24, 2014.

Stream Flow

Like many other rivers across California, stream flow in the San Lorenzo River is at a record low level for this time of year. The flow in the river measured at the U.S. geological Survey gauge in Felton is currently running **12 cubic feet per second** (cfs). The previous record low, 13 cfs, was set in 1991 in what was then the 5th year of a six-year drought. The mean monthly flow for January is **351** cfs, meaning that the river currently is running at a tiny fraction of normal, about four percent. It is even lower than would be expected late in summer or early fall. Without any rainfall to help replenish the watershed, flow in the San Lorenzo River is expected to continue dropping gradually over time.

Figure 2 shows mean monthly stream flows in the San Lorenzo River for the season to date, along with the long-term average values, and the 2013 water year for comparison. Figure 3 shows mean monthly stream flow this year compared with flows recorded during the 1976/77 drought. The level of flow in the river now is an astonishing 37 to 43 percent lower than it was in that critically dry period.

Reservoir Storage

Loch Lomond Reservoir presently stands at about **65 percent of capacity**, holding **1.85 billion gallons** of its 2.83 billion gallon capacity. Although this percent of storage is significantly better than many large reservoirs statewide, its capacity is relatively small. Even when full, the reservoir holds the equivalent of less than one year's supply. Right now, the water level in the reservoir is down nearly 20 feet below the spillway elevation.

While Stage 1 water restrictions instituted last May and extended this October helped to reduce system water demand and to preserve reservoir storage for the possibility (now a probability) of

a third dry year, the lack of rain this past fall meant that plant operators had to rely more on its reserves than expected in the months of October and November 2013. Since then, operators have been able to meet daily demands without having to draw further on the reservoir. However, with extended dry conditions, warmer than average weather, extremely low river flows, we are now at the point once again of having to tap Loch Lomond to meet the community's wintertime daily water needs. It is not unusual for the City water system to need lake water in the winter season. What is extraordinary is the reason. In most years, the reservoir serves as a backup source of supply when winter storms make the river and coast sources untreatable at the Graham Hill Water Treatment Plant due to high turbidity. This year, it is simply that the yield from the City's flowing sources is close to a level that cannot sustain even seasonally low winter water needs, which are currently averaging about **7.8 million gallons per day** (mgd).

One major difference between this time in 1977 and 2014 is that reservoir storage today is in comparatively better shape. In 1977, reservoir storage was at only **35 percent** of capacity at the end of January, heading into the second year of that drought.

Water Year Classification

The Water Department uses a water year classification system to characterize the City's overall annual water supply condition. Under this classification system, the water year beginning October 1 is designated as one of four types – Wet, Normal, Dry, or Critically Dry - depending on the total annual discharge of the San Lorenzo River, measured at the stream gage in Felton, and expressed in acre-feet[1].

Water Year 2014 is so far shaping up to be a **Critically Dry** year. Cumulative discharge for the water year to date measures only **3,089** acre-feet , less than one-tenth of the 33,000 acre-foot long-term average discharge for this time of year. Annual discharge from the San Lorenzo River must reach a threshold of **29,000** acre-feet for the year to be reclassified as **Dry** and **49,000** acre-feet to be upgraded to **Normal**.

Figure 4 shows the cumulative discharge from October 1, 2013 through January 24, 2014, along with the long term average, and two prior years for comparison. It illustrates how local runoff patterns can differ from year to year. In water year 2012, the bulk of seasonal runoff occurred early in late November and December, while in water year 2011, runoff did not develop until

[1] Discharge refers to the accumulated volume of runoff. One acre-foot of water is equal to 325,851 gallons. 3.07 acre-feet equals one million gallons.

Annual discharge of the San Lorenzo River is regarded as the best individual benchmark of the City's water supply condition for two reasons. First, the river is the city's single largest source of drinking water, providing about half the normal annual supply. Second, about three quarters of all the water used by city water customers is obtained from a flowing source of supply. In general, the higher the volume discharged from the San Lorenzo River means that:

- the local watersheds in the Santa Cruz mountains are more saturated;
- the stream sources will flow at higher levels later into the dry season; and
- there is more water available from all surface water sources, including the reservoir, to meet system demands over the course of the year.

The converse is also generally true; the lower the volume discharged by the San Lorenzo River means less water is available from all surface sources to meet system demands.

much later in the season. How this year will ultimately develop cannot be predicted. What is known is that it typically takes about 12 inches of rain in the watershed before soils become saturated and significant runoff develops. The two inches of rain that fell in the watershed earlier in the year have long since been lost to evaporation, so the preconditions for runoff to occur this year are basically the same as if there had been no rainfall at all. Each additional day without rain makes it that much harder to catch up.

Figure 5 shows the tiny amount of discharge measured this season compared to the historical record going back to 1921. While a not a complete year, it is another visualization of how unprecedented and scarce the water supply could be if conditions do not improve in the second half of the wet season.

Initial Estimate of Water Supply Availability

At this time, the water supply outlook for 2014 is dire. Three months have gone by with virtually no rain. Unless there is a dramatic change in weather in the second half of the season, the City potentially faces the very real threat of a devastating, critical water shortage emergency that is unprecedented in the City's history.

Experience tells that winter weather can change suddenly, and with a few major storms, the outlook can improve quickly. There have been years when winter got off to a late start, but came on strong later in the season. But the opposite has also occurred when the second half of the winter season was almost completely dry, like last year.

The situation underscores how vulnerable the City is to water shortage in extended and or critically dry years when available supply runs low. Unfortunately, there is very little that the City can to in the short run to increase its supply. The Water Department is in the process of preparing a petition, in coordination with state regulatory agencies, to potentially cut instream fish releases temporarily below Loch Lomond Reservoir, and to reduce the amount of water the City has been bypassing at its diversion facilities. Water Production staff is looking at the possibility of changing its standard for treating turbid water to help preserve storage. These measures would all help but only to a small degree. Ultimately, the only option in lieu of a supplemental water supply during times of shortage is to put in place measures to curtail water use.

One key decision concerning supply that will need to be made, assuming conditions remain dry, will be how much reservoir water should be made available for use in 2014 and how much should be banked as a safeguard against the possibility of another dry year. The considerations and guidance to help inform that decision are contained in Chapter 2 of the City's Water Shortage Contingency Plan.

The Stage 1 Water Shortage Alert adopted in May 2013 and extended last October still remains in force. Normally, any recommendation to change the level of shortage would be brought forward to City Council in the April timeframe. Doing so beforehand would be premature, for two reasons. One, there are too many uncertainties trying to project available supplies for the season ahead any earlier than March. Two, the measures to curtail water use are geared around

reducing peak season demands. Nevertheless, given the extraordinary circumstances, and to honor the Governor's emergency proclamation, staff will be recommending that City Council in the meantime adopt a resolution that echoes the Governor's call for a voluntary 20 percent reduction in water use by all City water customers.

The Water Department will continue to monitor water supply conditions and reevaluate the water supply outlook at the end of February, and again in late March. At that time, we should have enough information on which to make a monthly projection of the City's water supply availability and evaluate the adequacy of this supply to meet expected water demands within the City's water service area for the rest of 2014.

At the same time, staff is working hard on a variety of related communications and internal operating actions, which include the following:

- Launching a web page dedicated to ongoing drought information,
- Implementing a major advertising campaign,
- Creating signage for key gateway locations throughout the City service, and
- Making modifications to the City's utility billing system, billing frequency, and billing format in order to implement water rationing, should it be needed in 2014.

Finally it is worth mentioning that the City of Santa Cruz has a Local Hazard Mitigation Plan, updated in 2013, that has passed its initial review by the California Office of Emergency Services. The LHMP Update is currently under final review by FEMA. Once the plan is approved by FEMA and adopted by the City Council, the City becomes eligible to compete for funds through FEMA's Pre-Disaster Mitigation (PDM) Grant Program. These funds are awarded annually on a competitive basis for hazard mitigation planning as well as for the implementation of mitigation projects prior to a disaster event.

Attachments:

Figure 1. Monthly Rainfall, City of Santa Cruz
Figure 2. Mean Monthly Stream Flow, San Lorenzo River at Big Trees
Figure 3. Mean Monthly Stream Flow, WY 2014 Compared to WYs 1976 and 1977
Figure 4. Cumulative Runoff and Water Year Classification
Figure 5. Water Year Classification System
Figure 6. U.S. Drought Monitor, California

Figure 1. Monthly Rainfall, City of Santa Cruz (inches)

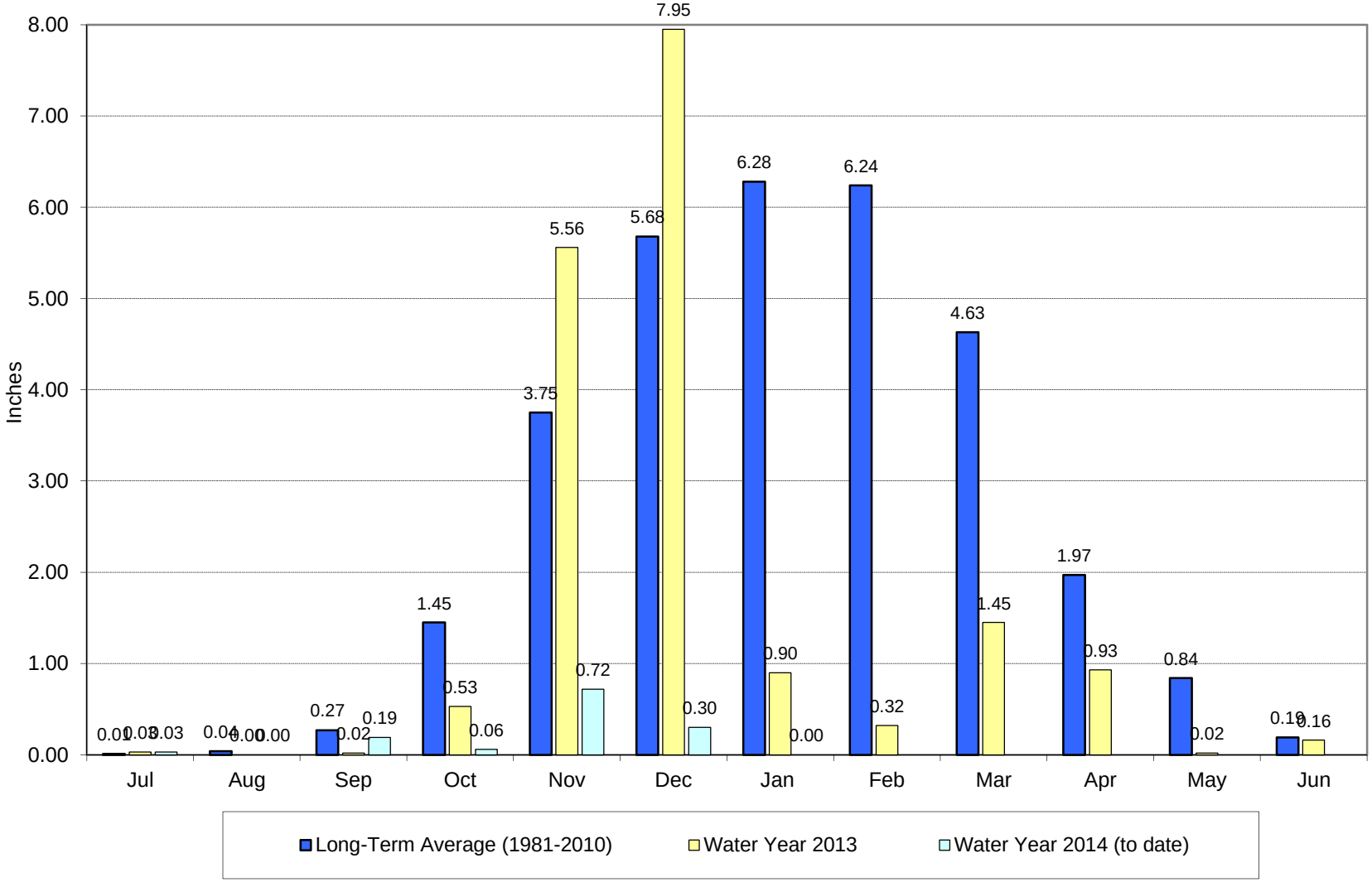


Figure 2. Mean Monthly Streamflow, San Lorenzo River at Big Trees, (cubic feet per second)

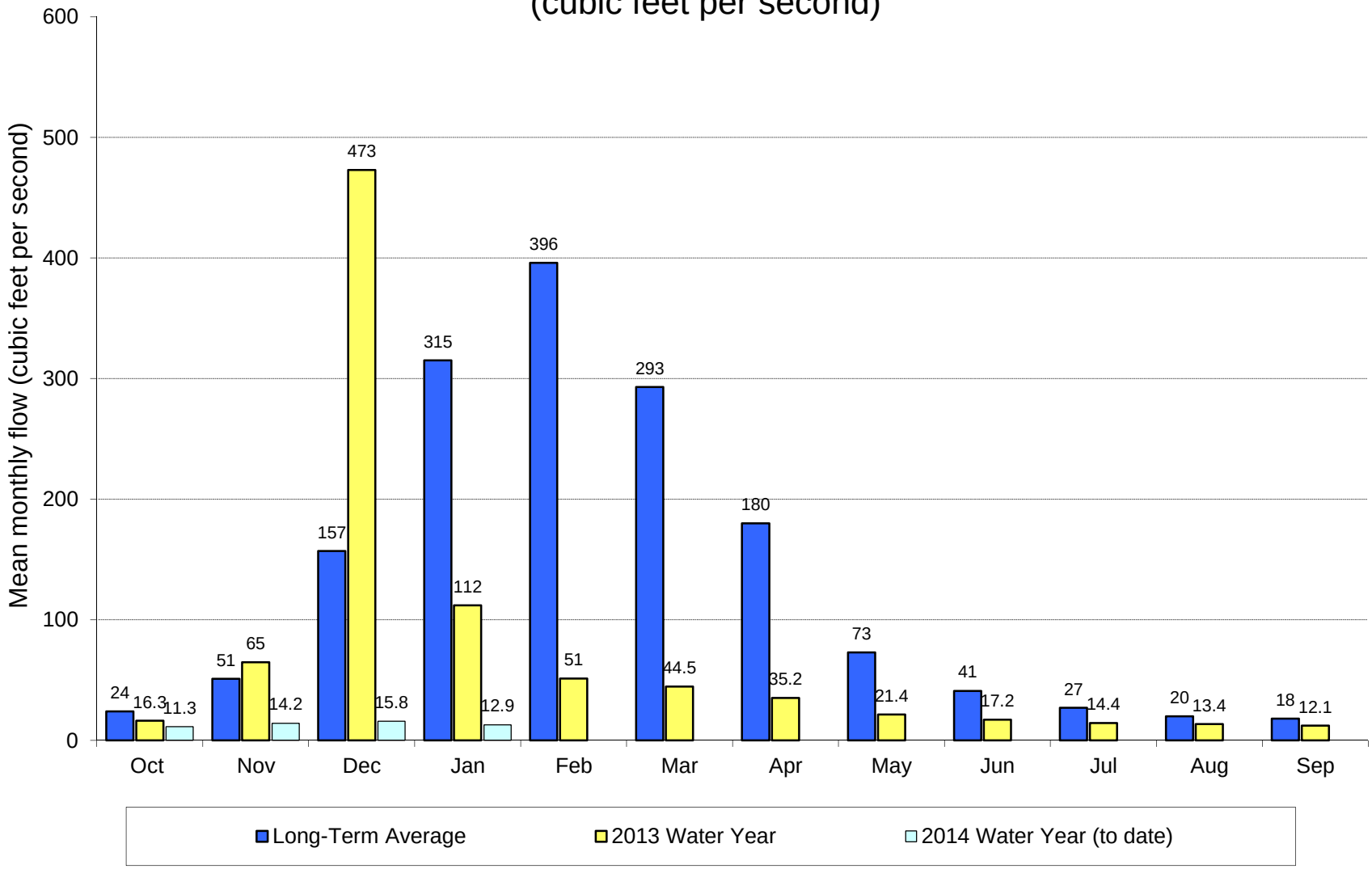


Figure 3. Mean Monthly Streamflow,
WY 2014 Compared to WYs 1976 and 1977
(cubic feet per second)

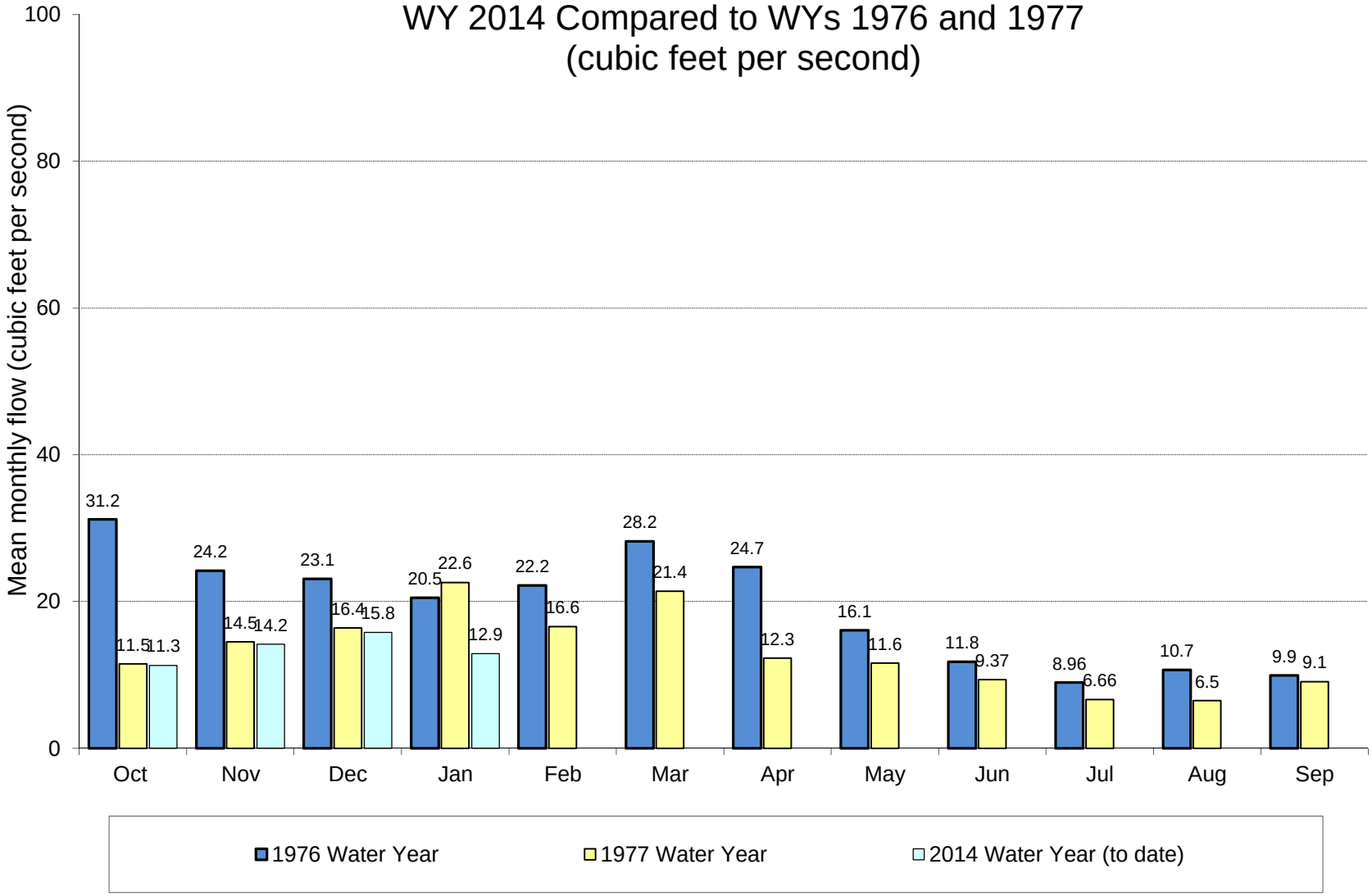


Figure 4. Cumulative Runoff and Water Year Classification, 1/24/14 (acre-feet)

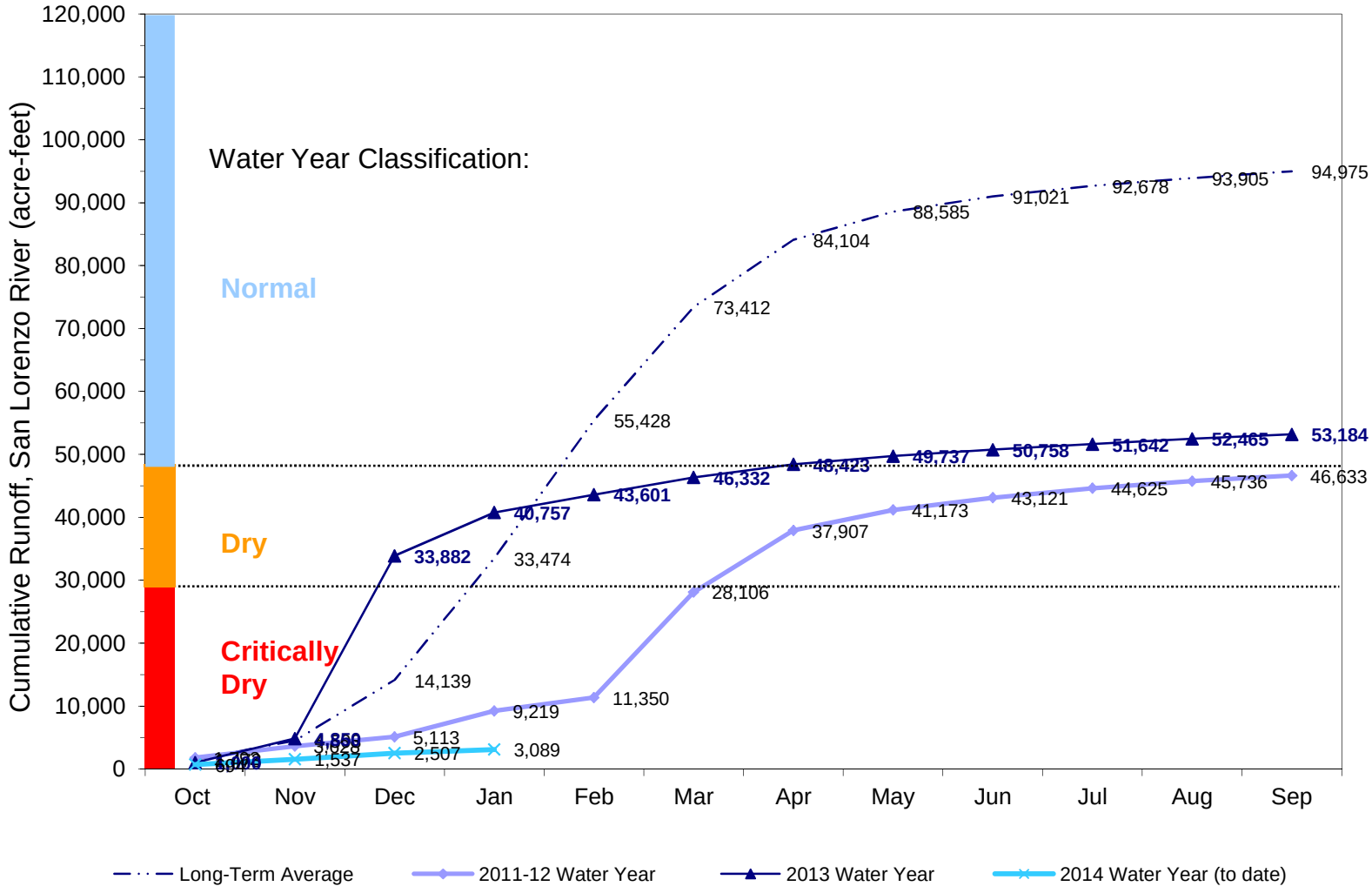
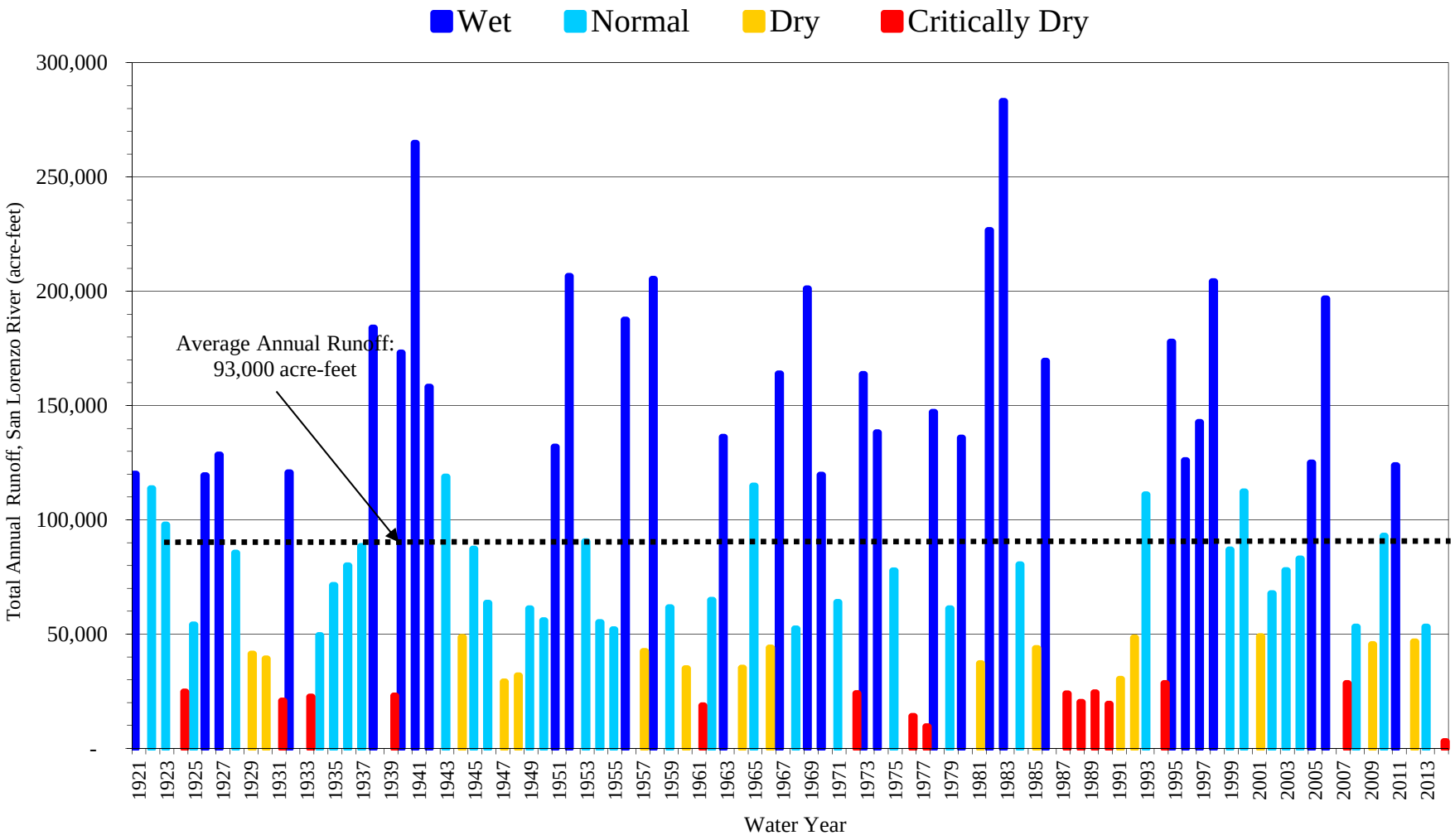
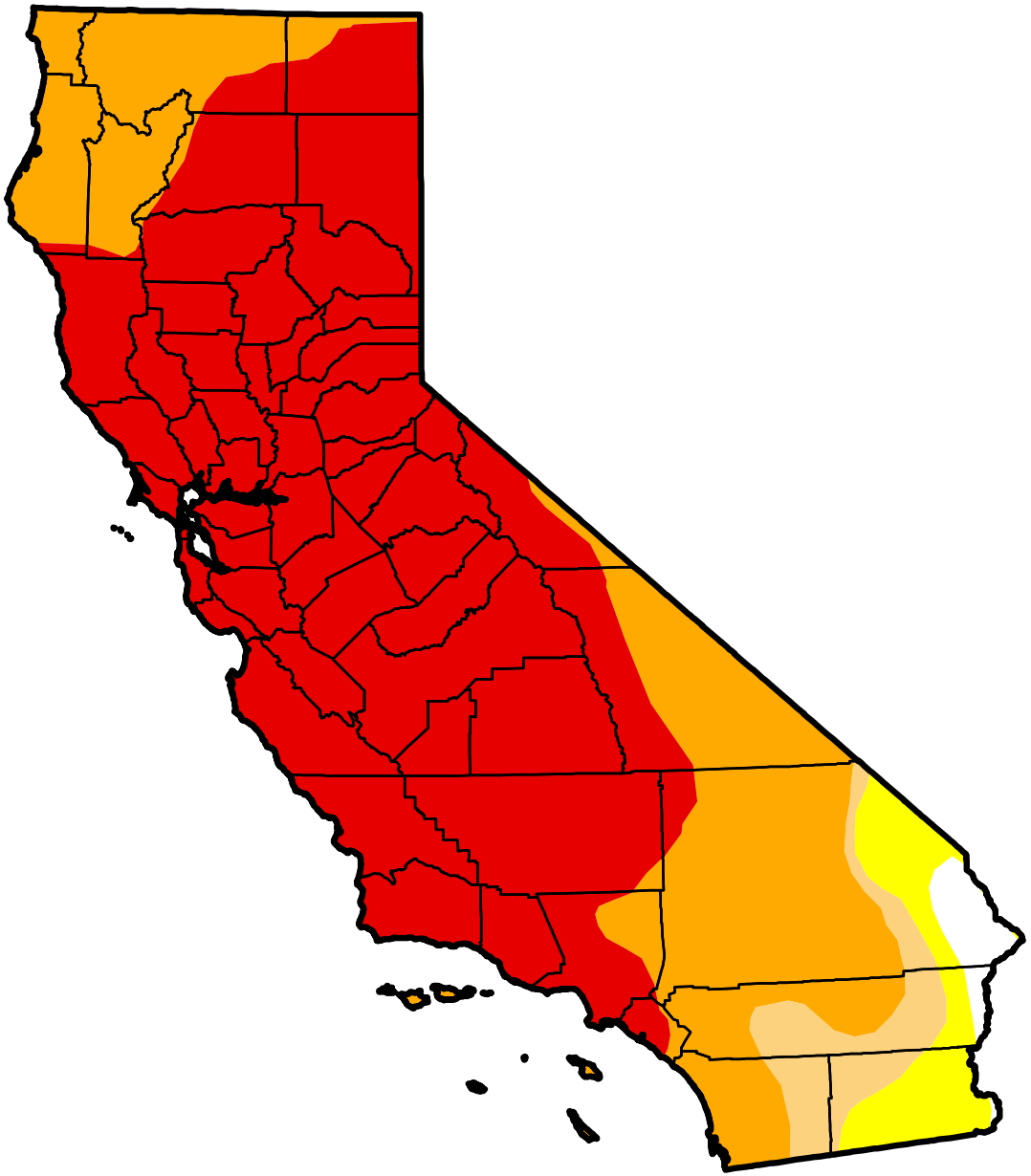


Figure 5. Water Year Classification System



U.S. Drought Monitor

California



77

January 21, 2014

(Released Thursday, Jan. 23, 2014)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.43	98.57	94.18	89.91	62.71	0.00
Last Week *1/14/2014*	1.43	98.57	94.18	89.91	62.71	0.00
3 Months Ago *10/22/2013*	2.66	97.34	95.98	84.12	11.36	0.00
Start of Calendar Year *12/31/2013*	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year	-	-	-	-	-	-
One Year Ago *1/22/2013*	34.20	65.80	53.58	21.57	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

National Drought Mitigation Center

http://droughtmonitor.unl.edu/

WATER COMMISSION REPORT

DATE: December 27, 2014

TO: Water Commission

FROM: Watershed Compliance Manager

SUBJECT: Anadromous Salmonid Habitat Conservation Plan (HCP) Status

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RECOMMENDATION: That the Commission receive information and provide comments regarding the HCP.

BACKGROUND: In the early 1990s, several species known to be or have been present in the City's water sources were listed by State and/or the Federal Agencies under the State and Federal Endangered Species Acts. In 1996 the City of Santa Cruz Water Department engaged the regulatory agencies (NOAA Fisheries and the California Department of Fish and Wildlife) in discussions about compliance for its drinking water operations with the Endangered Species Act. In 2002 the Department formally initiated the development of a permit (an ESA Section 10a1b permit, aka Habitat Conservation Plan"HCP"]). Section 10 of the Federal Endangered Species Act (FESA), as originally enacted by Congress in 1973, authorized permits for the "taking" (i.e. harm, harass, pursue, hunt, injure, etc.) of listed species by non-federal entities. The HCP program (designed by the US Department of the Interior in consultation with Congress) provides authorization to the City to continue activities in a manner that benefits both the water customers and the species. The Department's work to comply, while onerous, lengthy and complex, will provide long-term certainty for both the City's water system and related planning, within the context of all applicable legal requirements.

Since 2002, substantial study has gone into understanding

1. Effects, if any, of the City's water system on the species in question
2. Effects, if any, of other factors on these species that are outside of the City's control (such as streambed sedimentation from erosion, poor ocean conditions, channel simplification in streams outside of the City limits, etc.)
3. Opportunities and constraints for various strategies to improve conditions for these species.

Several issues have proven to be significant obstacles in completing this process. First, these studies involved population, hydrologic, water quality, habitat/flow relationship dynamics and related matters – which had not been fully examined with regard to the

streams that the City's water system operates in. These studies are generally seasonally dependent and – in some cases – could not be performed due to the lack of streamflow during the last several years. Several years of data from various water year types was required for calibration of the models involved in this project, and only in the recent past became possible.

Second, very few HCPs have been completed for activities such as those which the City is seeking take authorization for, and even fewer have been completed by the staff at the various agencies responsible for this HCP. In other words, no model exists for our exact permit.

And finally, there is hesitancy of both City and agency staff to sign on to a long term permit (typically 30-50 years) with such monumental ramifications. Making sure the data is correct is critical.

Current Status

System Operational Changes: Over the past few months staff has been implementing various operational changes (aka conservation strategy elements to leave varying amounts of water in the streams at different times of the year) and has been monitoring the streams to better understand 1) the practicability of implementing a given strategy from the perspective of meeting water demands and 2) to understand the relative effects on the species. This monitoring has included analysis of the following:

-Lagoon water quality and breach dynamics
-Streamflow
-Low flow hydrologic connectivity/passage
-Salmonid population status
-Production trends by source
-North Coast agricultural water use
-Raw water blend quality
-Treatment-related sludge discharge dynamics

Impacts of the trial implementation of the conservation strategy (i.e. "short term flows") is of paramount interest – especially in light of the extreme and unprecedented hydrologic conditions we are currently experiencing. A summary of several impacts, and observations of implementing various operational changes, follows.

1. A greater drawdown of Loch Lomond than would have otherwise been experienced during the typical dry season. (That said, end of dry season use projections were very close to what was experienced.)
2. Wet season short term flows are typically of a higher magnitude because they need to support adult migration, spawning and related life stages. However we have not received sufficient runoff to support these life stages and are still providing lower flows (similar in magnitude as those released during the dry season) to support rearing of these fish. Given the extremely dry conditions this

winter, we are currently having difficulty maintaining even these lower flows.

3. Currently, North Coast creeks are flowing at levels typically seen in the fall of critically dry water years and the San Lorenzo River is flowing at levels below those ever observed. While we have agreement from the agencies to reduce rearing flows in Liddell, Majors and Newell Creeks, the San Lorenzo River at Tait Street bypass requirement is currently requiring us to withdraw from storage on an increasingly routine basis. It is anticipated that we will be required to request a reduction in the San Lorenzo River bypass in the very near term if we are to continue to preserve storage in Loch Lomond for the (typically) drier months.
4. Laguna Creek does not have sufficient flow to provide for any level of diversion and also meet our current flow goals downstream. Laguna Creek is one of the primary conservation priorities of the agencies – given its potential to support Coho salmon. Therefore, it is anticipated that reduction of the flow goals on Laguna Creek will likely be the most difficult to achieve.

Mitigation: The City is not required to return the streams of interest to a state that existed prior to the City's existence. However, we are required to "avoid and minimize [our] effects on special status species as much as is practicable and compensate indirectly for remaining affects that can't be offset in that manner." In cases where avoidance and minimization measures (through flow improvements) are insufficient to entirely avoid potential effects, the City will be required to implement a mitigation program. The mitigation program is designed to address key limiting factors in watersheds where City activities take place. The mitigation program will prioritize measures that address the life-stage and/or location directly affected by a specific activity. In some cases, however, direct on-site measures may be unavailable or of limited benefit to the species. As such, alternative measures will be pursued. These measures will be pursued through a mitigation program (currently in a conceptual stage) whereby the City augments regional conservation measures through funding and/or technical support.

Water Supply Modeling: The City has been modeling supply reliability (i.e. "Confluence Modeling") of various regulatory agency-requested instream flow scenarios in support of developing a final agreement. The Confluence Model translates an instream flow scenario (how much water must be left in each stream throughout a given year) to ability to meet customer demands. This information will help inform a "Practicability Analysis" – which takes a broader look at the City water system's ability to provide instream flows for fish while also preserving system reliability. Factors which come into consideration in this analysis include supply reliability, water rights, ability to treat, relative cost/benefit, biological effects.

In the context wanting to complete the final conservation strategy in the most efficient manner possible, the Department is considering additions to and reorganization of the HCP team. Currently, the Department is planning to add negotiations, meeting facilitation and technical support to the team in anticipation of reinitiating of negotiations in the spring of 2014.

Next Steps

Prior to reinitiating the overall negotiations process, several technical meetings are being scheduled with the regulatory agencies in February and March. Staff will review recent monitoring and the short term flow implementation (described above), as this data may refine understanding of conservation priorities which are a key element of the final strategy. In the meantime, the Department will complete the practicability and effects analyses, finalize the HCP team structure and refine their respective roles and responsibilities, as well as schedule negotiations meetings with the regulatory agencies.

Provided that the practicability analysis indicates that the Department can agree to a conservation strategy which meets the regulatory obligations of the ESA, it is anticipated that long-term instream flow and offsite mitigation program funding obligations would be finalized by the fall of 2014. While there is work that remains after this point (including environmental review, permit applications, etc.), the most difficult part of the permit process will have been resolved.

Attachments:

1. Habitat Conservation Plan Update, Presentation to Santa Cruz City Council, April 5, 2011
2. US Fish and Wildlife Service Fact Sheet, Habitat Conservation Plans under the Endangered Species Act

U.S. Fish & Wildlife Service

Habitat Conservation Plans Under the Endangered Species Act

Introduction

Why should we save endangered species? Congress answered this question in the introduction to the Endangered Species Act of 1973 (Act), recognizing that endangered and threatened species of wildlife and plants "are of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people."

After this finding, Congress said that the purposes of the Act are ". . . to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved [and] to provide a program for the conservation of such . . . species. . . ." Habitat Conservation Plans (HCPs) under section 10(a)(1)(B) of the Act provide for partnerships with non-Federal parties to conserve the ecosystems upon which listed species depend, ultimately contributing to their recovery.

John Cleckler/USFWS

The endangered California tiger salamander is among the listed species included in the East Contra Costa County Habitat Conservation Plan.

What are HCPs?

HCPs are planning documents required as part of an application for an incidental take permit. They describe the anticipated effects of the proposed taking; how those impacts will be minimized, or mitigated; and how the HCP is to be funded.

HCPs can apply to both listed and nonlisted species, including those that are candidates or have been proposed for listing. Conserving species before they are in danger of extinction or are likely to become so can also provide early benefits and prevent the need for listing.

Who needs an incidental take permit?

Anyone whose otherwise-lawful activities will result in the "incidental take" of a listed wildlife species needs a permit. The U.S. Fish and Wildlife Service (FWS) can help determine whether a proposed project or action is likely to result in "take" and whether an HCP is needed. FWS staff can also provide technical assistance to help design a project to avoid take. For example, the project could be designed with seasonal restrictions on construction to minimize disturbance to a species.

What is the benefit of an incidental take permit and habitat conservation plan to a private landowner?

The permit allows the permit-holder to legally proceed with an activity that would otherwise result in the unlawful take of a listed species. The permit-holder also has assurances from the FWS through the "No Surprises" regulation.

What is "take"?

The Act defines "take" as ". . . to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" includes significant habitat modification that actually kills or injures a listed species through impairing essential behavior such as breeding, feeding, or sheltering.

Section 9 of the Act prohibits the take of endangered and threatened species. The purpose of the incidental take permit is to exempt non-Federal permit-holders—such as States and private landowners— from the prohibitions of section 9, not to authorize the activities that result in take.

What do habitat conservation plans do?

In developing habitat conservation plans, people applying for incidental take permits describe measures designed to minimize and mitigate the effects of their actions— to ensure that species will be conserved and to contribute to their recovery.

Habitat conservation plans are required to meet the permit issuance criteria of section 10(a)(2)(B) of the Act:

- (i) taking will be incidental;
- (ii) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of the taking;

- (iii) the applicant will ensure that adequate funding for the plan will be provided;

- (iv) taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and

- (v) other measures, as required by the Secretary, will be met.

What needs to be in HCPs?

Section 10 of the Act and its implementing regulations define the contents of HCPs. They include:

- an assessment of impacts likely to result from the proposed taking of one or more federally listed species.

- measures that the permit applicant will undertake to monitor, minimize, and mitigate for such impacts, the funding available to implement such measures, and the procedures to deal with unforeseen or extraordinary circumstances.

- alternative actions to the taking that the applicant analyzed, and the reasons why the applicant did not adopt such alternatives.

- additional measures that the Fish and Wildlife Service may require.

HCPs are also required to comply with the Five Points Policy by including:

1. biological goals and objectives, which define the expected biological outcome for each species covered by the HCP;

2. adaptive management, which includes methods for addressing uncertainty and also monitoring and feedback to biological goals and objectives;

3. monitoring for compliance, effectiveness, and effects;

4. permit duration which is determined by the time-span of the project and designed to provide the time needed to achieve biological goals and address biological uncertainty; and

5. public participation according to the National Environmental Policy Act.

What are "No Surprises" assurances?

The FWS provides "No Surprises" assurances to non-Federal landowners through the section 10(a)(1)(B) process. Essentially, State and private landowners are assured that if "unforeseen circumstances" arise, the FWS will not require the commitment of additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources beyond the level otherwise agreed to in the HCP without the consent of the permit-holder. The government will honor these assurances as long as permit-holders are implementing the terms and conditions of the HCPs, permits, and other associated documents in good faith. In effect, the government and permit-holders pledge to honor their conservation commitments.

Are incidental take permits needed for listed plants?

There are no Federal prohibitions under the Act for the take of listed plants on non-Federal lands, unless taking those plants is in violation of State law. However, the FWS analyzes the effects of the permit on listed plant species because section 7 of the Act requires that issuing an incidental take permit may not jeopardize any listed species, including plants. In general, it is a good idea to include conservation measures for listed plant species in developing an HCP.

What is the process for getting an incidental take permit?

The applicant decides whether to seek an incidental take permit. While FWS staff members provide detailed guidance and technical assistance throughout the process, the applicant develops an HCP and applies for a permit. The components of a completed permit application are a standard application form, an HCP, an Implementation Agreement (if applicable), the application fee, and a draft National Environmental Policy Act (NEPA) analysis. A NEPA analysis may result in a categorical exclusion, an environmental assessment, or an environmental impact statement.

While processing the permit application, the FWS prepares the incidental take permit and a biological opinion under section 7 of the Act and finalizes the NEPA analysis documents. Consequently, incidental take permits have a number of associated documents.

How do we know if we have listed species on our project site?

For assistance, check with the appropriate State fish and wildlife agency, the nearest FWS field office, or the National Marine Fisheries Service (NMFS), for anadromous fish such as salmon.

What kinds of actions are considered mitigation?

Mitigation measures are actions that reduce or address potential adverse effects of a proposed activity on species included in an HCP. They should address specific conservation needs of the species and be manageable and enforceable. Mitigation measures may take many forms, including, but not limited to, payment into an established conservation fund or bank; preservation (via acquisition or conservation easement) of existing habitat; enhancement or restoration of degraded or a former habitat; establishment of buffer areas around existing habitats; modifications of land use practices, and restrictions on access. Which type of mitigation measure used for a specific HCP is determined on a case by case basis, and is based upon the needs of the species and type of impacts anticipated.

What is the legal commitment of a HCP?

Incidental take permits make binding the elements of HCPs. While incidental take permits have expiration dates, the identified mitigation may be in perpetuity. Violating the terms of an incidental take permit may constitute unlawful take under section 9 of the Act.

Who approves an HCP?

The FWS Regional Director decides whether to issue an incidental take permit, based on whether the HCP meets the criteria mentioned above. If the HCP addresses all of the requirements listed above, as well as those of other applicable laws, the FWS issues the permit.

What other laws besides the Endangered Species Act are involved?

In issuing incidental take permits, the FWS complies with the requirements of NEPA and all other statutes and regulations, including State and local environmental/planning laws.

Who is responsible for NEPA compliance during the HCP process?

The FWS is responsible for ensuring NEPA compliance during the HCP process. However, if the Service does not have sufficient staff resources, an applicant may, within certain limitations, prepare the draft NEPA

analysis. Doing so can benefit the applicant and the government by expediting the application process and permit issuance. In cases like this, the FWS provides guidance, reviews the document, and takes responsibility for its scope, adequacy, and content.

Does the public get to comment on our HCP? How do public comments affect our HCP?

The Act requires a 30-day period for public comments on applications for incidental take permits. In addition, because NEPA requires public comment on certain documents, the FWS operates the two comment periods concurrently. Generally, the comment period is 30 days for a Low Effect HCP, 60 days for an HCP that requires an environmental assessment, and 90 days for an HCP that requires an environmental impact statement. The FWS considers public comments in permit decisions.

What kind of monitoring is required for a HCP, and who performs it?

Three types of monitoring may be required: compliance, effectiveness, and effects. In general, the permit-holder is responsible for ensuring that all the required monitoring occurs. The FWS reviews the monitoring reports and coordinates with the permit-holder if any action is needed.

Does the Fish and Wildlife Service try to accommodate the needs of HCP participants who are not professionally involved in the issues?

Because applicants develop HCPs, the actions are considered private and, therefore, not subject to public participation or review until the FWS receives an official application. The FWS is committed to working with people applying for permits and providing technical assistance throughout the process to accommodate their needs.

However, the FWS does encourage applicants to involve a range of parties, a practice that is especially valuable for complex and controversial projects. Applicants for most large-scale, regional HCPs choose to provide extensive opportunities for public involvement during the planning process. Issuing permits is, however, a Federal action that is subject to public review and comment. There is time for such review during the period when the FWS reviews the information. In addition, the FWS solicits public involvement and review, as well as requests for additional information during the scoping process when an EIS is required.

Are independent scientists involved in developing an HCP?

The views of independent scientists are important in developing mitigation and minimization measures in nearly all HCPs. In many cases, applicants contact experts who are directly involved in discussions on the adequacy of possible mitigation and minimization measures. In other cases, the FWS incorporates the views of independent scientists indirectly through their participation in listing documents, recovery plans, and conservation agreements that applicants reference in developing their HCPs.

How does the FWS ensure that species are adequately protected in HCPs?

The FWS has strengthened the HCP process by incorporating adaptive management when there are species for which additional scientific information may be useful during the implementation of the HCP. These provisions allow FWS and NMFS to work with landowners to reach agreement on changes in mitigation strategies within the HCP area, if new information about the species indicates this is needed. During the development of HCPs, the FWS and NMFS discuss any changes in strategy with landowners, so that they are aware of any uncertainty in management strategies and have concurred with the adaptive approaches outlined.

What will the FWS do in the event of unforeseen circumstances that may jeopardize the species?

The FWS will use its authority to manage any unforeseen circumstances that may arise to ensure that species are not jeopardized as a result of approved HCPs. In the rare event that jeopardy to the species cannot be avoided, the FWS may be required to revoke the permit.

How can I obtain information on numbers and types of HCPs?

Our national HCP database displaying basic statistics on HCPs is available online from our Habitat Conservation Planning page at http://ecos.fws.gov/conserv_plans/servlet/gov.doi.hcp.servlets.PlanReportSelect?region=9&type=HCP.

U. S. Fish and Wildlife Service
Endangered Species Program
4401 N. Fairfax Drive, Room 420
Arlington, VA 22203
703-358-2171
http://www.fws.gov/endangered/what-we-do/hcp-overview.html

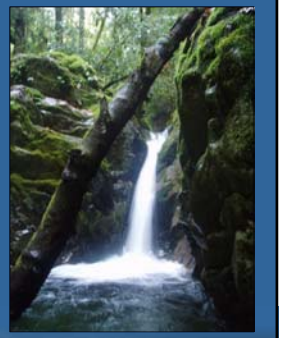
April 2011

HABITAT CONSERVATION PLAN UPDATE

Santa Cruz City Council
April 5, 2011

I Introductions

- Chris Berry – Water Resources Manager
- Sean Skaggs – Legal Counsel
- Jeff Hagar – Fisheries Biologist
- Gary Fiske – System Modeler
- Travis Baggett – Hydrologist



How did this all begin?

- In 2002 the City voluntarily began the process
- Water planning process required certainty regarding existing supplies
- Intended to be included in the Integrated Water Planning process to define how much supply the City could count on into the future

In short, what is proposed?

- Proposed flows categorized in 3 tiers
- Goal is improve streamflows over current conditions
- When streamflows are not improved, we are proposing to pay for off-site mitigation
- While certainly related, this presentation is not focusing on adding supplemental supply

II Defining the HCP Process

The habitat conservation planning permit program was designed to provide authorization to conduct activities that would otherwise be prohibited by Section 9 of the ESA.

Defining the HCP Process (continued)

- Section 9 of the ESA prohibits the "take" of endangered animal species. Specifically, section 9 prohibits significant habitat modification or degradation that actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.
- Under the ESA, take must be avoided or permitted under section 10 of the ESA.

Defining the HCP Process (continued)

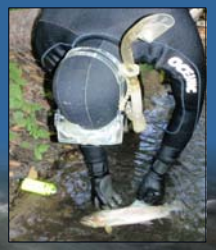
- A Habitat Conservation Plan (HCP) is a section 10 permit application. An HCP must meet specific permit issuance criteria in order to receive a permit:
- Important Permit Issuance Criteria
  - the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
  - the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild

Defining the HCP Process (continued)

- The stringent requirements to minimize and mitigate to the maximum extent practicable (and fully mitigate) and to avoid reducing the likelihood of survival and recovery of the species can result in significant costs to HCP/section 2081 permittees.
- For the City of Santa Cruz, an HCP/section 2081permit for anadromous fish will have a significant effect on available water supply.

Defining the HCP Process (continued)

- Violations of Section 9 of the ESA can be enjoined and/or enforced through civil and criminal penalties:
  - Request for injunctive relief by the Attorney General
  - Request for injunctive relief by citizen suit
  - Criminal and Civil Penalties brought by the United States (misdemeanor statute)



Options Moving Forward

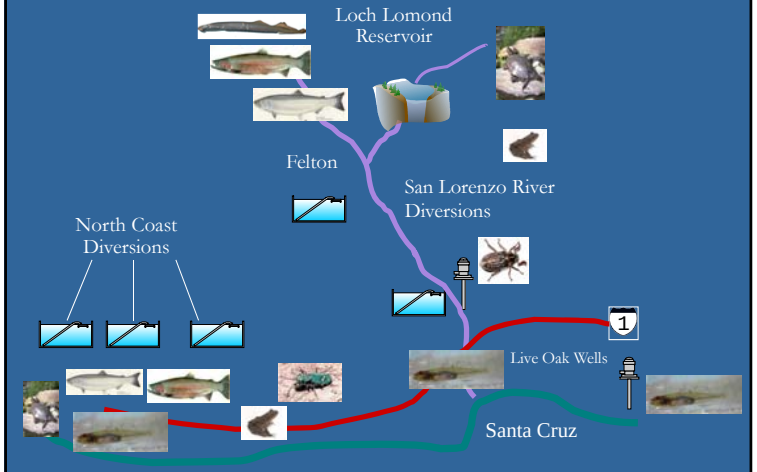
- Avoid take by ceasing diversions
- Contest applicability of the take prohibition/defend against enforcement actions and injunction actions
- Obtain Take Permit by completing HCP

III Background - ESA Section 10 Permit

What are we seeking a permit for?

Incidental take of anadromous salmonids and other species which may be taken while undertaking otherwise lawful activities such as; water diversion, sediment & vegetation management, etc.

SCWD Water System and Special Status Species

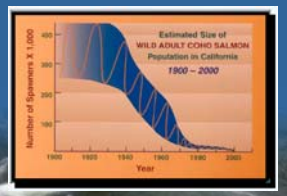


What have we done to date?

- Agency consultations
- Science
  - Literature reviews
  - Public process
  - New data collection
- Permitting process
  - Existing conditions
  - Effects analysis
  - Limiting factors
  - Conservation strategy
  - Water supply planning

Key Questions to be answered:

- What is current state of local anadromous salmonid populations and what is limiting them?
- City's operations' effects on them?
- What are the overall conservation priorities?
- Other than improved instream flow what else will help?
- Impact policies will have on the city's ability to serve customer demand?

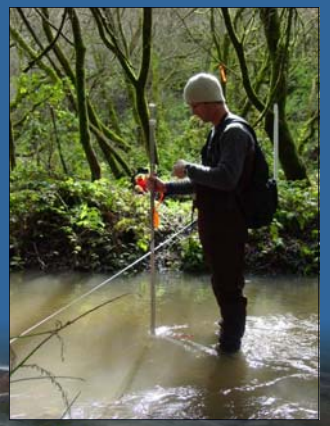


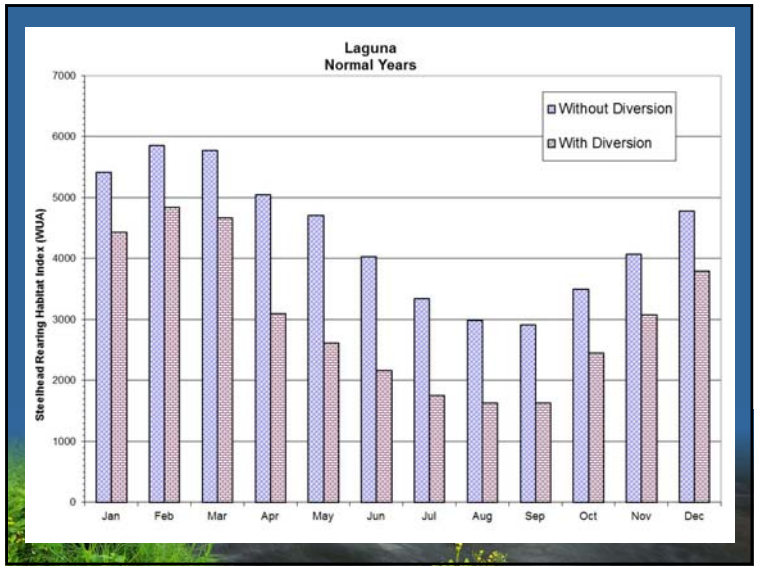
Key Questions to be answered:

- How to best achieve conservation priorities with limited resources?
- What resources are necessary to optimize conditions?
- What if we are unable to provide enough flow?

IV Approach to Assessing Impacts on Habitat

- Flow = Habitat
- How do diversions change habitat for steelhead and coho salmon?
- Habitat model





Flow Bypass to Minimize Habitat Impacts

Tier I

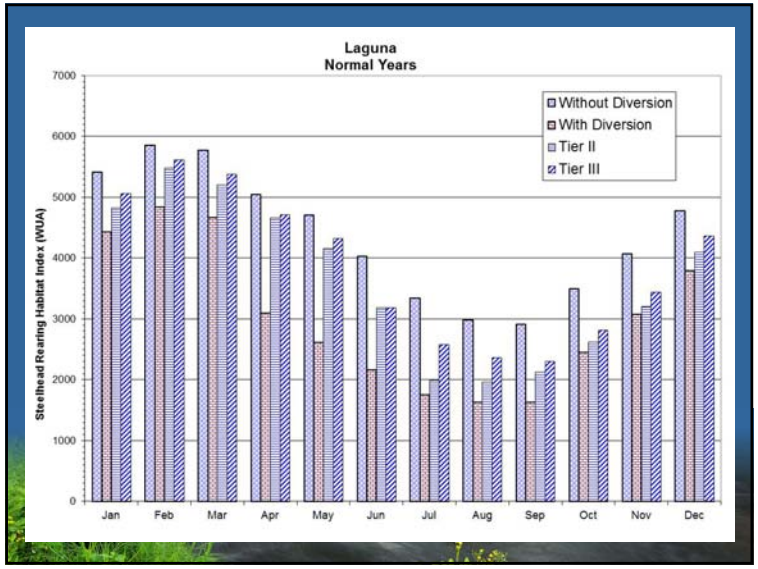
- Maintain existing habitat levels (= existing diversions)
- Floor to ensure no further degradation in habitat

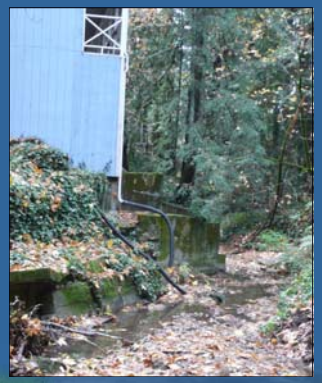
Tier II

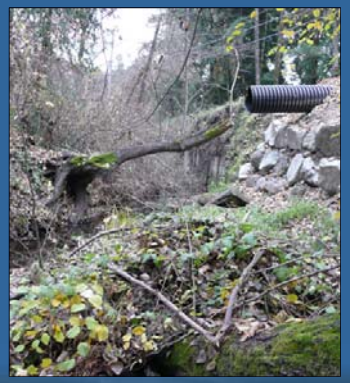
- Provide better than existing habitat in North Coast streams and San Lorenzo Lagoon (with priority to Laguna Creek and San Lorenzo Lagoon)

Tier III

- Provide 80% of optimum habitat conditions in most areas







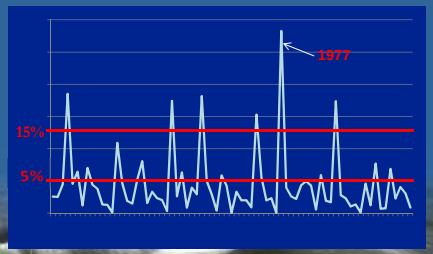
V Water System Impacts

Key Assumption Changes from IWP

- Updated daily flows
- Water demand forecast. Range developed for upcoming UWMP update
  - IWP:
    - From 4.6 (2010) to 5.3 (2030) billion gal/year
  - Current:
    - Low: 4.0 BGY by 2030
    - High: 4.5 BGY by 2030
- Reduced Beltz groundwater availability
- Other refinements

Key Indicators of Water Supply Reliability

- Expected drought-year (1977) peak-season shortage
- Fraction of hydrologic years with peak-season shortage > 5%
- Fraction of hydrologic years with peak-season shortage > 15%



Tier 2 System Impacts: No New Supply

Near-term (2010)

- 1977 peak-season shortage: up to 43%
- Peak-season shortage > 5%: up to 12 years out of 100
- Peak-season shortage > 15%: up to 10 years out of 100

2030

- 1977 peak-season shortage: up to 50%
- Peak-season shortage > 5%: up to 78 years out of 100
- Peak-season shortage > 15%: up to 28 years out of 100

Tier 2 System Impacts: 2.5 mgd Desal

Near-term (2015)

- 1977 peak-season shortage: up to 23%
- Peak-season shortage > 5%: up to 10 years out of 100
- Peak-season shortage > 15%: up to 3 years out of 100

2030

- 1977 peak-season shortage: up to 28%
- Peak-season shortage > 5%: up to 25 years out of 100
- Peak-season shortage > 15%: up to 8 years out of 100

Tier 3 System Impacts: 2.5 mgd Desal

Near-term (2015)

- 1977 peak-season shortage: up to 54%
- Peak-season shortage > 5%: up to 46 years out of 100
- Peak-season shortage > 15%: up to 18 years out of 100

2030

- 1977 peak-season shortage: up to 59%
- Peak-season shortage > 5%: up to 77 years out of 100
- Peak-season shortage > 15%: up to 32 years out of 100

VI. What is Being Proposed as a Conservation Strategy

- The Conservation Strategy is based on providing flows that will support the species within the practicability constraints of the City's water supply.
- The principal goal of the proposed flows is to minimize the potential effects of City activities on the species.
- Residual effects that could not be minimized would be offset through a mitigation fund that could be directed at species conservation actions.

What is Being Proposed as a Conservation Strategy (continued)

- The Conservation Strategy has a near-term and a long-term component.
- In the near-term (prior to developing supplemental supply), the goal of the Conservation Strategy is to provide Tier 2 flows as often as practicable. Under rare circumstances, it may be necessary to resort to Tier 1 flows in the near-term phase.
- In the long-term, the goal of the Conservation Strategy is to provide Tier 3 flows as often as practicable, with Tier 2 being the proposed fallback flow regime in those years when Tier 3 is not practicable. Tier 3 flows assume that the City has developed supplemental water supplies, such as desalination. Under some circumstances, it may be necessary to resort to Tier 1 flows during the long-term phase.

What is Being Proposed as a Conservation Strategy (continued)

The amount of mitigation funding provided is dependent on the flow set achieved in any given year, as follows:

Tier 1 - $500,000

Tier 2 - $250,000

Tier 3 - No off-site mitigation funding

Next Steps

- Propose/negotiate Conservation Strategy
- Develop Effects Analysis for Conservation Strategy
- Complete remaining sections of HCP
- Submit administrative draft HCP & initiate public review process

VII Options Moving Forward

- Avoid take by ceasing diversions
- Contest applicability of the take prohibition/defend against enforcement actions and injunction actions
- Obtain Take Permit by completing HCP

Recommendation

That the City Council authorize

negotiations with federal regulators

for a permit to ensure compliance with the Endangered Species Act.

WATER DEPARTMENT
MEMORANDUM

DATE: January 29, 2014

TO: Water Commission

FROM: Toby Goddard, Administrative Services manager

SUBJECT: Water Conservation Master Plan

RECOMMENDATION: That the Water Commission: 1) receive an update on the Water Conservation Master Plan, 2) provide input on additional information needed to help select a preferred water conservation program at a future meeting, and 3) provide input on the process for completing the plan.

BACKGROUND: At its October 7, 2013 meeting, the Water Commission received a progress report addressing the estimated water savings attributable to modern plumbing fixture and appliance codes and standards.

Modeling results produced by the project consultant, Maddaus Water Management, Inc., showed cumulative water savings from codes and standards of 242 million gallons per year in 2030. The water savings from codes and standards is expected to reduce total water demand from slightly above 4.0 billion gallons per year (bgy) to about 3.8 bgy in 2030, a reduction of about six percent.

The next two tasks in the work plan involve: 1) evaluating the water savings, benefits, and costs of individual water conservation measures, and 2) compiling measures into different program scenarios and evaluating the water savings, benefits, and costs of each program package. The results of this work are now complete and open for public review.

DISCUSSION: A total of 39 individual measures were evaluated using the consultant's end use model (Least Cost Planning Decision Support System Model or DSS Model). The measure description and detailed assumptions used in the DSS Model are provided in Appendix 1. Some of the key assumptions used in evaluating the water savings, benefits, and costs include the following:

- Applicable customer class
- Applicable end use
- Annual accounts (participation)
- Evaluation start and end year
- Program length, years

- Measure life, years
- Utility unit cost, $
- Customer unit cost, $
- Annual administration and marketing overhead

Three of the measures evaluated, Residential Washer Rebates, Residential SF Landscape Conversion/Turf removal and Residential MF/Commercial Landscape Conversion/Turf Removal are essentially identical but differ by the amount of utility and customer unit cost, program limitations, and participation level assumed. These are designated as with letters A/B with A corresponding to current incentive level and limitations, and B designating a more intensive program offering.

A summary of modeling results is provided in Table 1 and Figures 1-3. Although the model can show results for any year out to 2035, the following results focus on water savings in year 2030, corresponding to the planning horizon of the study and the time frame for current water demand projections.

Water Savings

Figure 1 shows the estimated annual water savings for each water conservation measure, expressed in millions of gallons per year (mgy) at 2030, ranked from highest to lowest. The water savings estimates are built up from small incremental water conserving activities over time to the cumulative savings shown in 2030. The program with the single largest water savings is the more intensive residential clothes washer rebate, at 48 mgy (Appendix A, Measure 14). The program with the smallest water savings is large rainwater catchment system incentive, at significantly less than 1 mgy (Appendix A, Measure 39). There are twelve measures with water savings of 10 mgy, or more, and 6 measures with water savings of 1 mgy or less. The remaining 21 measures would save between 1 and 10 mgy at 2030.

Cost of Water Saved

Figure 2 shows the cost of water saved for each program, expressed in $/million gallons ($/mg), ranked from lowest to highest. Dollars are the present value of utility costs from start year in 2013 through 2030. Water saved is millions of gallons at year 2030. The measure with the lowest cost of water saved is water budget-based billing for irrigation accounts at $178/mg (Appendix A, Measure 3). The measure with the highest cost of water saved is the Residential MF/Commercial landscape conversion/turf removal B at $49,069/mg (Appendix A, Measure 30).

There are six measures with an estimated cost of water saved that is close to or below the City's current variable operating cost of water supply of about $500/mg. Nine of the 39 measures have an estimated cost of water saved in excess of $10,000/mg.

Benefit-Cost Ratio

The DSS model uses Benefit/Cost ratio as an indicator of overall cost-effectiveness. Benefits are the estimated present value dollar savings to the utility from reduced water use. A measure with a B/C ratio of greater than 1.0 is considered cost-effective in that the dollar savings of a measure exceed the amount it costs the utility to implement it.

The analysis presented herein uses a placeholder value of $2,500 per million gallons saved that represents the assumed avoided cost of some unknown future water supply. It is not tied to any particular project; rather, it simply reflects the likelihood that any future water project the City may choose to pursue will cost substantially more on a unit basis than it does for existing supply. It is also a figure that can easily be changed in the DSS Model to perform sensitivity testing. The current placeholder value is selected at 5.0 times the current cost of water produced at $500 per mg.

Figure 3 shows the Benefit/Cost ratio for each measure, ranked from highest to lowest. The measure with the highest B/C ratio is the High Efficiency Faucet Aerator/Showerhead Giveaway program (Appendix A, Measure 9). The measure with the lowest B/C ratio is Residential MF/Commercial landscape conversion/turf removal B (Appendix A, Measure 30). Ten of the 39 measures analyzed have a B/C ratio equal to or greater than one; the rest have a B/C ratio less than one.

Water Conservation Program Scenarios

In this step of the project, the project team compiled the measures into four program scenarios, designated as Program A, B, C, and D, each representing a different suite of measures. Table 1 shows a checklist of the component measures for each program. The basis for assembling the conservation measures into the four trial programs is as follows:

Program	Description
A	This program represents the group of measures that the City is currently operating.
B	This program consists of the measures that are the most cost-effective, as well as some that are included for their customer-service value.
C	This program is a combination of measures currently being operated, cost-effective measures, and selected measures for added synergy and savings.
D	This is the essentially the entire list of measures analyzed, not including the less intensive versions of the measures s designated A/B

Tables 2, 3, and 4, and Figure 2 show the results of the water conservation program analysis, including the results of the earlier work addressing water savings from codes and standards.

Total water savings for the different programs range from 381 mgy in 2030 for program A to 572 mgy for Program D. The incremental savings (moving from one program to the next) associated with each program are as follows:

- Program A: 139 mgy (equal to 0.4 mgd)
- Program B: 106 mgy (equal to 0.3 mgd)
- Program C: 46 mgy (equal to 0.1 mgd)
- Program D: 40 mgy (equal to 0.1 mgd)

The present value of program costs range from $5.8 million for Program A to $21.4 million for Program D.

The water utility Benefit/Cost ratio at the program level ranges from 1.02 for Program B, to 0.55 for Program D.

Figure 4 shows a cost-effectiveness curve comparing cumulative water savings in 2030 for each program against the present value of program costs. This curve shows the classic diminishing economic returns, where the cost for additional water savings greatly increases as the gain in terms of added water savings levels out. Another way of showing this result is presented in Table 4, which lists the incremental cost and savings of each program, and the marginal cost of water saved per mgy at each program level.

Water Demands with Conservation Savings Projections

Table 5 and Figure 5 show numerically and graphically the City's projected water demands without the plumbing code, with the plumbing code, and with the water savings associated with the four different programs. As mentioned earlier, codes and standards alone account for about 242 mgy of water savings, reducing total water demand from slightly above 4.0 bgy to about 3.8 bgy in 2030.

Program A (existing conservation measures) would further reduce system water demand to 3.7 bgy. Program B would reduce system water demand to a level of about 3.6 bgy. Programs C and D would both reduce projected system demand to near 3.5 bgy.

The total water savings as a percent of total production is listed in Table 7. Including 6 percent savings achieved though codes and standards alone, the percent reduction in overall water production in 2030 is seen to vary from about 9.5 percent for Program A, 12.3 percent for Program B, 13.5 percent for Program C and 14.4 percent for Program D.

Per Capita Water Use with Conservation Savings Projections

Table 6 and Figure 6 show per capita water use in gallons per capita per day (gpcd) without the plumbing code, with the plumbing code, and with the water savings associated with the four different programs.

The DSS Model projects per capita water use in 2030 will decline slightly over time, ranging between 98 gpcd under Program A to 93 gpcd under Program D.

Discussion

The information presented above provides new insights into the potential for water conservation programs to help manage customer demand for water over the next 15 years. Previous estimates also ranged from 200 to 300 million gallons per year, but did not explicitly identify the substantial water savings attributable to modern codes and standards. The picture that emerges is one where water demand, with additional conservation, will essentially hover in the 3.5 to 3.7 bgy for the foreseeable future, depending on the choices made about the desired level of investment and actual outcomes, which may vary from the estimates in the model.

On the other hand, from a water supply planning perspective, while conservation can be seen as tempering growth in water demand more than previously expected over the next decade and beyond, it does not fully address the ongoing imbalance between available supply, estimated in

the City's 2010 Urban Water Management Plan to range between 2.6 and 2.8 bgy and ordinary demand for water in critically dry or multiple dry years.

Maddaus Water Management will be present at the February 3, 2014 meeting to review the above findings and to address any questions the Water Commission may have.

Staff is not asking that the Water Commission select a preferred program at its February 3 meeting. What staff is requesting is that the Water Commission review the attached information and identify any other types of information it might need to help select a preferred program to recommend to the City Council at a future meeting. Such information could include:

- Budget requirements
- Staffing requirements
- Cost of program to average customer (monthly, annually)
- Effect on ability to curtail water use (connection to curtailment plan)

Also, the Commission may wish to look at amending the program design such as changing the composition by moving some of the measures around between program scenarios.

Process Going Forward

The scope of work calls for a check in with City Council after this Water Commission meeting. However, because of the desire to expand community engagement over all matters affecting the City's water supply, it is staff's intent to hold a community meeting and get input about the findings before scheduling the meeting with City Council.

Afterwards, there are two factors that will dictate the schedule for completing work in the Water Conservation Master Plan. One is the Water Supply Advisory Committee. A key decision will be whether to stop work temporarily until the committee forms up and to allow it engage in the conservation planning process and provide its input on the plan, or to proceed with the preparation of a draft report while the committee is gearing up. That is a question for both the Water Commission and City Council to address.

The second factor influencing the project schedule is the critically dry conditions that the City faces right now. The ability of staff to make any headway on this project will depend on the weather. Without a major improvement in water supply conditions, drought mitigation actions will shortly overwhelm all available resources and redirect staff efforts within the Water Department to implement a drought shortage program for 2014.

The City has a responsibility under its contract with Maddaus Water Management, Inc. to inform them of scheduling issues and owes it the courtesy of being able to make arrangements with other clients in the event work on the City's project is delayed.

Table 1. Water Conservation Measures and Programs

Conservation Programs and Measures Santa Cruz, California							
Measure Name	**Program A**	**Program B**	**Program C**	**Program D**	**Water Savings MGY 2030**	**Benefit/Cost Ratio**	**Cost of Water Saved $/MG**
NRW Measure Model		X	X	X	38	0.73	$2,344
Install AMI		X	X	X	6	0.33	$4,967
Water Budget Based Billing		X	X	X	7	9.52	$178
Public Information Program including Various Outreach & Education Approaches	X	X	X	X	7	0.29	$6,679
Customer Billing Report & Service				X	5	0.42	$4,445
Real Customer Water Loss Reduction - Leak Repair and Plumbing Emergency Assistance		X	X	X	30	1.29	$1,313
Single Family Water Surveys	X	X	X	X	3	0.14	$12,615
Pressure Reduction				X	4	0.20	$8,039
High Efficiency Faucet Aerator / Showerhead Giveaway	X	X	X	X	25	9.55	$182
Residential High Efficiency Toilets (HET) Rebates	X	X			9	0.86	$2,079
Residential Ultra High Efficiency Toilets (UHET) Rebates			X	X	22	0.38	$4,294
Install High Efficiency Toilets, Showerheads, and Faucet Aerators in Residential Buildings					30	0.63	$2,570
Residential Washer Rebate A	X	X			31	1.74	$993
Residential Washer Rebate B			X	X	48	0.82	$2,097
Require High Efficiency Clothes Washers in New Development		X	X	X	16	2.03	$812
Provide a Rebate for Hot Water on Demand Pump Systems				X	2	0.07	$24,031
Require Hot Water on Demand / Structured Plumbing in New Developments			X	X	7	0.66	$2,407
Toilet Retrofit At Time of Sale	X	X	X	X	9	1.64	$1,076
High Efficiency Washer Rebate			X	X	3	0.54	$3,128
Customized Top Users Incentive Program	X	X	X	X	20	5.35	$306
Promote Restaurant Spray Nozzles		X	X	X	11	7.13	$245
CII Surveys and Top Water Users Program (Top customers from each customer category)	X	X	X	X	21	0.69	$2,394
High Efficiency Urinal Program	X		X	X	2	0.28	$5,968
Install sensor-activated faucets				X	21	0.31	$5,203
School Building Retrofit		X	X	X	5	2.73	$581
City Code Requirement for new Landscapes	X	X	X	X	8	4.24	$382
Res SF Landscape Conversion or Turf Removal A	X		X		1	0.09	$17,920
Res SF Landscape Conversion or Turf Removal B				X	2	0.05	$35,839
Res MF CII Landscape Conversion or Turf Removal A	X		X		0.5	0.07	$24,534
Res MF CII Landscape Conversion or Turf Removal B				X	1	0.03	$49,069
Expand Outdoor Water Survey & Water Budgets			X	X	2	0.15	$11,157
Financial Incentives for Irrigation and Landscape Upgrades				X	3	0.09	$17,578
Weather Based Irrigation Controller Rebates				X	5	0.20	$7,568
Rotating Sprinkler Nozzle Rebates			X	X	3	0.50	$3,051
Residential Gray Water Retrofit				X	0.4	0.19	$8,206
Shade Tree Program				X	5	0.29	$5,619
Promote Rain Sensors				X	1	0.33	$4,752
Provide Rain Barrel Incentive	X	X	X	X	5	0.58	$2,857
Provide Rain Catchment System Incentive				X	0.006	0.04	$42,988

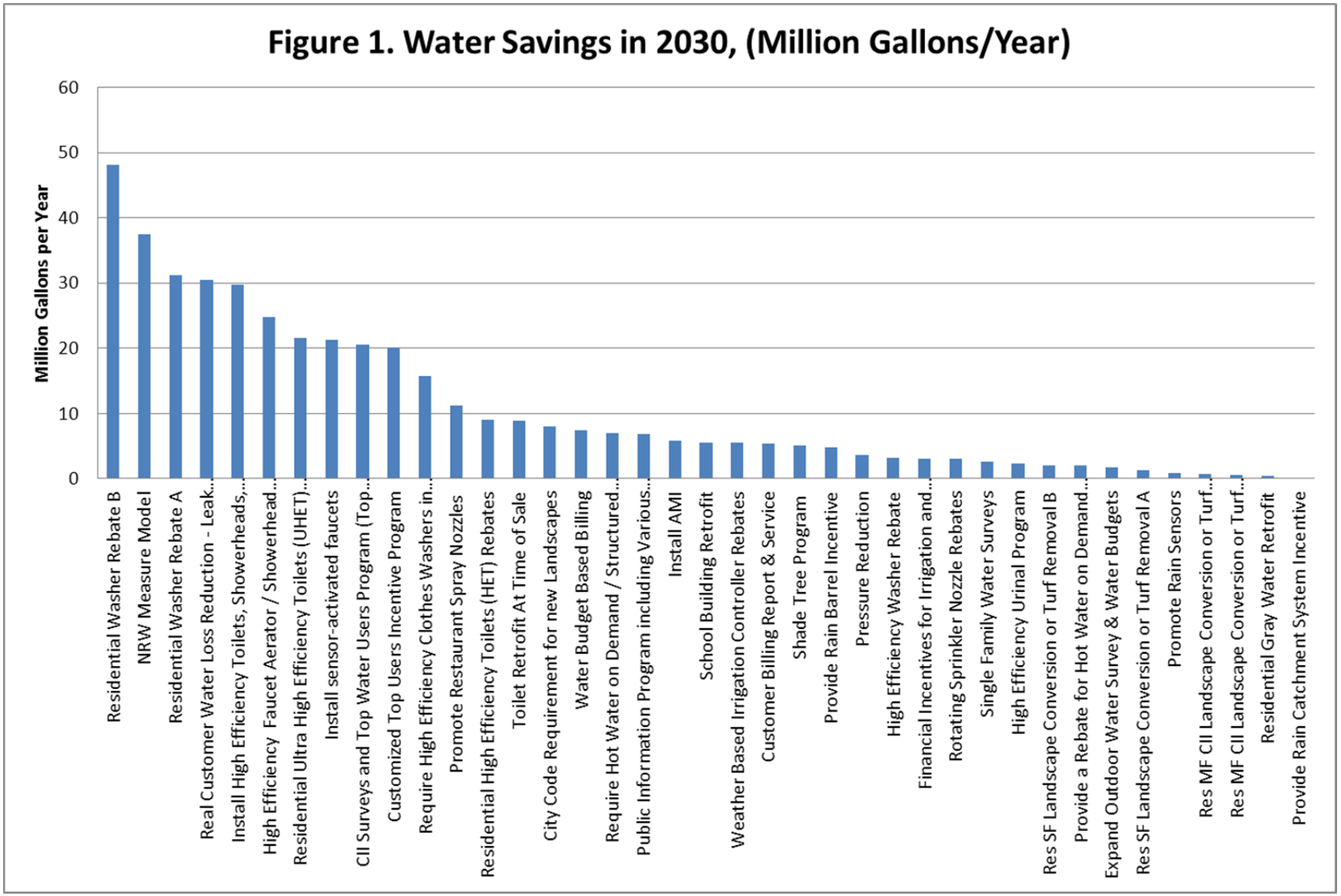


Figure 1. Water Savings in 2030, (Million Gallons/Year)
Million Gallons per Year
60
50
40
30
20
10
0
Residential Washer Rebate B
NRW Measure Model
Residential Washer Rebate A
Real Customer Water Loss Reduction - Leak...
Install High Efficiency Toilets, Showerheads,...
High Efficiency Faucet Aerator / Showerhead...
Residential Ultra High Efficiency Toilets (UHET)...
Install sensor-activated faucets
CII Surveys and Top Water Users Program (Top...
Customized Top Users Incentive Program
Require High Efficiency Clothes Washers in...
Promote Restaurant Spray Nozzles
Residential High Efficiency Toilets (HET) Rebates
Toilet Retrofit At Time of Sale
City Code Requirement for new Landscapes
Water Budget Based Billing
Require Hot Water on Demand / Structured...
Public Information Program including Various...
Install AMI
School Building Retrofit
Weather Based Irrigation Controller Rebates
Customer Billing Report & Service
Shade Tree Program
Provide Rain Barrel Incentive
Pressure Reduction
High Efficiency Washer Rebate
Financial Incentives for Irrigation and...
Rotating Sprinkler Nozzle Rebates
Single Family Water Surveys
High Efficiency Urinal Program
Res SF Landscape Conversion or Turf Removal B
Provide a Rebate for Hot Water on Demand...
Expand Outdoor Water Survey & Water Budgets
Res SF Landscape Conversion or Turf Removal A
Promote Rain Sensors
Res MF CII Landscape Conversion or Turf...
Res MF CII Landscape Conversion or Turf...
Residential Gray Water Retrofit
Provide Rain Catchment System Incentive

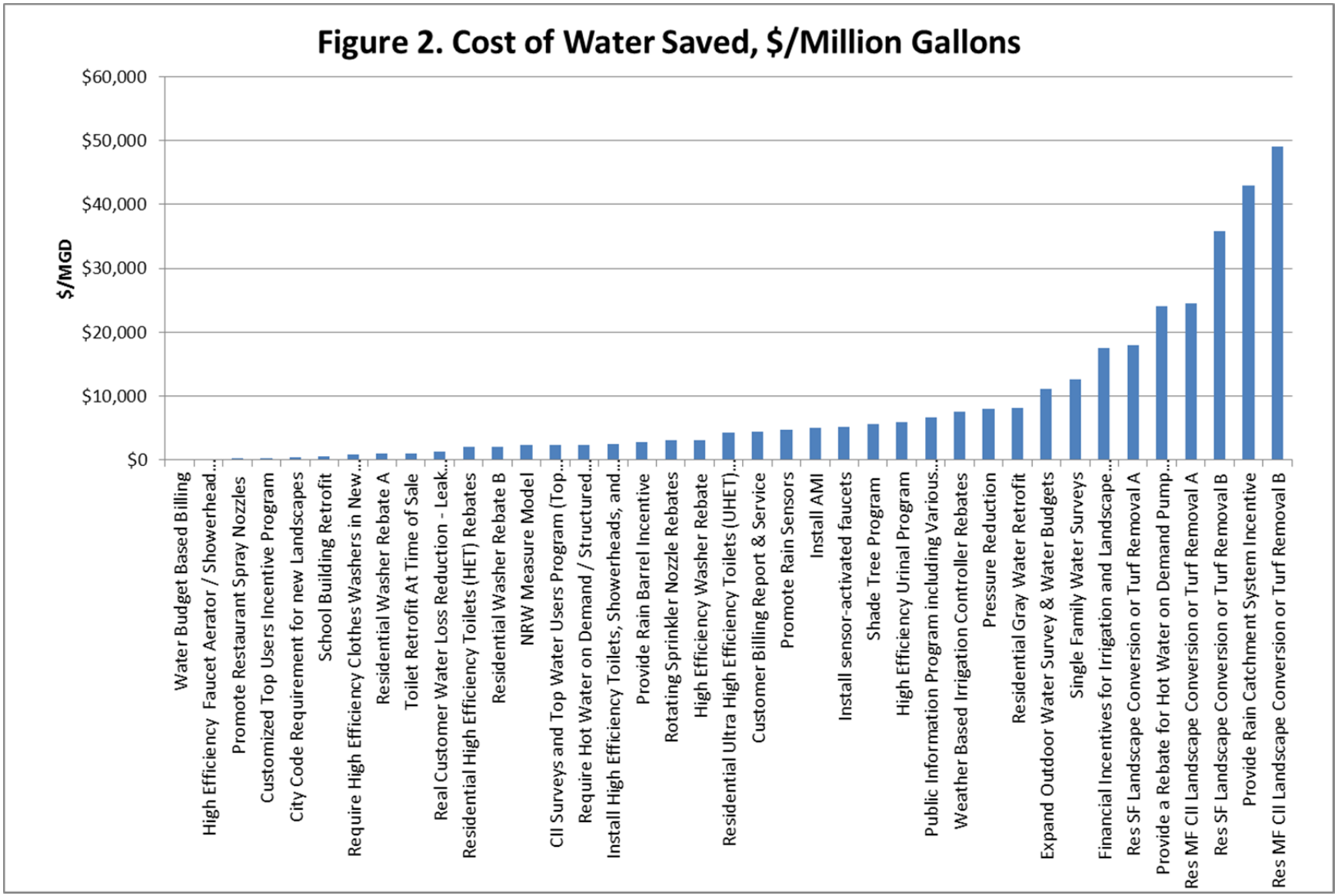


Figure 2. Cost of Water Saved, $/Million Gallons
$/MGD
$60,000
$50,000
$40,000
$30,000
$20,000
$10,000
$0
Water Budget Based Billing
High Efficiency Faucet Aerator / Showerhead...
Promote Restaurant Spray Nozzles
Customized Top Users Incentive Program
City Code Requirement for new Landscapes
School Building Retrofit
Require High Efficiency Clothes Washers in New...
Residential Washer Rebate A
Toilet Retrofit At Time of Sale
Real Customer Water Loss Reduction - Leak...
Residential High Efficiency Toilets (HET) Rebates
Residential Washer Rebate B
NRW Measure Model
CII Surveys and Top Water Users Program (Top...
Require Hot Water on Demand / Structured...
Install High Efficiency Toilets, Showerheads, and...
Provide Rain Barrel Incentive
Rotating Sprinkler Nozzle Rebates
High Efficiency Washer Rebate
Residential Ultra High Efficiency Toilets (UHET)...
Customer Billing Report & Service
Promote Rain Sensors
Install AMI
Install sensor-activated faucets
Shade Tree Program
High Efficiency Urinal Program
Public Information Program including Various...
Weather Based Irrigation Controller Rebates
Pressure Reduction
Residential Gray Water Retrofit
Expand Outdoor Water Survey & Water Budgets
Single Family Water Surveys
Financial Incentives for Irrigation and Landscape...
Res SF Landscape Conversion or Turf Removal A
Provide a Rebate for Hot Water on Demand Pump...
Res MF CII Landscape Conversion or Turf Removal A
Res SF Landscape Conversion or Turf Removal B
Provide Rain Catchment System Incentive
Res MF CII Landscape Conversion or Turf Removal B

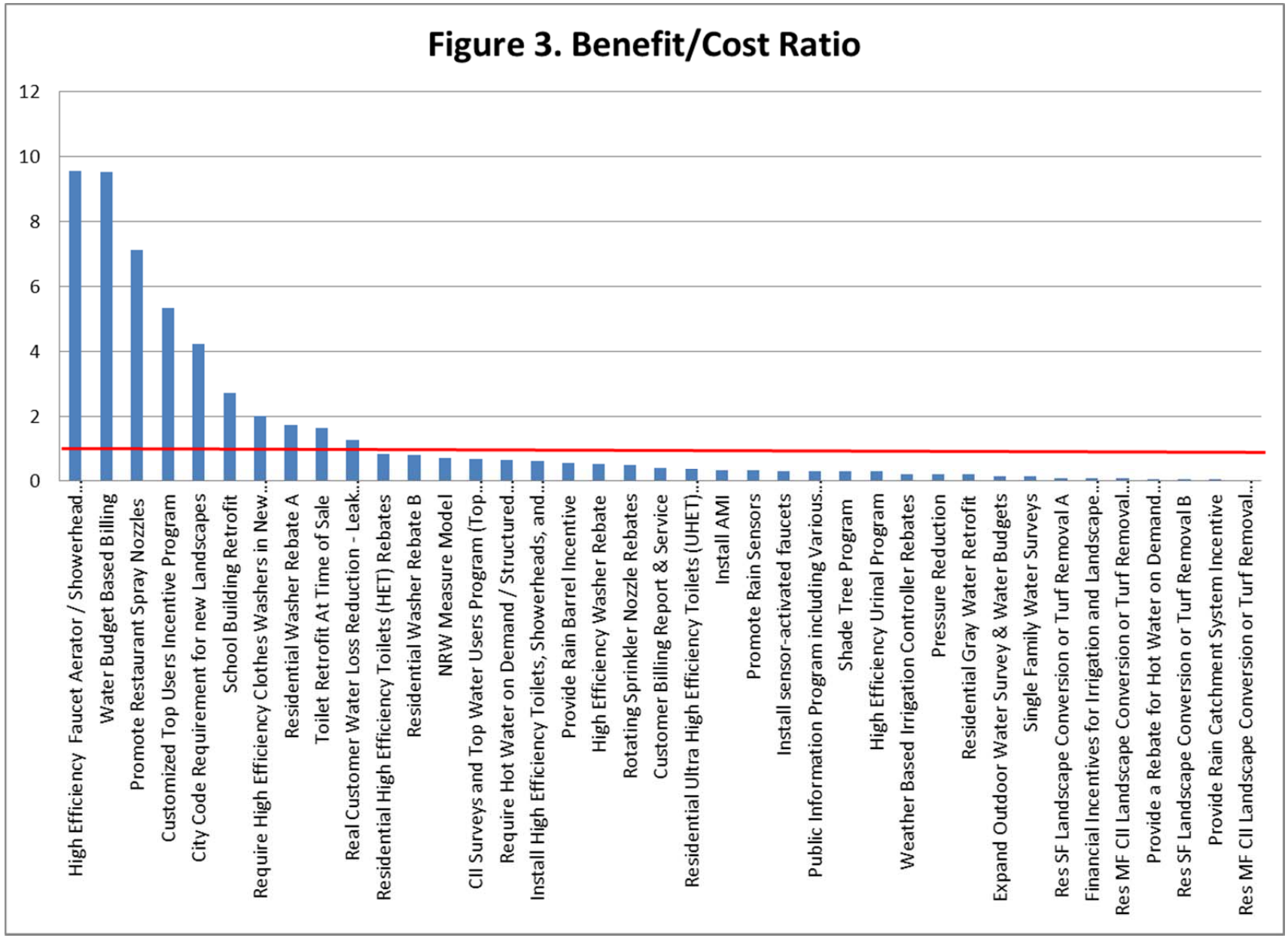


Figure 3. Benefit/Cost Ratio
12
10
8
6
4
2
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High Efficiency Faucet Aerator / Showerhead...
Water Budget Based Billing
Promote Restaurant Spray Nozzles
Customized Top Users Incentive Program
City Code Requirement for new Landscapes
School Building Retrofit
Require High Efficiency Clothes Washers in New...
Residential Washer Rebate A
Toilet Retrofit At Time of Sale
Real Customer Water Loss Reduction - Leak...
Residential High Efficiency Toilets (HET) Rebates
Residential Washer Rebate B
NRW Measure Model
CII Surveys and Top Water Users Program (Top...
Require Hot Water on Demand / Structured...
Install High Efficiency Toilets, Showerheads, and...
Provide Rain Barrel Incentive
High Efficiency Washer Rebate
Rotating Sprinkler Nozzle Rebates
Customer Billing Report & Service
Residential Ultra High Efficiency Toilets (UHET)...
Install AMI
Promote Rain Sensors
Install sensor-activated faucets
Public Information Program including Various...
Shade Tree Program
High Efficiency Urinal Program
Weather Based Irrigation Controller Rebates
Pressure Reduction
Residential Gray Water Retrofit
Expand Outdoor Water Survey & Water Budgets
Single Family Water Surveys
Res SF Landscape Conversion or Turf Removal A
Financial Incentives for Irrigation and Landscape...
Res MF CII Landscape Conversion or Turf Removal...
Provide a Rebate for Hot Water on Demand...
Res SF Landscape Conversion or Turf Removal B
Provide Rain Catchment System Incentive
Res MF CII Landscape Conversion or Turf Removal...

Table 2.

Santa Cruz, California		
Conservation Program	**Present Value of Costs ($1,000)**	**2030 Water Saved (MGY)**
Plumbing Code	$0	242
Program A	$5,768	381
Program B	$8,346	487
Program C	$13,425	532
Program D	$21,448	572

Figure 4.

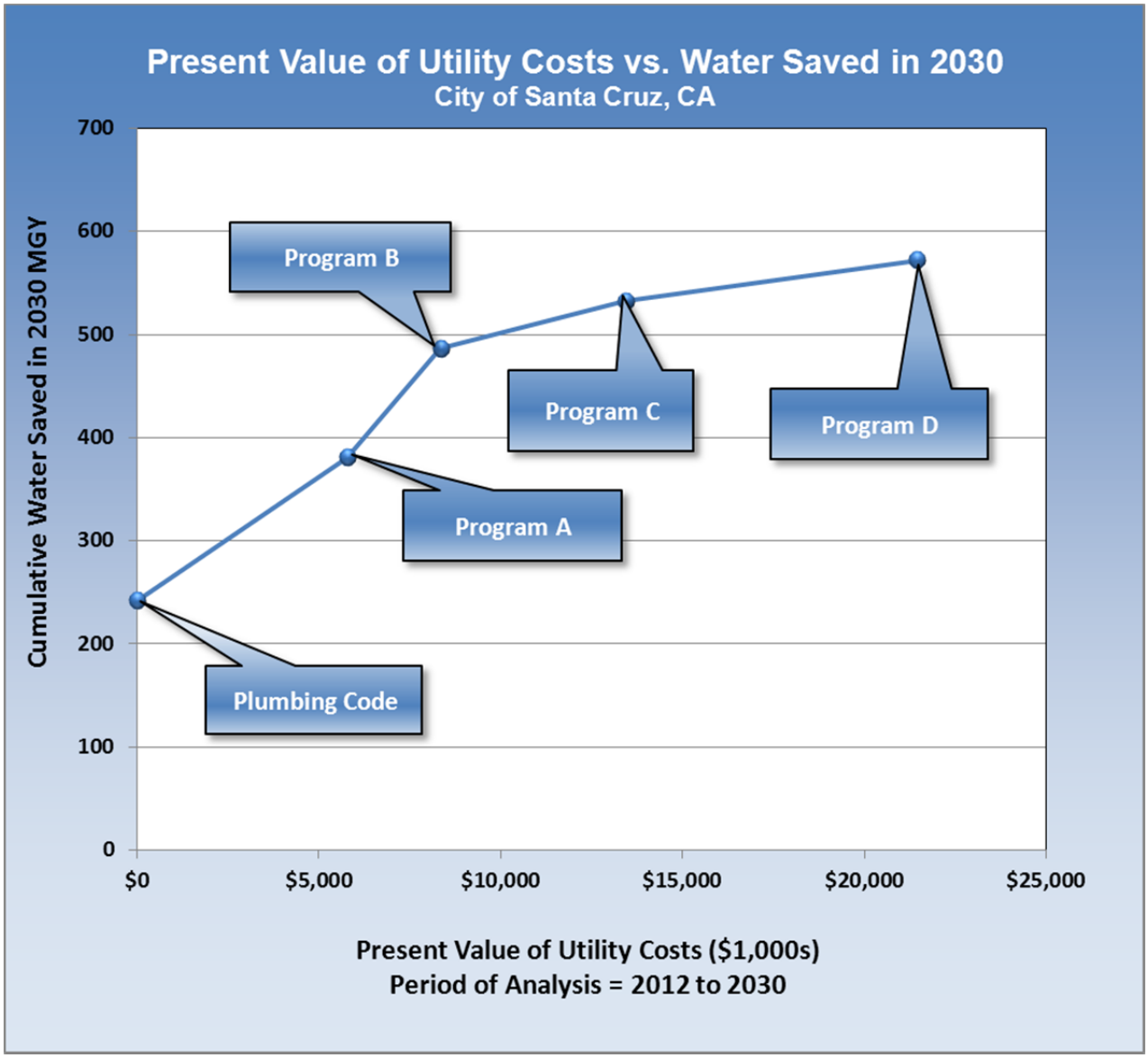


Table 3.

Long Term Conservation Program Water Savings Santa Cruz, California						
Water Savings (MGY)	2015	2020	2025	2030	Water Utility Benefit to Cost Ratio	Community Benefit to Cost Ratio
Program A	47	110	143	139	0.93	0.91
Program B	73	186	243	245	1.11	1.02
Program C	68	206	282	291	0.79	0.52
Program D	68	220	310	330	0.55	0.45

Table 4.

Marginal Cost Between Programs			
Conservation Program	Incremental Cost 30-year Present Value (PV) ($1000)	Incremental Savings, MGY	PV/MGY, $
Plumbing Code	$0	Baseline	$0
Program A	$5,768	138.87	$41,533
Program B	$2,578	105.90	$24,343
Program C	$5,080	45.76	$111,008
Program D	$8,022	39.80	$201,551

Table 5.

Water Demands with Conservation Savings Projections (MGY) Planned Population Growth Santa Cruz, California						
Water Demands (MGY)	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Water Demand without the Plumbing Code	3,517	3,690	3,861	3,969	4,075	4,076
Water Demand with the Plumbing Code	3,517	3,648	3,766	3,801	3,834	3,792
Water Demand with Plumbing Code and Program A	3,517	3,602	3,656	3,658	3,695	3,665
Water Demand with Plumbing Code and Program B	3,517	3,576	3,580	3,558	3,589	3,559
Water Demand with Plumbing Code and Program C	3,517	3,581	3,560	3,519	3,543	3,514
Water Demand with Plumbing Code and Program D	3,517	3,581	3,546	3,491	3,503	3,475
Population	91,291	94,694	98,097	100,441	102,784	102,784

Figure 5.

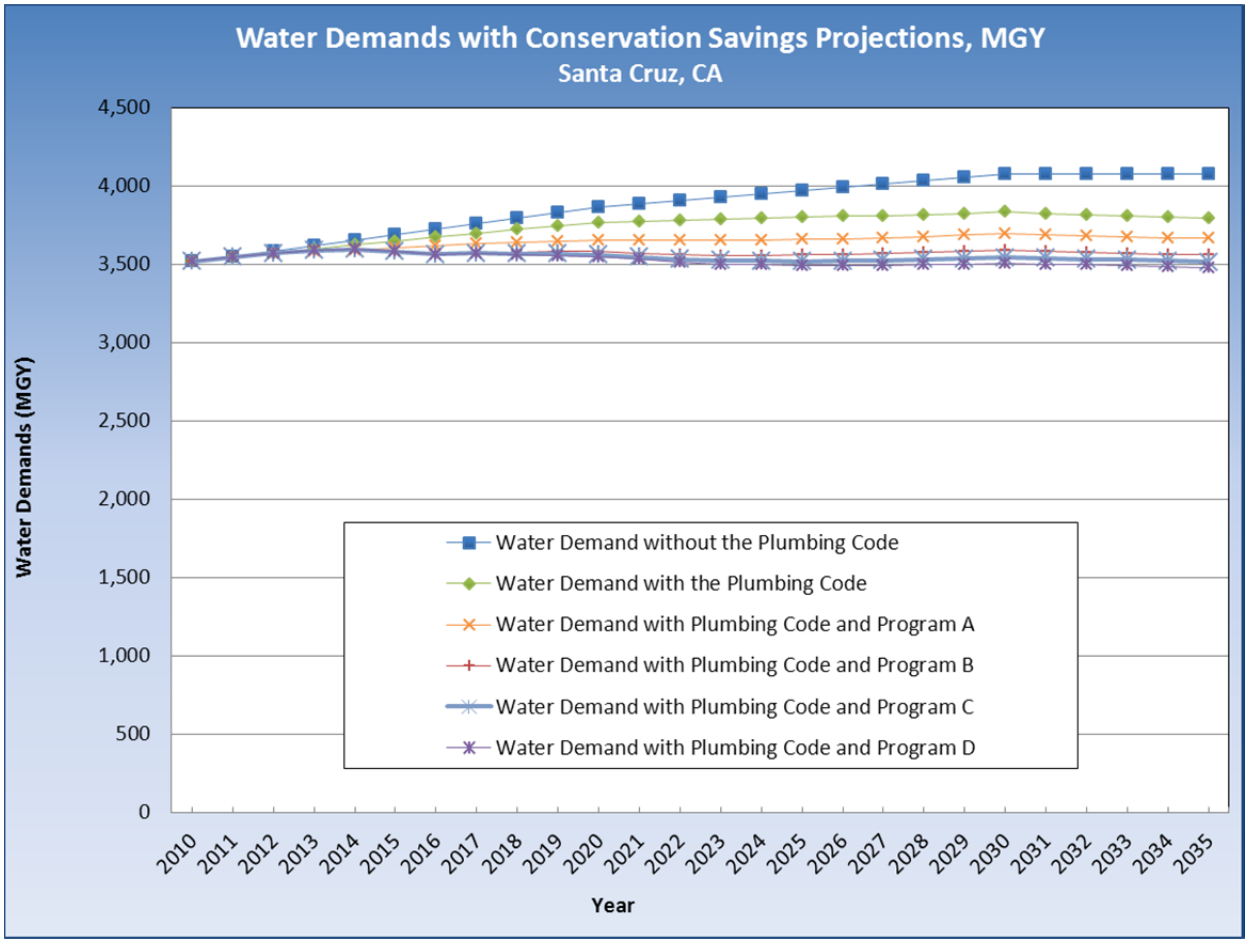
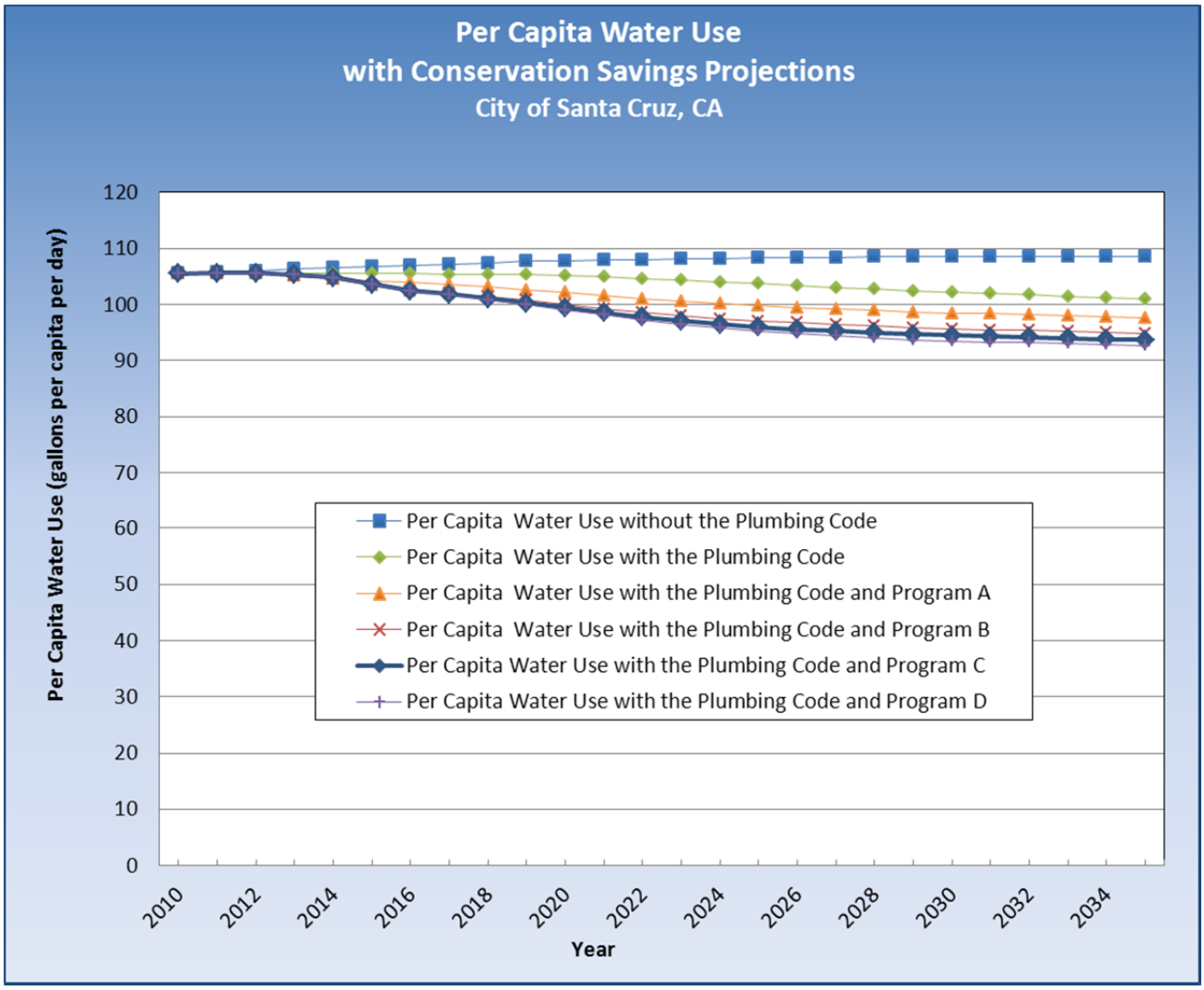


Table 6.

Per Capita Water Use with Conservation Savings Projections Santa Cruz, California						
Per Capita Water Use (gcd)	**2010**	**2015**	**2020**	**2025**	**2030**	**2035**
Per Capita Water Use without the Plumbing Code	106	107	108	108	109	109
Per Capita Water Use with the Plumbing Code	106	106	105	104	102	101
Per Capita Water Use with the Plumbing Code and Program A	106	104	102	100	98	98
Per Capita Water Use with the Plumbing Code and Program B	106	103	100	97	96	95
Per Capita Water Use with the Plumbing Code and Program C	106	104	99	96	94	94
Per Capita Water Use with the Plumbing Code and Program D	106	104	99	95	93	93

Figure 6.



DSS Model Measure Assumptions
Santa Cruz, California

Measure Number	1	2	3	4	5	6	7	8
Measure Name	**Water Loss Control Program**	**Install AMI**	**Water Budget Based Billing**	**Public Information Program including Various Outreach & Education Approaches**	**Customer Billing Report & Service**	**Real Customer Water Loss Reduction - Leak Repair and Plumbing Emergency Assistance**	**Single Family Water Surveys**	**Pressure Reduction**
Measure Description	City of Santa Cruz's water losses are relatively low. This measure would seek to maintain low non-revenue water rates through controlling both apparent and real water losses. This would be annual tracked through the AWWA Water Balance Water System Audit.	Install or retrofit system with AMI meters and associated network capable of providing continuous consumption data to Utility offices. Improved identification of system and customer leaks is major conservation benefit. Some of costs of these systems are offset by operational efficiencies and reduced staffing, as regular meter reading and those for opening and closing accounts are accomplished without need for physical or drive-by meter reading. Also enables enhanced billing options and ability to monitor unauthorized usage (such as use/tampering with closed accounts or irrigation if time of day or days per week are regulated). Customer service is improved as staff can quickly access continuous usage records to address customer inquiries. Optional features include online customer access to their usage, which has been shown to improve accountability and reduce water use. Assume seven year change-out would be a reasonable objective based on City's past experience with AMR installation program.	Develop individualized monthly water budgets for all or a selected category of customers. Water budgets are linked to a rate schedule where rates per unit of water increase when a customer goes above their budget, or decreases if they are below their budget. Budgets typically are based on such factors as the size of the irrigated area and often vary seasonally to reflect weather during the billing period. These rates have been shown to be effective in reducing landscape irrigation demand (AWWARF Reports). This measure would require rate study and capable billing software.	Comprehensive education and public awareness campaign that would evolve over the years and seek to drive participation in other conservation programs.This measure includes support for the Landscape Water Budget & Water Use Reports and additional overall customer service and administrative support not specific to any particular conservation measure across the Water Department.	Detailed Water Billing Reports for Customers with neighborhood use comparisons and suggestions on customer specific conservation actions. Use or pattern after WaterSmart software's program.	Customer leaks can go uncorrected at properties where owners are least able to pay costs of repair. These programs may require that customer leaks be repaired, but either subsidize part of the repair and/or pay the cost with revolving funds that are paid back with water bills over time. May also include an option to replace inefficient plumbing fixtures at low-income residences.	Indoor water surveys for existing single family residential customers. Target those with high water use and provide a customized report to owner. May include give-away of efficient shower heads, aerators, toilet devices. Would include a basic outdoor survey (look leaks, irrigation problems & schedule, plant information, etc.).	Provide incentive to install pressure regulating valve on existing properties with pressure exceeding 80 psi.
Applicable Customer Classes	System	All	IRR	System	SF	SF,MF	SF	System
Applicable End Uses	Non Revenue Water	ALL	ALL	SF	SF	All	External	All
Specific End Uses	System Losses	SF Int. Leakage,MF Int. Leakage,COM Int. Leakage	IRR Irrigation	SF Toilets,SF Baths,SF Showers,SF Faucets,SF Dishwashers,SF Laundry,SF Other,SF Int. Leakage,SF Irrigation,SF Pools,SF Wash-Down,SF Car Washing,SF Ext. Leakage	SF Toilets,SF Baths,SF Showers,SF Faucets,SF Dishwashers,SF Laundry,SF Other,SF Int. Leakage,SF Irrigation,SF Pools,SF Wash-Down,SF Car Washing,SF Ext. Leakage	SF Int. Leakage,MF Int. Leakage	SF Irrigation,SF Pools,SF Wash-Down,SF Car Washing,SF Ext. Leakage	SF Toilets,SF Showers,SF Faucets,SF Other,SF Int. Leakage,SF Irrigation,SF Wash-Down,SF Car Washing,SF Ext. Leakage,MF Toilets,MF Showers,MF Faucets,MF Other,MF Int. Leakage,MF Irrigation,MF Wash-Down,MF Car Washing,MF Ext. Leakage
Market Penetration by End Of Program (%)	N/A	100%	100%	100%	100%	2.5%	7.5%	6.0%
Annual Market Penetration (%)	N/A	3%	36%	50%	20%	0.5%	1.5%	0.4%
Use Only New Accounts	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Affected Units	System	Account	Account	Account	Account	Account	Account	Accounts
Annual Accounts (Assumes per year)	N/A	3.0%	N/A	100%	100%	0.5%	1.5%	0.4%
Water Use Reductions For Targeted End Uses	1.0%	25%	6%	0.5%	1.0%	100.0%	10%	5.0%
Evaluation Start Year	2015	2021	2015	2013	2018	2018	2013	2021
Evaluation End Year	2035	2035	2017	2030	2030	2035	2035	2035
Program Length, years	20	14	3	17	12	17	23	15
Measure Life, years	Permanent	5	Permanent	2	2	5	5	10
Saves Hot Water	FALSE	FALSE	FALSE	FALSE	TRUE	TRUE	TRUE	TRUE
Utility Unit Cost for SF accounts, $/fixture	$3	$40	$0	$4.00	$6	$300	$100	$300
Utility Unit Cost for MF accounts, $/fixture	$17	$40	$0	$4.00	$0	$600	$0	$300
Utility Unit Cost for Non-Res accounts, $/fixture	$69	$40	$50	$4.00	$0	$0	$0	$0
Customer Unit Cost for SF. $/fixture	$0	$500	$0	$2	$0	$0	$50	$0
Customer Unit Cost for MF. $/fixture	$0	$500	$0	$2	$0	$0	$0	$0
Customer Unit Cost for Non-Res. $/fixture	$0	$1,500	$200	$2	$0	$0	$0	$0
Annual Utility Admin & Marketing Cost	40%	40%	50%	50%	35%	45%	45%	45%
SF Number of Fixtures per Account	N/A	1	1	1	1	1	1	1
MF Number of Fixtures per Account	N/A	1	1	1	1	1	1	1
Non-Res Number of Fixtures per Account	N/A	1	1	1	1	1	1	1
Basis of Water Savings	Expanded main replacement and active leak detection	Difficult to assess since system won't be operational until infrastructure installed. Baseline Survey had a low level of leakage. Past End Use Studies have shown higher levels of leakage on a percent of average use (few homes leak significantly).	Overwatering is about 30 MGY for all participants or about 12%. Education has dropped the use about 15 MGY and Price should do the rest of 15 MGY or about 6% of this category.	Not quantified. Assume baseline of 0.5% per year average single family home use.	Assume 1-2% per year savings from SFR	Savings is difference between unrepaired and repaired leaks. Assumes accounts that have more than 100 gpd/acct leakage or more are eligible to participate. Basis for eligibility is the PGE Customer Care program	Use results from Baseline Study to support conservation potential and CUWCC Cost and Savings Study, 2006	Use research reports to document savings of 4-6% from pressure reduction.
Basis of Utility Costs	Checked with WSO, Reinhard Strum. Estimated cost is $150k.	Assume 10% of the $400 per connection cost to upgrade is beneficial and attributable to the conservation program.	Experience with current Waterfluence based on City data.	Based on staffing support and education materials cost	Based on WaterSmart Software Program cost at $132k per year	Assuming that City pays 100% of costs for low income. Basis was City checking with local plumbing contractors.	Based on two hours of labor per survey	Local plumber cost estimate provided by City staff (August 2013).
Basis of Customer Costs	None additional costs (assumed included in rate structure).	Assume no customer side costs for new meter. Costs are for leak repair.	Assume some adjustment of irrigation schedule needed	Minor direct cost to customers	No direct cost to customer	Assuming that low income customers pay 0%	Cost to customer to implement recommendations	Assume that customer pays 0%.
Notes	Pay to bring in consultant to analyze our system and lay out formal water loss control strategy.	Limit the number of value of AMI investment assigned to do Water Conservation Department.	Rafetlis is doing current rate study. Future billing system update. Foster City (Steve Toler, ACM) did an update to the budget based billing. Only bill once per year. Tracks what the penalty and then get a note and if they make change a then, update the formula. Check into AWWARF Report on Water Budget based billing.	Have staffing support and web site now. Assume continuing program with approximately $4.	Pilot study for 5,000 accounts for 6 months for $20,000 for WaterSmart software.	Reference PG&E CARE program		http://www.atlantisplumbing.com/water-pressure-regulators.php

Abbreviations:

RSF = Residential Single Family

RMF = Residential Multi Family

BUS/COM= Commercial

IND = Industrial

IRR = Dedicated irrigation meters

NRSF = New Single Family Homes

GOV = Government

INS = Institutional/Public, buildings / grounds owned by the Water Utility

DSS Model Measure Assumptions
Santa Cruz, California

Measure Number	9	10	11	12	13	14	15	16
Measure Name	**High Efficiency Faucet Aerator / Showerhead Giveaway**	**Residential High Efficiency Toilets (HET) Rebates**	**Residential Ultra High Efficiency Toilets (UHET) Rebates**	**Install High Efficiency Toilets, Showerheads, and Faucet Aerators in Residential Buildings**	**Residential Washer Rebate (Current)**	**Residential Washer Rebate (Intensive)**	**Require High Efficiency Clothes Washers in New Development**	**Provide a Rebate for Hot Water on Demand Pump Systems**
Measure Description	Utility would buy showerheads and faucet aerators in bulk and give them away at Utility office and/or community events.	Provide a rebate or voucher for the installation of a high efficiency toilet (HET). (Toilets flushing less than 1.28 gpf or less and include dual flush technology. Rebate amounts would reflect the incremental purchase cost and have been at least $150 for HET.	Provide a rebate or voucher for the installation of an ultra high efficiency toilet (UHET). (Toilets flushing less than 1.0 gpf or less and include dual flush technology. Rebate amounts would reflect the incremental purchase cost and have been at least $150 for UHET.	Utility would subsidize installation cost of a new UHET purchased by the utility. Licensed plumbers, pre-qualified by the Utility would solicit customers directly. Customers would get a new UHET installed at a discounted price. *Example: the Niagara City Smart Program*	Provide a rebate for efficient washing machines to single family homes and in-unit condo/apartment complexes that do NOT have common laundry rooms. It is assumed that the rebates would remain consistent with relevant state and federal regulations (Department of Energy, Energy Star) and only offer the best available technology. This program would be similar the City's current program. Current rebate $100.	Provide a rebate for efficient washing machines to single family homes and in-unit condo/apartment complexes that do NOT have common laundry rooms. It is assumed that the rebates would remain consistent with relevant state and federal regulations (Department of Energy, Energy Star) and only offer the best available technology. This program would be similar the City's current program. Rebate would be modified to increase incentive for the most efficient washers.	Require developers to install an efficient clothes washer (meeting certain water efficiency standards, such as gallons/load), Building Department would be requested to ensure that an efficient washer was installed before new home or building occupancy. Verify that the Utility can enforce conditions of water service that may include efficiency standards for washing machines. Pattern after the North Marin Water District Program.	Provide a rebate to equip homes with efficient hot water on demand systems. These systems use a pump placed under the sink to recycle water sitting in the hot water pipes to reduce hot water waiting times by having a an on-demand pump on a recirculation line. Can be installed on kitchen sink or master bath, wherever hot water waiting times are more than 1/2 minute. Requires an electrical outlet under the sink, which is not common on older home bathrooms but is on kitchen sinks.
Applicable Customer Classes	SF	SF,MF	SF,MF	SF,MF	SF,MF			SF
Applicable End Uses	Internal	Toilets	Toilets	Toilets	Laundry	Laundry	Laundry	Internal
Specific End Uses	SF Showers,SF Faucets	SF Toilets,MF Toilets	SF Toilets,MF Toilets	SF Toilets,SF Showers,SF Faucets,MF Toilets,MF Showers,MF Faucets	SF Laundry,MF Laundry	SF Laundry,MF Laundry	SF Laundry,MF Laundry,COM Laundry	SF Showers,SF Faucets
Market Penetration by End Of Program (%)	20.0%	6.0%	21.0%	8.00%	29%	45%	100%	5.20%
Annual Market Penetration (%)	2.50%	1.75%	1.2%	1.0%	2.25%	3.75%	100%	0.29%
Use Only New Accounts	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	TRUE	FALSE
Affected Units	Accounts	Accounts	Toilets	Toilets, Showerheads, Faucets	Washers	Washers	Washers	SF
Annual Accounts (Assumes per year)	2.50%	1.75%	1.2%	1.0%	2.25%	3.75%	100%	0.289%
Water Use Reductions For Targeted End Uses	27%	63%	38%	38%	53%	53%	53%	11.6%
Evaluation Start Year	2013	2013	2014	2018	2013	2014	2015	2018
Evaluation End Year	2020	2015	2030	2025	2025	2025	2035	2035
Program Length, years	8	3	17	8	13	12	21	18
Measure Life, years	25	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent	Permanent
Saves Hot Water	TRUE	FALSE	FALSE	FALSE	TRUE	TRUE	TRUE	TRUE
Utility Unit Cost for SF accounts, $/fixture	$12	$150	$150	$300	$100	$200	$50	$300
Utility Unit Cost for MF accounts, $/fixture	$0	$150	$150	$300	$100	$200	$50	$0
Utility Unit Cost for Non-Res accounts, $/fixture	$0	$0	$0	$0	$0	$0	$50	$0
Customer Unit Cost for SF. $/fixture	$0	$150	$150	$100	$500	$400	$600	$600
Customer Unit Cost for MF. $/fixture	$25	$150	$150	$100	$500	$400	$600	$0
Customer Unit Cost for Non-Res. $/fixture	$25	$0	$0	$0	$0	$0	$1,200	$0
Annual Utility Admin & Marketing Cost	35%	35%	35%	45%	35%	40%	40%	50%
SF Number of Fixtures per Account	2	2.2	2.2	2.2	1	1	1	3
MF Number of Fixtures per Account	1	4.0	4.0	4.0	1	1	1	14
Non-Res Number of Fixtures per Account	1	10	1	1	1	1	10	1
Basis of Water Savings	Using the Baseline Survey, assume flow rate of average of 1.8 old showerheads at 2.5 gpm replaced with 1.8 gpm showerheads and 3.5 aerators replaced at 2.2 gpm - 1.5 gpm. Same basis for MF with 1.2 showerheads and 2.4 faucets, and 4 showerheads and 10 faucets for Commercial and Municipal accounts	Calculated from fixture models based on flush volume HET vs. 3.5gpf	Calculated from fixture models based on flush volume UHET vs. 1.6 gpf	Based on Green City Program, would start after new law in place and replace ULFT with UHET	Calculated from fixture models based on washer volume, see below.	Calculated from fixture models based on washer volume, see below.	Based on new machine being paid by developer	Based on Jim Lutz paper and information from Gary Klein and David Grieshop. See spreadsheet titled "Hot Water On Demand Water Savings Estimate_2013" includes 1750 sq ft house saves 1571 gallons per year or 4.3 gpd/acct and a total of 99.5 gpd per SF home, equates to ~4.3% savings per home. Based on a review of Single Family Home use for City of Santa Cruz customers at 30.6 gpd for faucet and 37.5 gpd for showers per household results in an equivalent savings of 12% on shower and faucet end use. Overall an estimated 7.45 gpd savings or 12% by MWM. See "Hot Water Demand System Estimate"
Basis of Utility Costs	Cost of showerhead / aerator	City's Current Rebate Value	City's Current Rebate Value	City would need to provide substantial subsidy	City's Current Rebate Value	City's Higher Rebate Value	Cost of inspection. City estimates the administrative costs of having a HEW code requirement as part of construction projects would be about $10,000 per year. This is based on 75-100 projects that would need plan review, customer contacts to explain requirements, inspections at the end of all projects, and all necessary interactions with Planning Department through the computer or by other means.	Rebate value
Basis of Customer Costs	Assume self installed or some by plumber at customer cost.	MWM estimate for plumber install	MWM estimate for plumber install	Minimal participate so they have to provide something	Incremental purchase cost for customer after rebate.	Incremental purchase cost for customer after rebate.	Developer would bear cost of clothes washer.	Installation cost
Notes	Program description calls for an office giveaway, but this also could be a systemwide distribution program. Number of fixtures per account came from baseline study. Savings and costs do not reflect distribution to hotel/motel or other commercial or multi-family properties.	There are not many UHET models right now, but may become more popular in the future.	There are not many UHET models right now, but foresee becoming more popular in the future as market transformation occurs.	We would cover much, but not all of the cost for a direct install program.	See calculations of savings below	City is considering increasing rebate amount from $100 to $200 or more to increase participation.	About 60 new SF homes per year for a total of 840 new homes inside the city by year 2030. Also an additional 2510 multi-family dwelling units by 2030.	Based on Jim Lutz paper and information from Gary Klein and David Greshop

Abbreviations:

RSF = Residential Single Family

RMF = Residential Multi Family

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NRSF = New Single Family Homes

GOV = Government

INS = Institutional/Public, buildings / grounds owned by the Water Utility

DSS Model Measure Assumptions
Santa Cruz, California

Measure Number	17	18	19	20	21	22	23	24
Measure Name	**Require Hot Water on Demand / Structured Plumbing in New Developments**	**Toilet Retrofit At Time of Sale**	**High Efficiency Washer Rebate**	**Customized Top Users Incentive Program**	**Promote Restaurant Spray Nozzles**	**CII & MF Surveys and Top Water Users Program (Top customers from each customer category)**	**High Efficiency Urinal Program**	**Install sensor-activated faucets**
Measure Description	Work with developers and permitted remodels (of certain size or type) to equip new homes or buildings with efficient hot water on demand systems such as structured plumbing systems. These systems use a pump placed under the sink to recycle water sitting in the hot water pipes to the water heater or to move the water heater into the center of the house and/or reduce hot water waiting times by having a an on-demand pump on a recirculation line.	Work with the real estate industry to require a certificate of compliance be submitted to the Utility that verifies that a plumber has inspected the property and efficient fixtures were either already there or were installed at time of sale.	Provide a $400 rebate for the installation of a high efficiency commercial washer (HEW) in CII and MF Common Area Laundry. Rebate amounts would reflect the incremental purchase cost. Program will be shorter lived as it is intended to be a market transformation measure and eventually would be stopped as efficient units reach saturation. Currently, eligible for City's program, this is planned as an expanded measure.	After the free water use survey has been completed at site, the Utility will analyze the recommendations on the findings report that is provided and determine if site qualifies for a financial incentive. Financial incentives will be provided after analyzing the cost benefit ratio of each proposed project. Incentives are tailored to each individual site as each site has varying water savings potentials. Incentives will be granted at the sole discretion of the Utility while funding lasts.	Provide free 1.3 gpm (or lower) spray nozzles and possibly free installation for the rinse and clean operation in restaurants and other commercial kitchens. Thousands have been replaced in California going door to door, very cost-effective because saves hot water.	Top water customers from each category would be offered a professional water survey that would evaluate ways for the business to save water and money. The surveys would be for large accounts (such as, accounts that use more than 5,000 gallons of water per day) such as hotels, restaurants, stores and schools. Emphasis will be on supporting the top 25 users for each customer category.	Provide a rebate or voucher for the installation of a high efficiency urinals. WaterSense standard is 0.5 gpf or less, though models flushing as low as 0.125 gpf (1 pint) are available and function well, so could be specified. Rebate amounts would reflect the incremental purchase cost and have been about $300.	Consider direct install program, rebates or grants for installation of high efficiency (0.5 gpm) sensor faucet fixtures in all or selected high-use commercial or institutional buildings.
Applicable Customer Classes	SF,MF,COM	SF,MF,COM	Multifamily, Business	MF,Business	Business	MF,Business	Business,Municipal,Industrial	Business,Industrial,Municipal
Applicable End Uses	Internal	Internal	Laundry	Toilets,Showers,Faucets,Dishwashers,Laundry,Int. Leakage,Irrigation,Ext. Leakage	Kitchen Spray Wash	Toilets,Showers,Faucets,Dishwashers,Laundry,Int. Leakage,Irrigation,Ext. Leakage	Urinals	Faucets
Specific End Uses	SF Showers,SF Faucets,MF Showers,MF Faucets,COM Showers,COM Faucets	SF Toilets,MF Toilets,COM Toilets	MF Laundry,COM Laundry	MF Toilets,MF Showers,MF Faucets,MF Dishwashers,MF Laundry,MF Int. Leakage,MF Irrigation,MF Ext. Leakage,COM Toilets,COM Showers,COM Faucets,COM Dishwashers,COM Laundry,COM Int. Leakage,COM Irrigation,COM Ext. Leakage	COM Kitchen Spray Wash	COM Toilets,COM Showers,COM Faucets,COM Dishwashers,COM Laundry,COM Int. Leakage,COM Irrigation,COM Ext. Leakage,MF Toilets,MF Showers,MF Faucets,MF Dishwashers,MF Laundry,MF Int. Leakage,MF Irrigation,MF Ext. Leakage	COM Urinals,MUNI Urinals,IND Urinals	COM Faucets,MUNI Faucets,IND Faucets
Market Penetration by End Of Program (%)	100%	4.25%	3.23%	2.8%	11.4%	3.00%	20.0%	32.5%
Annual Market Penetration (%)	100%	0.85%	0.35%	0.5%	5.7%	0.5%	5.0%	2.5%
Use Only New Accounts	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Affected Units	SF MF CII Indoor	Accounts	Accounts	Account	Account	Account	Account	Account
Annual Accounts (Assumes per year)	100.0%	1.0%	0.350%		220 accts total (or 110 per year)	Same approach as menu - top user list	20.0%	20.0%
Water Use Reductions For Targeted End Uses	11.6%	63.0%	53%	10%	50%	10%	80%	75%
Evaluation Start Year	2018	2013	2015	2018	2015	2018	2017	2018
Evaluation End Year	2035	2017	2024	2023	2016	2023	2020	2030
Program Length, years	18	5	10	6	2	6	4	13
Measure Life, years	Permanent	Permanent	Permanent	Permanent	25	Permanent	Permanent	Permanent
Saves Hot Water	TRUE	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE
Utility Unit Cost for SF accounts, $/fixture	$25	$38	$0	$0	$0	$0	$0	$0
Utility Unit Cost for MF accounts, $/fixture	$25	$38	$400	$500	$0	$1,000	$0	$0
Utility Unit Cost for Non-Res accounts, $/fixture	$25	$125	$400	$500	$100	$1,000	$300	$400
Customer Unit Cost for SF. $/fixture	$600	$80	$0	$0	$0	$0	$0	$0
Customer Unit Cost for MF. $/fixture	$2,768	$75	$500	$1,500	$0	$500	$0	$0
Customer Unit Cost for Non-Res. $/fixture	$2,940	$500	$500	$1,500	$0	$500	$200	$100
Annual Utility Admin & Marketing Cost	50%	50%	35%	50%	40%	50%	35%	35%
SF Number of Fixtures per Account	3	2.2	1	1	1	1	1	1
MF Number of Fixtures per Account	14	4	2	1	1	1	1	1
Non-Res Number of Fixtures per Account	15	10	4	2	1	2	2	6
Basis of Water Savings	Based on Jim Lutz paper and information from Gary Klein and David Grieshop. See spreadsheet titled "Hot Water On Demand Water Savings Estimate_2013" includes 1750 sq ft house saves 1571 gallons per year or 4.3 gpd/acct and a total of 99.5 gpd per SF home, equates to ~4.3% savings per home. Based on a review of Single Family Home use for City of Santa Cruz customers at 30.6 gpd for faucet and 37.5 gpd for showers per household results in an equivalent savings of 12% on shower and faucet end use. Overall an estimated 7.45 gpd savings or 12% by MWM. See "Hot Water Demand System Estimate"	Assume City's ordinance will sunset when Statewide Retrofit on Resale SB 407 goes active 2017 for residential and 2019 for commercial properties. Savings based on replacing a 3.5 gpf with a 1.28 gpf HET.	Engineering estimate of average savings, assume water factor is 25% less for replacement	Engineering estimate of average savings for MF CII Facilities receiving an incentive. Assume targeting larger accounts above 5,000 gpd.	Back calculate from the City's baseline survey, use 1.3 gpm Fisher.	CUWCC Cost and Savings Study (2005) reports potential savings range from 11 to 29%, assuming all projects are implemented. Assume 30% potential and 35% compliance, CUWCC Cost and Savings Study, 2005, pg 2-66-68. Assume 10% due to survey only, rest of savings come from participation in an incentive program.	Assume reduction from 1.25 gpf down to 0.25 gpf. Baseline Survey found lower saturation in restaurants and office buildings. Schools were 100% high efficiency.	Reduction in flow rate from existing say 2 gpm down to 0.5 gpm or 75% reduction.
Basis of Utility Costs	Inspection cost	Inspection cost	City estimate	Assume cost may triple as more expensive rebates requested	Door to door distribution	CUWCC Cost and Savings Study (2005) reports costs range from $600 to $8,000.	Cost of Fixture	Rebate for full amount of cost
Basis of Customer Costs	Assume developer funded.	Purchase and Installation cost	Covers labor costs	Covers labor costs	no cost to customer	Covers labor costs	Installation	Installation cost
Notes	About 60 new SF homes per year for a total of 840 new homes inside the city by year 2030. Also an additional 2510 multi-family dwelling units by 2030.	Long term housing turnover is about 2.7% per year. Commercial property turns over less frequently than residential. Fewer than 1 fixture per property is now being replaced under this ordinance. Will upgrade standard to become HET.	Start by consider a combination of a mandate and City funded clothes washer program for common laundry rooms that would accelerate retirement of old inefficient equipment for the next 5- 10 years, when codes will transform market.	This is a designer rebate or grant program that depends on viable projects documented in survey.	This would be a one-year distribution type program, Plan on about 200 sites with up to 300 valves in our service area.	Large CII users are already receiving landscape water use reports and surveys	Comprehensive City, school, and other government buildings urinal replacement with 0.5 gpf or less. City could potentially fund 100 percent of costs.	Coupled with 0.5 gpm flow rate faucet.

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IND = Industrial

IRR = Dedicated irrigation meters

NRSF = New Single Family Homes

GOV = Government

INS = Institutional/Public, buildings / grounds owned by the Water Utility

DSS Model Measure Assumptions
Santa Cruz, California

Measure Number	25	26	27	28	29	30	31	32
Measure Name	**School Building Retrofit**	**City Code Requirement for new Landscapes**	**Landscape Conversion or Turf Removal**	**Landscape Conversion or Turf Removal**	**Landscape Conversion or Turf Removal**	**Landscape Conversion or Turf Removal**	**Expand Outdoor Water Survey & Water Budgets**	**Financial Incentives for Irrigation and Landscape Upgrades**
Measure Description	School retrofit program wherein school receives a grant to replace fixtures and upgrade irrigation systems. Expand current City Program, pattern after EBMUD and MWD programs. Promote to schools for cash flow upfront. Review Generation Water program.	Include less irrigation demand for new accounts due to more efficient landscape designs due to City Code (implementation of Statewide Model Landscape Ordinance)	Provide a per square foot incentive for to remove turf and replace with low water use plants or permeable hardscape. Pattern after the City's current program. Rebate is currently $0.50 per square foot removed, and capped at an upper limit of $500 for single family residence.	Provide a per square foot incentive for to remove turf and replace with low water use plants or permeable hardscape. Pattern after the City's current program. Rebate would be $1.00 per square foot removed, and capped at an upper limit of $1,000 for single family residence.	Provide a per square foot incentive for to remove turf and replace with low water use plants or hardscape. Pattern after the City's current program. Rebate is currently $0.50 per square foot removed, and capped at an upper limit of $2,500 for multi-family or commercial residence.	Provide a per square foot incentive for to remove turf and replace with low water use plants or hardscape. Pattern after the City's current program. Rebate is currently $0.50 per square foot removed, and capped at an upper limit of $2,500 for multi-family or commercial residence.	Outdoor water audits offered for existing large landscape customers. Normally those with high water use are targeted and provided a customized report on how to save water. All large multi-family residential, CII, and public irrigators of large landscapes would be eligible for free landscape water audits upon request. Tied to the Water Budget Program.	For SF, MF, CII, and IRR customers with landscape, provide a Smart Landscape Rebate Program with rebates for substantive landscape retrofits or installation of water efficient upgrades; Rebates contribute towards the purchase and installation of water-wise plants, compost, mulch and selected types of irrigation equipment upgrades. Cost shared rebate for residential accounts and for commercial customers.
Applicable Customer Classes	Municipal	Multifamily, Industrial, Business, Municipal	Single Family	Single Family	Multifamily,Business	Multifamily,Business	Irrigation	Single Family, Multifamily, Business
Applicable End Uses	Toilets, Urinals, Faucets, Showers, Int. Leakage, Irrigation, Ext. Leakage	Irrigation	Irrigation	Irrigation	Irrigation	Irrigation	IRR Irrigation	Irrigation
Specific End Uses	MUNI Toilets,MUNI Urinals,MUNI Faucets,MUNI Showers,MUNI Int. Leakage,MUNI Irrigation,MUNI Ext. Leakage	MF Irrigation,IND Irrigation,COM Irrigation,MUNI Irrigation	SF Irrigation	SF Irrigation	MF Irrigation,COM Irrigation	MF Irrigation,COM Irrigation	IRR Irrigation	SF Irrigation,MF Irrigation,COM Irrigation
Market Penetration by End Of Program (%)	10.0%	100%	1.97%	2.95%	0.97%	4.20%	57.2%	5.75%
Annual Market Penetration (%)	1.0%	100%	0.20%	0.30%	0.10%	0.15%	2.2%	0.25%
Use Only New Accounts	FALSE	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Affected Units	Account	Account	Account	Account	Account	Account	Account	Account
Annual Accounts (Assumes per year)	2 schools/yr for 10 years, 20 total	based on growth rate of new large accounts (over 5,000 sf)	0.20%	0.30%	0.100%	0.150%	10	0.250%
Water Use Reductions For Targeted End Uses	25%	25%	25.0%	25.00%	25.0%	25.0%	6.6%	20.0%
Evaluation Start Year	2018	2013	2013	2013	2013	2013	2015	2018
Evaluation End Year	2027	2040	2040	2040	2040	2040	2040	2040
Program Length, years	10	28	28	28	28	28	26	23
Measure Life, years	27	27	10	10	10	10	10	25
Saves Hot Water	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Utility Unit Cost for SF accounts, $/fixture	$0	$0	$500	$1,000	$0	$0	$0	$500
Utility Unit Cost for MF accounts, $/fixture	$0	$50	$0	$0	$1,500	$3,000	$1,500	$2,000
Utility Unit Cost for Non-Res accounts, $/fixture	$2,500	$100	$0	$0	$2,500	$5,000	$1,500	$2,000
Customer Unit Cost for SF, $/fixture	$0	$0	$2,500	$2,000	$0	$0	$0	$1,000
Customer Unit Cost for MF, $/fixture	$0	$1,000	$0	$0	$8,500	$7,000	$1,500	$3,000
Customer Unit Cost for Non-Res, $/fixture	$2,500	$2,500	$0	$0	$12,500	$10,000	$1,500	$3,000
Annual Utility Admin & Marketing Cost	35%	35%	45%	45%	45%	45%	45%	45%
SF Number of Fixtures per Account	1	1	1	1	1	1	1	1
MF Number of Fixtures per Account	1	1	1	1	1	1	1	1
Non-Res Number of Fixtures per Account	1	1	1	1	1	1	1	1
Basis of Water Savings	Do two schools per year and assume cut use 25% below a current use of 3,000 gpd	Based on native landscaping (Xeriscape) over efficiently irrigated turfgrass per City Code Chapter 16.16 http://www.cityofsantacruz.com	Estimated savings are 19 gallons per square foot. CUWCC Cost and Savings Study (2005) reports up to 39% savings in summer. Assume 50% of landscaping removed and replaced with low water use that uses 50% less water so overall irrigation savings may be a maximum of 38%. Given some system efficiency/residual overwatering may still occur, conservatively assumed 25%.	Estimated savings are 19 gallons per square foot. CUWCC Cost and Savings Study (2005) reports up to 39% savings in summer. Assume 50% of landscaping removed and replaced with low water use that uses 50% less water so overall irrigation savings may be a maximum of 38%. Given some system efficiency/residual overwatering may still occur, conservatively assumed 25%.	Estimated savings are 19 gallons per square foot from high water use plants (turfgrass) at Plant Factor 0.8 compared to low water use plants at PF of 0.2. ET for Santa Cruz is relatively low at 36 inches per year. Assume 50% square footage is replaced.	Estimated savings are 19 gallons per square foot from high water use plants (turfgrass) at Plant Factor 0.8 compared to low water use plants at PF of 0.2. Assume 50% square footage is replaced.	Savings to-date, see notes on water budget based billing	Assume 50% of landscape water is wasted due to low irrigation efficiency in older irrigation systems or inefficient manual watering. This is assumed that these sites will be made over will save nearly half of the water waste (e.g., back to distribution uniformity of 75%).
Basis of Utility Costs	Assume $5,000 split 50:50 with City	Application and Inspection	Assume $3/per square foot total costs based on MWM experience.	Assume $3/per square foot total costs based on MWM experience.	Assume $3/per square foot total costs based on MWM experience.	Assume $3/per square foot total costs based on MWM experience.	$1400 per audit per contract	Extensive make-over planned at ~3/sq ft and from 300 to 1500 sq ft; City pays up to 50%
Basis of Customer Costs	Assume $5,000 split 50:50 with City	Based on Xeriscape over turf	Net cost to customer is $2/square foot and 1,000 square feet	net cost to customer is $2/square foot and 1,000 square feet	net cost to customer is $2/square foot and 1,000 square feet	net cost to customer is $2/square foot and 1,000 square feet	Assume customer makes some changes to system to try and meet budget	Extensive make-over planned at ~3/sq ft and from 300 to 1500 sq ft; customer pays 50% or more
Notes	Might have to couple with survey of school sites first, and landscape survey	Have copy of City Ordinance (could consider as an attachment to the Plan).	Considering increasing rebate amount per square foot and limit on total square feet.	Considering increasing rebate amount per square foot and limit on total square feet.	Considering increasing rebate amount per square foot and limit on total square feet.	Considering increasing rebate amount per square foot and limit on total square feet.	10-15 audits per year on 250 participating accounts.	Flexible program landscape related improvements as opposed to individual rebate programs.

Abbreviations:

RSF = Residential Single Family

RMF = Residential Multi Family

BUS/COM= Commercial

IND = Industrial

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DSS Model Measure Assumptions
Santa Cruz, California

Measure Number	33	34	35	36	37	38	39
Measure Name	**Weather Based Irrigation Controller Rebates**	**Rotating Sprinkler Nozzle Rebates**	**Residential Gray Water Retrofit**	**Shade Tree Program**	**Promote Rain Sensors**	**Provide Rain Barrel Incentive**	**Provide Rain Catchment System Incentive**
Measure Description	Provide a per station rebate (typically $25 per station) with a cost-share for the purchase of a weather based irrigation controller. These controllers have on-site weather sensors or rely on a signal from a central weather station that modifies irrigation times at least weekly. Requires local irrigation contractors who are competent with these products, so may require sponsoring a training program in association with this measure.	Provide rebates to replace standard spray sprinkler nozzles with rotating nozzles that have lower application rates. Nozzles cost about $6 each.	Provide a workshop to support a Gray water Challenge similar to 2013 event that was modeled after Sonoma County program. Offer rebate to assist covering certain percentage of the cost to single family homeowners per year to install gray water systems. Package from local hardware stores had the primary components would be supported by City rebate.	Provide incentives and information to promote shade tree planting as a water conservation measure. Potential for Water-Energy Partnership.	Promote installation of rain sensor shut-off devices when installing new irrigation systems if a weather based controller is not being installed.	Provide incentive for installation of rain barrels. This could involve rebates or bulk purchase and giveaways of barrels plus workshops on proper installation and use of captured rain water for landscape irrigation. Pattern after Honolulu Board of Water Supply program.	Provide incentive for installation of large rainwater catchment systems up to 2,500 gallons. This could involve rebates, grants and other cost share methods. Might require simultaneous installation of water efficient landscaping to assure that amount of water collected is capable of lasting into the peak irrigation season.
Applicable Customer Classes	Single Family, Multifamily, Business	Single Family, Multifamily, Business	Single Family	Single Family, Multifamily, Business	Single Family	Single Family	Single Family
Applicable End Uses	Irrigation	Irrigation	SF Irrigation	Irrigation	SF Irrigation	SF Irrigation	SF Irrigation
Specific End Uses	SF Irrigation,MF Irrigation,COM Irrigation	SF Irrigation,MF Irrigation,COM Irrigation	SF Irrigation	SF Irrigation,MF Irrigation,COM Irrigation	SF Irrigation	SF Irrigation	SF Irrigation
Market Penetration by End Of Program (%)	13.8%	11.5%	2.6%	26.6%	6.5%	35.0%	13.0%
Annual Market Penetration (%)	0.6%	0.5%	0.1%	2.0%	0.5%	2.0%	1.0%
Use Only New Accounts	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	TRUE
Affected Units	Account	Primarily residential	Primarily residential	Account	Account	Account	Account
Annual Accounts (Assumes per year)	0.100%	0.535%	0.1%	0.025%	1.0%	2.0%	1.0%
Water Use Reductions For Targeted End Uses	15.0%	10.0%	10.0%	5.0%	5.0%	5.0%	5.0%
Evaluation Start Year	2018	2018	2015	2015	2018	2013	2018
Evaluation End Year	2040	2040	2040	2025	2030	2030	2030
Program Length, years	23	23	26	11	13	18	13
Measure Life, years	25	20	Permanent	Permanent	20	20	Permanent
Saves Hot Water	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Utility Unit Cost for SF accounts, $/fixture	$200	$50	$150	$50	$50	$30	$500
Utility Unit Cost for MF accounts, $/fixture	$500	$100	$0	$50	$0	$0	$0
Utility Unit Cost for Non-Res accounts, $/fixture	$500	$200	$0	$50	$0	$0	$0
Customer Unit Cost for SF. $/fixture	$300	$100	$300	$50	$50	$30	$1,500
Customer Unit Cost for MF. $/fixture	$500	$200	$0	$50	$0	$0	$0
Customer Unit Cost for Non-Res. $/fixture	$2,000	$400	$0	$50	$0	$30	$0
Annual Utility Admin & Marketing Cost	45%	45%	45%	45%	45%	45%	35%
SF Number of Fixtures per Account	1	1	1	1	1	1	1
MF Number of Fixtures per Account	1	1	1	2	1	1	1
Non-Res Number of Fixtures per Account	1	1	1	10	1	1	1
Basis of Water Savings	IRWD experience. Other Smart Irrigation Controller Studies from USBR: http://www.usbr.gov/waterconservation/docs/WaterSavingsRpt.pdf	Assume improvement in distribution uniformity saves 10% of irrigation. Reference CUWCC Potential Best Management Practice Report on Rotating Nozzles.	Assume single fixture type system used to replace a portion of garden watering on new or existing homes.	Assume remove 50-100 sf of turf, water demand for a large (ginko) tree; Assume this amounts to a net 5% reduction in irrigated area. Could be patterned after San Jose's "Our City Forest Program" http://www.ourcityforest.org/plantingandcare/planting/getatree (supported by PGE) or the City of Roseville program in Sacramento area that was well run. http://www.roseville.ca.us/electric/shade_tree/default.asp	MWM studies of potential water savings in Bay Area due to skipped irrigations due to rain events of a significant size	We assume 4 effective fills per year for 20 years. 20 year useful life	We assume 3 effective fills per year for 20 years.
Basis of Utility Costs	~ $25 per station	Assume cos is $6/nozzle and rebate is $2 per nozzle and following nozzles required: SF = 25; MF = 50; COM = 100	System costs ~$450 and City pays ~ 1/3	Planned rebate value	Cost of device	City pays 50%	City pays 30%
Basis of Customer Costs	Remainder + installation	Remainder + installation	Installation cost	Installation cost	Installation cost	50%; customer has to install	Customer cost (70$)
Notes	Might become easier to implement over time as technology gets easier and more familiar	No nozzle minimum; customer has to turn in old nozzles to get paid.	Plan to carefully track accounts and savings.	Start by providing funds to Parks tree program	City already requires this for new development; perhaps this program should be a voluntary approach targeted to people with existing irrigation controllers. Consider giveaway program, but would need to do market research beforehand.	If this model were available locally, we would probably stop selling them and offer a rebate instead due to storage and delivery challenges. We could also add a rebate anyway so people have more choice in models and sizes. Assume a 50 percent subsidy.	Program not found on City of Santa Rosa web site, http://ci.santa-rosa.ca.us/departments/utilities/conserve/Pages/default.aspx

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~Excerpt from Water Commission Bylaws adopted March 4, 2004

ARTICLE VI – OFFICERS AND ELECTIONS

Section 1. Officers

Officers of the Advisory Body shall consist of a Chair and Vice Chair.

Section 2. Election of Officers

As soon as is practicable following the first day of February of every year, there shall be elected from among the membership of the Advisory Body a Chair and Vice Chair.

Section 3. Term of Office

The term of office for the Chair and Vice Chair is one calendar year. Officers may not serve in the same position for more than two consecutive years.

Section 4. Nominations

The Chair will open the floor to nominations. Any member may nominate a candidate from the membership for the position of Chair or Vice Chair; nominations need not be seconded.

A member may withdraw his/her name if placed in nomination, announcing that, if elected, s/he would not be able to serve; but s/he shall not withdraw in favor of another member.

Once the nominations are complete, the Chair will ask for a motion to close the nominations; a second of, and vote on, the motion is required.

The Chair then declares that it has been moved and seconded that the nominations be closed, and the members proceed to the election.

Section 5. Voting

Voting may be by voice vote or by roll call vote.

The candidate who receives a majority of the votes is then declared to be legally elected to fill the office of Chair, and will immediately chair the remainder of the meeting.

The same procedure is followed for the election of Vice Chair.

Section 6. Vacancy of an Officer

Should a vacancy occur, for any reason, in the office of Chair or Vice Chair prior to the next annual election, a special election shall be held to fill the vacant office from among the membership. That member shall serve until a new appointment has been made.

Section 7. Removal of Elected Officers

The Chair or Vice Chair may be removed by a majority vote of the full Advisory Body at a regularly scheduled meeting of the Advisory Body, when all appointed members are

present, or at a special meeting convened for that purpose at which a quorum is present. Any officer removed ceases to hold the office once the vote has been tallied and announced. If the Chair is removed, the Vice Chair shall become the new Chair. An election for the Vice Chair shall then be agendized for the next meeting.

Section 8. Duties of the Chair

The Chair shall preside at all regular meetings and may call special meetings. The Chair shall decide upon all points of order and procedure during the meeting; his/her decision shall be final unless overruled by a vote of the Advisory Body, in compliance with Article IX, Section 2, "General Conduct of Meetings." The Chair may not make motions, but may second motions on the floor. The Chair acts as primary contact for staff and shall represent the Advisory Body before City Council whenever the Advisory Body or Council considers it necessary unless another member(s) is (are) appointed by the Advisory Body. The Chair and staff shall jointly set the meeting agenda.

Section 9. Duties of the Vice Chair

The Vice Chair shall assume all duties of the Chair in the absence or disability of the Chair.

Section 10. Duties of the Acting Chair

In case of absence of both the Chair and the Vice Chair from any meeting, an Acting Chair shall be elected from among the members present, to serve only during the absence of the Chair and Vice Chair.

From: Andy Schiffrin [mailto:Andy.Schiffrin@santacruzcounty.us]
Sent: Monday, January 27, 2014 3:39 PM
To: Linette A Almond
Subject: Water Commission agenda for 2.3.14

Hi Linette –

I assume that you've seen the Water Resources Report that John Ricker prepared for the Board of Supervisors January 28th agenda (http://sccounty01.co.santa-cruz.ca.us/bds/Govstream/BDSvData/non_legacy/agendas/2014/20140128/PDF/036.pdf).

Would it be possible to have this added to our February agenda as an information item that would be discussed at our March meeting? I've spoken to John and he is willing to come to the March meeting.

Andy

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County of Santa Cruz

HEALTH SERVICES AGENCY

POST OFFICE BOX 962, 1080 EMELINE AVE., SANTA CRUZ, CA 95060
TELEPHONE: (831) 454-4000 FAX: (831) 454-4770

GIANG T. NGUYEN
HEALTH SERVICES AGENCY DIRECTOR

AGENDA: January 28, 2014

January 6, 2014

Board of Supervisors
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

SUBJECT: County Water Resources Status Report

Members of the Board:

This letter presents the annual status report on County water resource management activities, with highlights on the major efforts being taken with regard to re-evaluation of water supply options, water transfers, oversight of non-municipal groundwater pumping, integrated regional water management, response to the current drought conditions, and support for the San Lorenzo River Alliance, a new effort to focus actions to revitalize the San Lorenzo River. Additional information attached to this letter provides a summary of all water resource management efforts related to water supply and water conservation, water quality protection, habitat restoration, and stormwater and flood management in the Santa Cruz and Pajaro regions (Attachment 1). The Health Services Agency also requests your approval of the attached resolution declaring a state of drought for Santa Cruz County.

Water Supply Challenges in Santa Cruz County

Santa Cruz County water agencies continue to experience major water supply challenges, a situation currently being exacerbated by record-low rainfall over the past year. Most of the groundwater basins are in a state of overdraft, meaning that more water is being pumped from the basins than is infiltrating into them. Most major water supply agencies do not have sufficient sustainable supplies to meet current and future demand. The Soquel Creek Water District has determined that it needs to reduce groundwater pumping by 35% for 20 years to allow the mid-county groundwater basin to recover to levels necessary to prevent seawater intrusion. The City of Santa Cruz has deficiencies during a drought and must further reduce its stream diversions to restore habitat for endangered salmon and steelhead. The desalination project that was being developed to provide a supplemental supply for both the Soquel Creek Water District and the City of Santa Cruz Water Department has been subject to significant community criticism and has been put on hold to allow for a community-driven evaluation of potential water supply alternatives. The groundwater basins supplying the Scotts Valley area and the Pajaro Valley continue to be in a state of overdraft. All of these current deficiencies are expected to be exacerbated by the impacts of climate change, which is projected to result in significantly increased irrigation demand and a

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30% reduction in groundwater recharge. These deficiencies threaten the well-being of county residents and could significantly impact options for economic development.

County staff are assisting the water agencies in a number of efforts to address these deficiencies:

- Developing options for water exchange among the agencies to better utilize available resources while balancing environmental needs.
- Compiling information on non-municipal well usage and engaging small and private water users in basin water management efforts.
- Developing the updated Integrated Regional Water Management (IRWM) Plan, which will serve as the basis for coordinated efforts and future state funding assistance to help address regional needs.
- Providing technical assistance to evaluate underlying geology, hydrology, broad basin water budgets, fish habitat needs, and potential water management options.
- Promoting and implementing groundwater recharge projects through IRWM and stormwater management programs.
- Promoting water conservation, greywater reuse, and wastewater recycling.
- Meeting regularly with water managers and governing bodies to emphasize and promote a regional approach to addressing water supply deficiencies and restoration of fish habitat.

Water Exchange and Conjunctive Use

Northern Santa Cruz County has four major water agencies that are for the most part reliant upon one source of supply, either surface water or groundwater. This reliance upon a single source limits operational flexibility and the ability to better manage resources. There is an abundance of surface water during normal winter months, but flows are significantly reduced in summer months and droughts. Groundwater basins typically have significant volumes of water in storage, but long term pumping rates have exceeded the rates of recharge, resulting in depleted groundwater levels, seawater intrusion, loss of yield, and reduced flow of streams that are fed by the groundwater system. Conjunctive water use involves using multiple water sources, usually both surface and groundwater sources, in a way that maximizes water storage and availability under different climatic conditions. Within the county, this could involve exchanges among water agencies of winter streamflow, summer groundwater, recycled water, and water from desalination. Conjunctive use can provide for increased water supply reliability, increased groundwater storage, reduced summer stream diversions, and increased summer stream flows. In Santa Cruz County, conjunctive use would require connections between separate districts because each is dependent upon a single source of water (i.e. either surface or groundwater).

In 2007, the Santa Cruz Region began to assess the potential for conjunctive use under a Proposition 50 IRWM Implementation Grant from the State Water Resources Control Board. Eight technical analyses were conducted as part of that project that examined the potential for conjunctive use in the lower San Lorenzo River Watershed. Three preferred projects were identified, one of which involved the delivery of excess winter flow in the San Lorenzo River to the Scotts Valley area in order to reduce groundwater pumping and recharge the basin. County staff further evaluated the potential yields of this proposal and included the Soquel Creek Water District as one of the potential beneficiaries of excess winter flow. A report outlining the potential benefits of this project was presented to the Soquel Water District and your Board in May, 2011. Since that time, Proposition 84 funds have been utilized to provide more detailed technical analyses of yields, infrastructure needs and costs, potential fishery impacts, and water rights approaches for various scenarios.

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The concept behind water exchange is to transfer excess, available surface water during the winter months from the City of Santa Cruz diversion and treatment facilities on the San Lorenzo River to the surrounding groundwater agencies to supply their demands. Such a supplemental supply would allow the groundwater agencies to reduce pumping from their overdrafted groundwater basins, helping those basins to begin to recover. As basin recovery occurs, increased groundwater levels will increase stream baseflow and available fish habitat. Conceptually, after sufficient basin recovery, during dry summers, water could be provided back to the City of Santa Cruz to help meet their demands while leaving more flow in the streams for fish. A future phase of the project could utilize excess winter flow for direct recharge into the groundwater basins.

In the current study, 73 years of streamflow records were used in a computer model of the City of Santa Cruz water supply operations to evaluate various water transfer scenarios. The model took into account the variation in demand, the availability of water from different City sources, the expected need to reduce other city diversions to restore fish habitat, and the capacity of infrastructure to pump and treat the water. Because winter flow in the San Lorenzo River is frequently subject to higher sediment load, higher turbidity, and increased organic and potential pathogen load, considerable process improvements to provide adequate treatment would be required. Pumping significantly more winter water from Tait Street, with treatment at the Santa Cruz Water Department's Graham Hill Treatment Plant, will require upgrade of diversion and treatment facilities and increased operation costs. Five water transfer scenarios were modeled, the results of which indicate a total potential yield for water transfer between 445 and 1,712 acre-feet per year (af/yr), depending on the level of infrastructure improvements. Capital costs for diversion and treatment upgrades ranged from $27 to $92 million, with increased operations costs of between $2 and $7 million per year. The various scenarios are summarized in Attachment 2.

A key issue to be resolved is the need to apply for new water rights or approvals of transfers. A variety of mechanisms were identified to accomplish this task, likely to include a combination of short term transfers under existing rights while a new water right is obtained from the State Water Resources Control Board. The City of Santa Cruz has generally been supportive of this concept, provided it can be done in a way that does not adversely affect their existing water rights, their treatment facilities, or the amount of water available to their customers. Current efforts are focusing on determining how soon and how much water could be sent back to Santa Cruz from the groundwater agencies to meet Santa Cruz needs during a drought period. Both Scotts Valley Water District and Soquel Water District are supportive of the concept, and Soquel has identified water exchange as a backup supplemental water source.

County Water Resources staff are working with water agencies to finalize the remaining technical analyses and prepare a final project report that is expected to be available by March 2014. Next steps will include further consultation with the fishery resource agencies, defining a critical path towards addressing water rights, and developing agreements and the institutional framework for moving a project forward.

Oversight of Non-Municipal Water Use in Mid-County

Small water systems and individual users account for an estimated 30% of the total water used in Santa Cruz County outside of the Pajaro Valley (Attachment 3). Cumulative water use by these pumpers has an impact on groundwater levels and streamflows. In the Purisima portion of the overdrafted Soquel-Aptos basin, 38% of the pumping is by non-municipal users. In the urban coastal area, which is the most overdrafted portion of the Purisima, 15% of the pumping is by non-

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municipal pumpers, such as Cabrillo College, Seascape Golf Course, several small water systems, and agricultural users. The Soquel Creek Water District is concerned about potential impact of private users on the basin overdraft and a number of the District ratepayers have urged the District to look into formation of a groundwater replenishment district, whereby a fee on groundwater pumping could help fund basin recovery efforts. As the district considers a moratorium on new connections, they may also request that the County limit new well construction as was done back in 1981.

The County is currently the entity that has the greatest potential for oversight of non-municipal pumpers. The County has some tools to help minimize impacts of private pumping through its oversight of small public water systems, water conservation programs, water waste prohibitions, and regulation of new well construction. County staff are proposing to work with the Soquel Creek Water District to form a private well working group to engage with private well owners and encourage their participation in improved management of the Soquel-Aptos groundwater basin. Some potential future actions in this area could include:

- Education, outreach, and rebates to encourage reduced water use.
- Increased requirements for small water systems to monitor and reduce water use.
- Increased monitoring and/or groundwater modeling to better assess the impact of inland pumping on coastal groundwater levels.
- County participation in a Joint Powers Authority with Soquel Creek Water District, Central Water District and City of Santa Cruz for management of the Soquel-Aptos Basin.
- Formation of a groundwater replenishment district to help fund basin management and replenishment.
- Declaration of a groundwater emergency, with restrictions on new wells and possible restrictions on water use, in parallel with Water District restrictions.
- Development of a water impact fee paid by new development outside of the Water District boundaries, similar to the Water District's water demand offset program.

Staff will keep your Board apprised as further discussions occur.

Santa Cruz Integrated Regional Water Management

Given the small geographic area and reliance upon local resources, most of the diverse water resource management issues in the county are interrelated and can be addressed through comprehensive, collaborative programs. Since 2005, the State has identified "integrated regional water management" as a key approach to addressing state and regional water supply and water management needs. This program has helped to further bolster the County's long-standing watershed management approach, bringing together water agencies, resource protection agencies, and other stakeholders to address water supply, habitat protection, water quality protection, flooding, groundwater recharge, stormwater management, and wastewater management in an integrated and comprehensive manner. County staff have been actively engaged in integrated regional water management (IRWM) in northern Santa Cruz County, the Pajaro Watershed, the Central Coast Region, and at the state level.

The Santa Cruz IRWM Region includes all of Santa Cruz County outside of the Pajaro Watershed, plus the Watsonville Sloughs and the City of Watsonville for the purposes of water quality and habitat improvement. The County joined with eight other partner agencies in signing a 2008 Memorandum of Agreement for IRWM in the Santa Cruz Region. The Regional Water Management Foundation (RWMF), a subsidiary of the Community Foundation of Santa Cruz

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County serves as the hub for Santa Cruz IRWM efforts and has administered the two IRWM grants received from the state. County Water Resources staff work closely with the RWMF and are currently leading the effort to update the Santa Cruz IRWM Plan, which is scheduled to be completed in 2014. Attachment 1 provides a listing of current IRWM efforts and water resource management activities in the Santa Cruz IRWM Region, organized under the four topic areas of the IRWM Program: water supply and water conservation, water quality protection, watershed and aquatic habitat restoration, and stormwater and flood management.

Pajaro Management Activities

County staff also participate actively in the Pajaro IRWM, which encompasses the entire 1300 square mile watershed. Pajaro IRWM includes water supply and flood management projects throughout the Pajaro Valley, as well as water quality and habitat restoration projects in the Pajaro Valley outside the Watsonville Slough system. In 2013, progress continued to be made to address the substantial water resource issues in the Pajaro Valley:

- An updated Basin Management Plan to reduce current groundwater extraction by 12,000 af/yr is expected to be adopted by the Pajaro Valley Water Management agency in 2014.
- The County has taken further steps to reduce flood hazard through bench excavation of accumulated sediment from the Salsipuedes Creek channel.
- The Community Water Dialogue, a community stakeholder group, has organized grower and community support for a variety of efforts to implement managed recharge projects, improved irrigation efficiency, and improved basin management.
- The Resource Conservation District has worked with the agricultural community to implement programs to reduce water use, promote groundwater recharge, and improve water quality.
- The City of Watsonville, County, and other entities have worked together to better characterize and address the causes of excessive harmful algae blooms at Pinto Lake.

The list of current water resource management activities within the Santa Cruz County portion of the Pajaro Watershed is included in Attachment 1.

Current Drought Conditions

California and Santa Cruz County have just completed the driest calendar year on record and are headed for the driest January. The San Lorenzo River, the largest single water supply source for much of the County, is experiencing the lowest January flow ever recorded in 77 years of historical record. Although groundwater supplies experience less immediate impact in a drought, the lack of recharge and increased demand accelerates overdraft conditions and seawater intrusion. Local water agencies have already taken a number of steps to encourage or require reduced water use by their customers (Attachment 4). County staff will work with water agency staff to encourage water saving measures and enforce the County Code prohibitions on water waste

On January 17, 2014, the Governor declared a state of drought emergency and directed a number of efforts to be taken by State departments to reduce water use, including a voluntary 20% reduction in water use by all users state-wide. Locally, County staff are working with our local water agencies to make a joint statement of drought severity and the need for all water users in the county to take action to reduce their water use. In addition to your Board meeting on January 28, a joint press conference is scheduled and drought management actions are being considered by the governing bodies of the City of Santa Cruz, City of Watsonville and Soquel Creek Water District. Similar actions are scheduled at a later date in Scotts Valley and Central Water Districts.

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Consistent with those actions, County staff is recommending that your Board adopt the attached resolution declaring a state of drought throughout the county. Staff will continue to work with the water agencies, small water systems, and water users throughout the county and will report back to your Board if additional actions are needed.

San Lorenzo River Alliance

On January 7, 2014, the Coastal Watershed Council, a local non-profit group hosted a kick-off meeting of the San Lorenzo River Alliance (Alliance). The Alliance is intended to be a community coalition of agencies, businesses and community groups, which will help focus and coordinate efforts to revitalize the health of the San Lorenzo River (River) and transform the River corridor into a vibrant community asset. The following entities have been invited to participate in the Alliance: Coastal Watershed Council, City of Santa Cruz, County of Santa Cruz, Museum of Natural History, San Lorenzo Valley Women's Club, and the Resource Conservation District of Santa Cruz County. County staff are already participating in the River Oversight Committee and the Water Quality Working Group, working under the umbrella of the Alliance. The County has a major role in promoting water quality and overall health of the River and its watershed. Staff believes that it is important at this time for your Board to formally support and endorse active County participation in the San Lorenzo River Alliance.

Conclusion and Recommendation

County staff are working closely with other partner agencies to provide a comprehensive and integrated approach to water resources management in the County resulting in a substantial number of collaborative projects to address significant water resources issues. We anticipate further successful efforts in the coming year.

It is therefore RECOMMENDED that your Board:

1. Accept and file this report and direct the Water Resources Division Director to provide a follow up annual report on County water management activities in January 2015.
2. Adopt the attached resolution declaring a state of drought for Santa Cruz County.
3. Endorse the County's participation in the San Lorenzo River Alliance to revitalize the health of the San Lorenzo River.

Sincerely,

Giang Nguyen

Giang T. Nguyen
Health Services Agency Director

RECOMMENDED:

Susan Mauriello by sp

SUSAN A. MAURIELLO
County Administrative Officer

Attachments:
1. Status of Water Resource Management Efforts in Santa Cruz County, 2013
2. Water Exchange Evaluation
3. Water Use in Santa Cruz County - 2012
4. Current Water Use Restrictions in Santa Cruz County, January 2014
5. Resolution Declaring a State of Drought for Santa Cruz County

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Cc: Public Works Department
Planning Department
Environmental Health
Water Advisory Commission
Water Agencies
LAFCO

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Status of Water Resource Management Efforts in Santa Cruz County, 2013

Santa Cruz County continues to address major water resource challenges. Most of the groundwater basins are being pumped in excess of sustainable yield and the major water supply agencies do not have sufficient sustainable supplies to meet current and future demand. Historic salmon and steelhead populations have been greatly diminished by reductions in streamflow, increased erosion and sedimentation, barriers to migration, and removal of large woody material from streams. Coastal water quality has been degraded by urban runoff and leaky sewer systems. The natural benefits of wetlands, floodplains, riparian corridors, and groundwater recharge areas have been significantly diminished by development and agricultural use. The County and its partner agencies are conducting a range of successful efforts to address these and other water resource challenges.

Following is a summary of 2013 water resource management efforts, organized by Integrated Regional Water Management (IRWM) Region and six topic areas:

- Santa Cruz Water Supply and Conservation
- Santa Cruz Water Quality
- Santa Cruz Watershed and Aquatic Habitat
- Santa Cruz Stormwater and Flood Management
- Santa Cruz (IRWM) Planning and Administration
- Pajaro IRWM and Water Resource Efforts

Water Supply and Conservation

1. The City of Santa Cruz and Soquel Creek Water District (scwd^2) completed the Draft Environmental Impact report for the proposed joint desalination project. As a result of substantial public criticism over the cost and energy impacts of the project, the City Council has suspended further action on the desal project over the next 12 months in order to further re-evaluate the water supply deficiencies and potential options to address those deficiencies.

2. The Soquel Creek Water District continues to face the need to cut pumping by 35% and is conducting a series of public workshops to evaluate its options without a desal project, including use of water exchange, recycled water, water use curtailment, and augmented groundwater management.

3. The City of Santa Cruz completed a baseline water conservation study and will complete a new ten year water conservation plan to quantify the amount of additional conservation that can be reliably expected.

4. County staff continue to work with the water agencies to complete an evaluation of potential opportunities for water exchanges, including potential yield, infrastructure needs, costs, fish impacts, and water rights issues, as described above and in Attachment 2. An evaluation report will be completed in early 2014.

5. The City of Santa Cruz continues to negotiate its habitat conservation strategy with the fishery resource agencies. This work is anticipated to be substantially completed in 2014

and will dictate how much of its current water supply the City will need to give up in order to support the recovery of Coho salmon and steelhead.

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6. The San Lorenzo Valley Water District has started to develop the information necessary to evaluate the impact of its stream diversions on fish habitat. It is expected that this process will take 5-10 years to reach an agreement on the amount of stream flow the District needs to release to adequately restore fish habitat.

7. The San Lorenzo Valley Water District and the Scotts Valley Water District secured a grant from the California Department of Public Health to construct emergency interties connecting the two districts and the four subareas of the San Lorenzo District. These interties can eventually be used of conjunctive management and water exchange, but not until a full evaluation of fishery and other environmental impacts is completed. There was inadequate grant funding to include Lompico, Santa Cruz, and Soquel in the intertie project.

8. County staff worked with staff from the Local Agency Formation Commission, San Lorenzo Valley Water District and Lompico County Water District to develop plans to make capital improvements and merge the two Districts to address substantial deficiencies in water quality and reliability. A public workshop was held in December 2013 and it is anticipated that efforts will be completed in 2014, if it is supported by the Lompico ratepayers.

9. County staff are working with the City of Santa Cruz and Soquel Creek Water District to jointly apply for a grant to evaluate recycled water options for the City and mid-county area.

10. Scotts Valley Water District continues to pursue a water exchange project with the City of Santa Cruz and Pasatiempo golf course to use recycled water from Scotts Valley on the golf course, and in return Scotts Valley would receive potable water from Santa Cruz.

11. Scotts Valley Water District will complete an update of the groundwater model for the Scotts Valley area in 2014 which will help determine groundwater management objectives and options, including the effects of water exchange.

12. Central Water District is conducting a study of options for moving pumping to the Purisima formation and reduce pumping from the Aromas Formation, which is overdrafted and subject to naturally elevated levels of hexavalent chromium.

13. County staff have provided technical assistance to the water agencies to better understand underlying geologic structure and groundwater movement in the Scotts Valley and Soquel-Aptos areas.

14. The County, City of Santa Cruz, and San Lorenzo Valley Water District are conducting a project to identify and better understand the occurrence of karst geology, which has the potential to store and transmit significant amounts of water, but which is very susceptible to adverse impacts from overlying land use. This work should be completed in 2014 and may result in recommendations to update county policies to provide more water resource protection in karst areas.

15. County staff continue to regulate the 130 small public water systems with 5-199 connections. The County recently received a one-time grant from the State Department of public Health to bolster that program.

16. The County, City of Santa Cruz, and Scotts Valley Water District recently received Proposition 84 stormwater grant to implement projects to reduce stormwater runoff and increase groundwater recharge by infiltrating runoff from impervious surfaces. This will be implemented in 2013 and 2014.

17. The County continues to coordinate submission of groundwater level data to the State's groundwater monitoring program (CASGEM). County staff also implement a cooperative program to monitor private well levels in the inland mid-county area.

18. The County Board of Supervisors adopted a new Water Efficient Landscape Ordinance and updated the County's water conservation ordinances. County staff continue to work with the water agencies and the real estate community to implement the water conservation programs, including promotion of greywater reuse.

Water Quality

1. County staff continue to work with the State, City of Santa Cruz, City of Capitola, and the Sanitation District to implement projects and conduct monitoring to assess public health threats, reduce bacterial contamination and improve beach water quality. The Water Resources Division Director continues to serve on the State Clean Beach Task Force and was invited to present to the Assembly Select Committee on Ocean Protection.

2. County staff maintain ongoing efforts for water quality protection through septic system management, monitoring and investigation, funded by CSA 12. In 2014 staff will work with the Onsite Sewage Disposal Technical Advisory Committee to update the County's onsite wastewater management program and sewage disposal ordinance to bring it into compliance with new state septic system requirements.

3. The County Water Resources laboratory continues to offer free nitrate testing to residents with individual wells. Several wells with nitrate above drinking water standards have been identified through this program.

4. Public Works staff have worked to allow sewer connections to some 260 properties in the Pasatiempo/Rolling Woods area. This will allow property owners to more easily address failing septic systems in that area.

5. Public Works staff has received tentative approval from the State Clean Beach Task Force for grant funds to upgrade the sewer system near Soquel Creek and Neary Lagoon, to eliminate potential sewer leaks and sources of contamination to Cowell and Capitola beaches.

Watershed and Aquatic Habitat

1. The Resource Conservation District of Santa Cruz County worked with landowners and agency partners to complete over 70 habitat improvement projects through the Integrated Watershed Restoration Program (IWRP). These projects included wetland restoration, fish barrier removal, rural road upgrades, stream habitat improvement, and community education.

2. County staff worked with the water agencies to maintain annual sampling of stream habitat and juvenile salmonids in four watersheds: San Lorenzo, Soquel, Aptos and Pajaro. In 2013, young-of-the-year steelhead numbers were relatively good, reflecting good survival from limited winter storms, but were small in size. Steelhead yearling densities were low throughout the four watersheds. Steelhead numbers were low in Aptos Lagoon compared to the two previous years and steelhead were again not found in Pajaro Lagoon.

3. County staff completed riparian assessments and general stream condition surveys for much of Bean and Zayante creeks and portions of Soquel, Lompico and Mountain Charlie Gulch.

4. County staff continued to implement the large woody material management program to maintain large wood for habitat value in county streams without jeopardizing public safety. There were few requests for large woody material removal due to the limited number of storms in the 2012-13 winter season.

5. County staff are participating in a multi-agency group working with Caltrans to replace the Highway 1 Bridge at Scott Creek in a way that also enhances lagoon and beach habitat for listed species including coho salmon, steelhead, tidewater goby, red-legged frog, and snowy plover.

6. County staff are working with the National Marine Fisheries Service to identify critical efforts to be implemented from the Coho Salmon Recovery Plan, which was released in 2013. The draft Steelhead Recovery Plan is expected to be released for public review later in 2014.

7. County Planning and Environmental Health staff met with other regulatory agencies to develop more effective approaches to environmental code compliance.

8. County staff are participating with the Coastal Watershed Council, City of Santa Cruz, and other entities in the formation of the new San Lorenzo River Alliance, which is seeking to improve water quality and reinvigorate community engagement with the lower river and the watershed.

Stormwater and Flood Management

1. County Public Works staff maintained the ALERT flood warning system.

2. County Public Works staff completed the updates to the drainage master plans for Zone 5 and Zone 6 in the mid-county area.

3. County staff continued to implement the County's stormwater management program and are updating the program to bring it into compliance with the State's new municipal stormwater permit, which was adopted in 2013.

4. The County, City of Santa Cruz, and Scotts Valley Water District recently received Proposition 84 stormwater grant to implement projects to reduce stormwater runoff and increase groundwater recharge by infiltrating runoff from impervious surfaces. This will be implemented in 2013 and 2014.

5. The County and water agencies are working with Ecology Action of Santa Cruz to implement a grant to promote use of low impact development measures and rainwater catchment to reduce stormwater runoff.

IRWM Planning and Administration

1. Regional partners completed 16 projects funded by $12.5 million Proposition 50 IRWM Implementation Grant from the State Water Resources Control Board, which began in 2008. Following is a listing of the components, including the responsible partner agency, and the current grant amount:
2.
    a. Overall Project Administration: Regional Water Management Foundation (RWMF), $758,000
    b. Abandoned Well Destruction, County Environmental Health Services, $355,000
    c. San Lorenzo/Scotts Valley Conjunctive Use, County Environmental Health Services, $227,500
    d. Aptos Watershed Drainage Master Plan, County Public Works Department, $227,500
    e. Stormwater Pollution Prevention, County Public Works Department, $207,500
    f. Groundwater Recharge Projects and Policies, County Environmental Health, $332,500
    g. New Brighton Sewer Line Relocation, County Sanitation District, $1,365,000
    h. Desal Project Intake Study, Soquel Creek Water District/City of Santa Cruz, $611,000
    i. Polo Grounds Well, Treatment Plant, and Water Conservation Element; Soquel Creek Water Dist. and County Parks; $2,065,295
    j. Polo Grounds Monitoring Well, Soquel Creek Water District, $150,000
    k. Davenport Drinking Water Treatment, Davenport County Sanitation District, $334,393
    l. Watsonville Sloughs Restoration, Resource Conservation District, $690,000
    m. Integrated Watershed Restoration Program, Resource Conservation District, $3,825,000
    n. Recycled Water Pipeline Extensions, Scotts Valley Water District, $705,705
    o. Coordinated Monitoring, County Environmental Health Services, $350,000
    p. Improve Integration of Water Management, County Environmental Health Services, $295,607

3. Regional partners continued 8 projects funded by a $1 million Proposition 84 IRWM Planning Grant, which is due to be completed in 2014:

    a. Update the IRWM plan framework, including governance, financing, relation to land use planning, and stakeholder involvement, County Environmental Health, $14,000
    b. Provide improvements to the IRWM Plan, including updated objectives, management strategies, projects, project prioritization and effectiveness assessment, data management, and performance evaluation, County Environmental Health, $120,000
    c. Develop a climate change strategy relative to water resources and water facilities, County Environmental Health, $31,500.
    d. Evaluate the potential to increase pumping in the eastern Purisima Formation in order to reduce pumping from the overdrafted Aromas formation, Central Water District, $200,000

e. Update the Santa Margarita Groundwater Model, Scotts Valley Water District, $221,519
f. Develop detailed recommendations for conjunctive use and water transfers, County Environmental Health, $164,500
g. Develop a hydrologic and hydraulic model of the middle and lower Watsonville Slough system to support future management and enhancement efforts, Resource Conservation District, $199,056
h. Administer and manage the Grant, RWMF, $49,175

4. The RWMF received a $100,000 grant from California Department of Water Resources to promote engagement of disadvantaged communities in IRWM. Work will be focused in Davenport, Watsonville, Lompico and other small low income communities in the region.

5. County and RWMF staff continued work on the IRWM Plan Update, which is scheduled to be completed in 2014 and will form the basis for application for additional water bond grant funds.

6. Partner agencies agreed to provide $80,000 to the RWMF to support ongoing IRWM planning and management in the region for 2014.

7. County staff have provided outreach to the community on IRWM efforts, including one public meeting and talks to County Commissions and service groups.

8. County staff participated in statewide water planning, including the Public Advisory Committee for the California Water Plan Update 2013, and the IRWM Strategic Plan development.

9. County staff were invited to participate in the local panel for a special hearing by the Assembly, Water, Parks and Wildlife Committee on the need for a future State water bond.

10. County staff have tracked water related mitigation actions in the County's Climate Action Strategy and have participated in a project to evaluate the potential effects of sea level rise in the Monterey Baby areas.

Pajaro Management Activities

County staff also participate actively in the Pajaro IRWM, which encompasses the entire 1300 square mile Pajaro watershed. Pajaro IRWM includes water supply and flood management projects throughout the Pajaro Valley, as well as water quality and habitat restoration projects in the Pajaro Valley outside the Watsonville Slough system. The Pajaro IRWM is led by Santa Clara Valley Water District, San Benito County Water District and the Pajaro Valley Water Management Agency. Following is the list of current water resource management activities within the Santa Cruz County portion of the Pajaro Watershed:

1. The Pajaro Valley Water Management Agency (PVWMA) completed the Draft Environmental Impact Report for the Basin Management Plan Update, which is anticipated to be finalized and adopted in 2014. Implementation of this plan is expected to reduce groundwater extraction by 12,000 af/yr and halt further seawater intrusion.

2. PVWMA has formed an Ad Hoc Funding Committee to develop a rate structure for collection of pumping fees to fund implementation of the updated Basin Management plan. The new rates will be put t a vote of the well owners in 2015.

3. The Community Water Dialog, a community stakeholder group has organized grower and community support for a variety of efforts to implement managed recharge projects, improved irrigation efficiency, and community support for improved basin management.

4. The Resource Conservation District has worked with the agricultural community to implement a variety of outreach, technical assistance and cost-sharing programs to reduce water use, promote groundwater recharge, and improve water quality.

5. The City of Watsonville, County and other entities have worked together to better characterize and address the causes of excessive harmful algae blooms at Pinto Lake. Additional grant funds are being sought to better characterize the specific sources and to begin implementation of measures to reduce nutrient loading.

6. The County has taken further steps to reduce flood hazard though bench excavation of accumulated sediment from the Salsipuedes Creek channel. The County, City and other entities continue to pursue implementation of a project with the Army Corps of Engineers to significantly upgrade the flood conveyance system to provide an adequate level of flood protection.

7. The Resource Conservation District and partner agencies have completed the Watsonville Slough Hydrologic Model, which provides critical information on the movement of water through the slough system. This will help guide future management efforts for water supply, drainage, and habitat restoration.

8. In 2014 the Resource Conservation District and partner agencies will complete College Lake Improvement and Watershed Management Project. This project involves filed work and modeling to better understand the movement and storage of water in College Lake, and will evaluate various scenarios for management of the lake for water supply, fish habitat, wildlife habitat and agricultural use.

9. In 2014, the Pajaro IRWM region will complete implementation of projects funded by a $25 million Proposition 50 IRWM Implementation Grant and a $1 million Proposition 84 Planning Grant that will result in an updated IRWM plan.

10. In late 2013 the Pajaro Region was notified that they were the only region in the Central Coast selected for Round 2 of Proposition 84 funding, at an amount of $7,569,000. Within Santa Cruz County, this grant will fund an increased recycled water storage project for PVWMA and an agricultural water quality and aquifer enhancement project to be conducted by the Resource Conservation District of Santa Cruz County.

Water Exchange Evaluation:
Potential Yields and Costs under Various Infrastructure Upgrade Scenarios

The Santa Cruz Regional Water Exchange Project proposes to transfer excess available surface water from the San Lorenzo River during the winter months of November through April. Water would be transferred to the surrounding groundwater agencies to supply their demands, allowing them reduce pumping from their overdrafted groundwater basins, and helping those basins to recover. As basin recovery occurs, increased groundwater levels will increase stream baseflow and available fish habitat, and during dry summers water could be provided back to the City of Santa Cruz (City) to help meet their demands while leaving more flow in the streams for fish. The timing and amount of return flow back to the City are presently undetermined and depend on the condition of the groundwater basins, pumping capabilities of the groundwater agencies, and policies for basin management established by the governing boards. The City would also benefit from some increase in San Lorenzo River flow and increase in groundwater levels in the western Purisima basin, which they share with the Soquel Water District.

As originally conceived, water would first be provided to the Scotts Valley area (Scotts Valley and San Lorenzo Valley Water Districts), which is within the San Lorenzo Watershed, and would eventually lead to increased baseflow in Bean Creek and the lower San Lorenzo River. Any available water in excess of Scotts Valley demand would be provided to Soquel Water District. The eventual priority and timing of deliveries is a matter subject to negotiation and agreement among the water agencies.

The City utilizes the Confluence model to model its operations, taking into account the variation in demand, the availability of water from its various sources, and the capacity of its infrastructure to pump and treat the water. Confluence has been used to model various water transfer scenarios to calculate the expected yield during the range of historical hydrologic conditions. All model runs took into account the need protect fish habitat throughout the City operations and utilized the flow bypass requirements that are currently under consideration in the City's Draft Habitat Conservation Strategy. Under those conditions, it should be noted that the City utilizes the Tait Street Diversion significantly more than they have historically used it, leaving less water available for transfer to neighboring agencies. The total amount potentially transferred in a day is also limited to the actual daily demand of the groundwater agencies.

Winter flow in the San Lorenzo River is frequently subject to higher sediment load, higher turbidity, and increased organic and potential pathogen load, requiring considerable treatment to meet State Public Health requirements. Depending on the amount of water transferred, pumping more winter water from Tait Street, with treatment at the City's Graham Hill Treatment Plant, will require upgrade of diversion and treatment facilities and increased operation costs. Kennedy/Jenks Consultants has prepared an analysis of the improvements needed under the various scenarios and a planning level estimate of the capital and operational costs of those improvements. (Water rights changes needed to accomplish the various scenarios are discussed in a subsequent section.)

The following scenarios have been evaluated:

1. Utilize of current water rights, current Tait Street Diversion capacity 7.8 million gallons per day (mgpd), current Graham Hill Treatment Plant (Treatment Plant) capacity 10 mgpd, and existing interties between Santa Cruz and Soquel to transfer water to Service Area 1 of the Soquel Water District. This assumes a capacity of 1.06 mgpd, but the actual hydraulic capacity of those interties is currently being re-evaluated and may be greater.
2. Utilize current water rights and diversion/treatment infrastructure, with new interties to Scotts Valley (1-2 mgpd capacity) and to Soquel (1.5-3.5 mgpd capacity). This would also require some upgrades to the Tait Street intake to better handle the increased sediment load from increased winter use.
3. Increase Treatment Plant Capacity to 16 mgpd. This would require replacement of the pre-treatment solids settling and filtration components and oxidation/disinfection components at the Treatment Plant.

4. Increase Treatment Plant capacity to 16 mgpd as in Scenario 2 and double diversion capacity at Tait Street to 14 mgpd by constructing an additional new diversion works and upgrading pumps.
5. Increase Treatment Plant capacity to 16 mgpd as in Scenario 2 and upgrade treatment process to treat turbid source water up to 200 NTU, by upgrading the solids handling process. This allows more days of diversion during the winter.
6. Increase Treatment Plant capacity to 16 mgpd and turbidity treatment to 200 NTU per Scenario 4 and Tait Street diversion capacity to 14 mgpd per scenario 3.

The following table presents the results of the yield and cost analysis of the various scenarios.

	Scenario	SqCWD Average Yield MG(AF)	SVWD Average Yield MG(AF)	Total Potential Yield MG(AF)	Capital Cost $M[4]	Annual Cost $M[4]	Production Cost/AF $/AF[4]
1	Current Tait / GHTP Infrastructure/ Water Rights/ Connections 1.06 mgpd to SqCWD SA1[1]	122 (375)	0	122 (375)	2.77	0.32	850
2	Current Infrastructure/Rights[2,3] New interties (SV: 1-2 mgpd; SqCWD: 1.5-3.5 mgpd)	39 (120)	106 (325)	145 (445)	26.95	1.90	4,260
3	Increase GHWTP Capacity from 10 mgpd to 16 mgpd[2,3]	95 (292)	108 (331)	204 (623)	77.53	5.24	8,420
4	Increase GHWTP Capacity and Increase Tait Capacity from 7.8 to 14 mgpd[3,5]	333 (1,022)	154 (473)	488 (1495)	90.61	6.40	4,280
5	Increase GHWTP Capacity and Turbidity Treatment from 15 to 200 NTU (Tait at 7.8 mgpd)[2,3]	136 (417)	124 (381)	260 (798)	85.73	5.91	7,410
6	Increase GHWTP Capacity, Increase Tait Capacity, Increase Turbidity Treatment[6]	384 (1,178)	174 (534)	558 (1,712)	91.68	6.68	3,900

Sources/Notes

[1] Hydraulic capacity of current interties is currently being re-evaluated, which could result in different yields.

[2] Fiske, Phase 2 Water Transfer Analysis: Task 1 Results (Second Revision), May 22, 2013

[3] Fiske, Water Transfer Phase 2 Summary, June 27, 2013

[4] Kennedy/Jenks, Water Transfer Infrastructure Summary Report, October 25, 2013; costs are costs of production and do not include additional costs of delivery to customers.

[5] Fiske, Phase 2 Water Transfer Project Draft Task 3 Technical Memorandum: Potential Transfers with Unlimited Tait Street Capacity, June 20, 2013

[6] Fiske, Supplemental Analysis of Water Transfer Volumes, July 24, 2013

[7] Fiske, Water Transfer Project: Long-Term Analysis Scenario 2 (REVISED), June 22, 2012

Replacement page
0180

Attachment 3

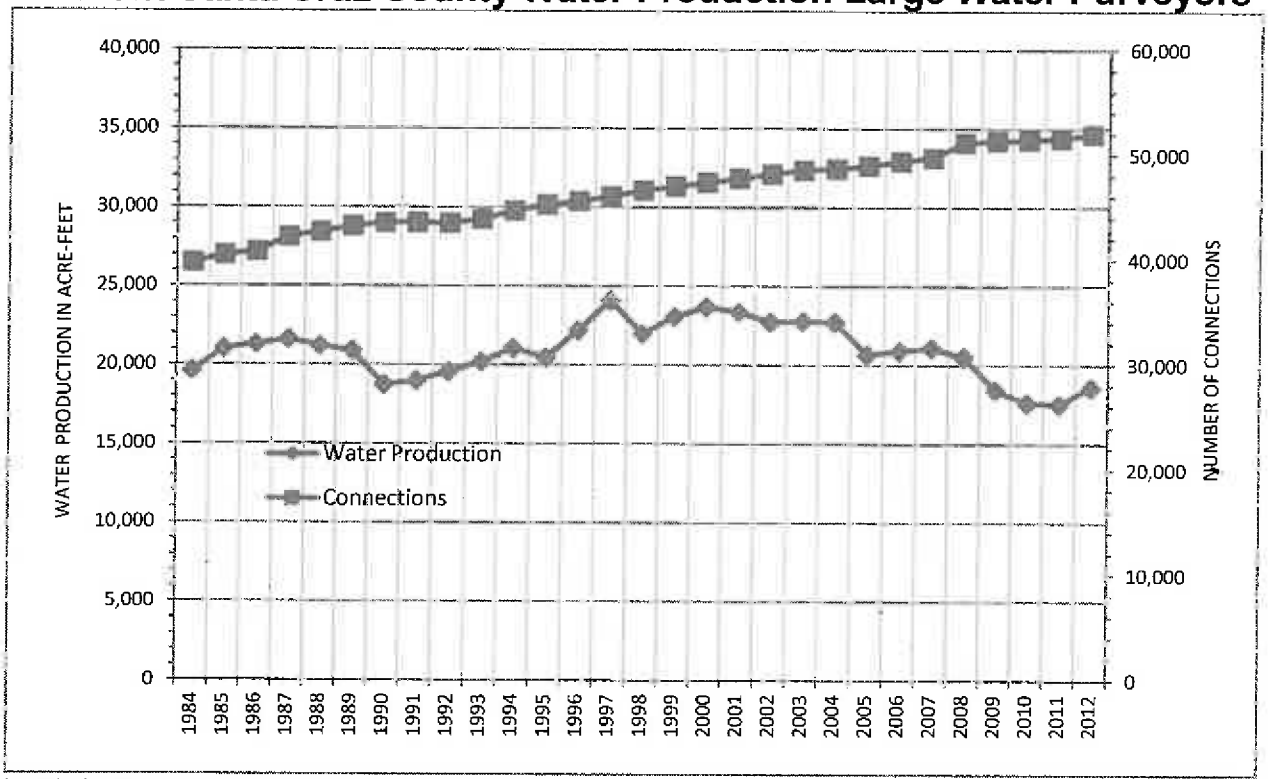
Water Use in Santa Cruz County - 2012

Water Supplier	Connections	Population	Water Use acre-feet/yr	Ground water	Surface Water	Recycled Water
Santa Cruz City Water Dept.	24,425	93,400	10,134	5%	95%	
Watsonville City Water Dept	14,843	65,000	7,760	92%	8%	
Soquel Creek Water District	15,562	38,000	4,171	100%		
San Lorenzo Valley (SLVWD)	5978	18,200	1,845	56%	44%	
SLVWD-Felton	1,337	4,000	393		100%	
Scotts Valley Water District	3,900	11,700	1,537	88%		12%
Central Water District	810	2,700	535	100%		
Lompico Creek Water District	495	1,300	93	77%	23%	
Big Basin Water Company	580	1,500	240	15%	85%	
Mount Hermon Association	530	1,400	250	100%		
Forest Lakes Mutual Water Company	330	900	140	100%		
Smaller Water Systems (5-199 conn.)*	3,000	8,000	1,800	95%	5%	
Individual Users*	8,000	20,000	5,000	95%	5%	
Pajaro Agriculture (SC Co only)**			25,254	94%	1%	5%
Mid- & North-County Agriculture*			2,400	75%	25%	
Totals	**79,790**	**266,100**	**63,498**	**78%**	**20%**	**2%**

*Values are Estimates

**Ag water use in 2012 on the Monterey County side of the Pajaro Basin, was 20,891 af/yr

Northern Santa Cruz County Water Production Large Water Purveyors*



* Includes Santa Cruz, Scotts Valley, San Lorenzo Valley, Lompico, Soquel Creek, and Central Water Districts

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Attachment 4

Replacement page 0181

Current and Proposed Water Use Restrictions in Santa Cruz County, January 24, 2014

Agency	Current Restrictions	Restrictions Under Consideration	2012 Average Total Daily Use, per connection, gpd	2010 Single Family Res. Average Daily Use per conn., gpd	2010 per capita use gpcd	UWMP 5 year Base use per capita gpcd	UWMP 10 year Base use per capita gpcd
County of Santa Cruz	• Permanent Water Waste Prohibition	• Drought Declaration • 20% voluntary reduction					
City of Santa Cruz Water	• Stage 1 Water Use Restrictions in effect: ○ Water Waste Prohibition ○ No Watering 10am-5pm ○ Water service at visitor facilities only on request	• Drought Declaration • 20% voluntary reduction • Considering Stage 2-5 restrictions and rationing, depending on additional rain.	370.4	172.1	93.1	115.6	112.7
Soquel Creek Water District	• Voluntary 15% Reduction • Water Waste Prohibition • No Watering 10am-8 pm	• Considering Tier 3 mandatory 25% curtailment • Considering long term Phase 1 Mandatory Water rationing	239.3	169.5	97.0	121	118
Scotts Valley Water District	• Water Waste Prevention Ordinance in effect all year: ○ No spray irrigation 10am-5pm ○ No hosing off of hardscapes ○ No irrigation run-off	Considering Stage 2 (15% cut) or Stage 3 (20%) restrictions	351.8	223.4	117.6	164.7	179.9
San Lorenzo Valley Water District		• Considering Stage 2 or 3 restrictions	273.0	171.0	89.0	--	103
City of Watsonville	• Permanent Water Wise Use • Permanent Water Waste Prohibition	• Drought Resolution • 20% Voluntary Reduction	590.0	237.3	101.2	114.2	115.9
Central Water District	Increase in water rates.	Drought Resolution 2/18/14	467.0	467	--		
Pajaro Valley Water Management Agency	Permanent Water Waste Prohibition	10-20% Voluntary Reduction					
Lompico County Water District			168.0	168	--		
State	• Declaration of Drought Emergency • Voluntary 20% Reduction						192
Central Coast Region							154

Notes:
gpd=gallons per day, gpcd=gallons per capita per day
UWMP: 2010 Urban Water Management Plans require establishing a 5 year base water use and a 10 year base water use based on historical water use, in order to set targets for water use reduction by 2020.

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Attachment 5 0181 a.

BEFORE THE BOARD OF SUPERVISORS
OF THE COUNTY OF SANTA CRUZ, CALIFORNIA

RESOLUTION NO. _____

On the motion of Supervisor
duly seconded by Supervisor
the following resolution is adopted:

RESOLUTION DECLARING A STATE OF DROUGHT
FOR SANTA CRUZ COUNTY

WHEREAS Santa Cruz County is experiencing the third consecutive year of below normal precipitation, with 2013 the driest year on record; and

WHEREAS the County's water supplies are in dire condition, indicated by: the San Lorenzo River is at its lowest January level ever recorded; Loch Lomond is at only 65% of its full capacity; and groundwater levels are declining in already overdrafted basins; and

WHEREAS dry conditions and lack of precipitation present urgent problems: drinking water supplies are at risk; businesses may be impacted by reduced water supply reliability; animals and plants that rely upon local streams and rivers, including threatened and endangered species, will be further threatened; groundwater wells may run dry or be impacted by seawater intrusion; fewer crops may be cultivated, at a higher cost, and farmers' long-term investments are put at risk; and the potential for catastrophic wildfire is greatly increased; and

WHEREAS extremely dry conditions have persisted since 2012 and may continue beyond this year and more regularly into the future, based on scientific projections of the impact of climate change upon rainfall patterns, runoff rates and recharge volumes in Santa Cruz County, requiring both short and long term approaches to better manage our water resources; and

WHEREAS the magnitude of the severe drought conditions presents threats beyond the control of the services, personnel, equipment and facilities of any single local government entity; and

WHEREAS the County is working closely with the other water supply agencies to address the short term and long term water shortages; and

WHEREAS, on January 17, 2014, Governor Brown declared a state of State of Emergency to exist in California due to prolonged drought conditions; and

WHEREAS, the Governor has called on all Californians to voluntarily reduce their water usage 20 percent, to ease the effects of the water shortage on agriculture, communities, and fish and wildlife.

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NOW, THEREFORE, BE RESOLVED AND ORDERED that the Santa Cruz County Board of Supervisors declares that a State of Drought exists in Santa Cruz County.

BE IT FURTHER RESOLVED AND ORDERED that the Santa Cruz County Board of Supervisors urges all County residents, including small water systems and private well owners, to become aware of the drought and take actions to reduce water usage by at least 20 percent.

BE IT FURTHER RESOLVED AND ORDERED that all County departments will immediately implement water conservation measures and take all reasonable actions to reduce water use at least 20 percent at County facilities including parks, buildings and rights of way.

BE IT FURTHER RESOLVED AND ORDERED that the County of Santa Cruz work with local water districts, non-governmental organizations and interested stakeholders to identify additional actions that residents, business and government should take to lessen the impacts of drought.

BE IT FURTHER RESOLVED AND ORDERED that the County of Santa Cruz Water Resources Division Director continues to support the activities of water agencies to develop alternative water supply and conservation projects in collaboration with local stakeholders.

BE IT FURTHER RESOLVED AND ORDERED that the County of Santa Cruz Water Resources Division Director monitor drought impacts and identify subsequent actions that should be taken to address critical issues within particular areas of the County.

PASSED AND ADOPTED at a regular meeting of the Board of Supervisors of the County of Santa Cruz, State of California, this 28th day of January, 2014, by the following vote:

AYES: SUPERVISORS
NOES: SUPERVISORS
ABSENT: SUPERVISORS

_____
Chairperson of the Board

ATTEST: _____
Clerk of the Board

Approved as to Form:
Assistant County Counsel

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WATER COMMISSION
REPORT

DATE: January 29, 2014

TO: Water Commission

FROM: Toby Goddard, Administrative Services Manager

SUBJECT: Water Shortage Contingency Plan

Attached is a copy of the City Water Shortage Contingency Plan for your review. This is an opportunity to read the plan before it may be necessary to implement it later this spring. It is not an agenda item for February 3rd. However, a special study session will be held by the City Council February 11, 2014 to review the plan and the framework for reducing water use.

Santa Cruz Sentinel.com

Newsmaker 2013: Water posed pressing political, environmental issues in Santa Cruz County

By J.M. Brown Santa Cruz Sentinel
POSTED: 12/29/2013 03:42:54 PM PST

Bill Kocher, director of the Santa Cruz Water District, stands on a patch of dry land in the...

SANTA CRUZ -- Simply put, 2013 was a watershed year for water agencies in Santa Cruz County.

Often in short supply in California, water became an even greater environmental and political focal point in 2013 -- the driest on record for some parts of the state -- after the city of Santa Cruz drew down its reservoir to the lowest level in nearly two decades and pressed the pause button on a controversial seawater desalination facility.

Mounting criticism from the public and a host of state and federal regulators demonstrated the uphill battle city leaders faced in finalizing an environmental analysis of the project and winning approval from voters in 2014. In late November, the City Council voted to form a 14-member advisory panel to closely examine alternatives and make recommendations for supplementing and managing a water supply impacted by severe drought and mandated fish habitat restoration.

The city's move to "reset" the debate over water after nearly a decade of planning for desalination sent Santa Cruz's desal partner, the Soquel Creek Water District, into an immediate inventory of its options for addressing saltwater intrusion in its over-pumped groundwater basin. The city also faced a judicial roadblock in extending additional water to UC Santa Cruz to support campus growth plans.

All this took place as the city and district underwent changes in leadership.

Bill Kocher, who ran the Santa Cruz department for 27 years, retired in September. An effort is

underway to name a replacement.

The Soquel Creek district hired Kim Adamson, who managed a water and sewer agency in Washington state, to replace 16-year director Laura Brown, who retired in 2012 for medical reasons.

Scotts Valley Water District also hired a new director from within Santa Cruz's ranks -- water finance chief Piret Harmon -- while the Pajaro Valley Water Management Agency lost a board member who led the district through a budget morass. Dennis Osmer resigned from the South County board amid a disagreement about how to restore the agency's overdrafted basin.

For all these reasons, the Sentinel staff chose water as a top newsmaker for 2013, and the topic looks to be front and center throughout 2014.

DESAL DEBATE

The Santa Cruz City Council in 2005 voted to pursue desal as the city's preferred water supply project while continuing conservation and initiating restrictions during dry periods.

Concerns about the environmental and economic toll of desalting ocean water increased after the city released an environmental analysis in May. During a rare three-month public review period, the city received more than 400 comments and questions, including criticism of proposed pump station locations near residential areas and a school that galvanized opposition.

The only alternative to desalination identified in the report as having the potential to reliably supply enough water to solve problems faced by the city and the Soquel Creek district was the direct reuse of recycled wastewater. The city proposed piloting a reuse project within the desal facility with the possibility of converting the plant once the state approves direct reuse, with Kocher saying, "We wouldn't be proposing a desal plant" if direct reuse were legal.

Still, in August, then-mayor Hilary Bryant joined City Manager Martín Bernal in recommending the council suspend the pursuit of desal and re-examine other alternatives rejected in the environmental report.

"We listened and we heard that we are certainly not in agreement, and we recognize the need to re-engage in a community involved process to evaluate our water problem," Bryant said in August. "If nothing else, it's my job and the council's job to listen to the community."

Three council members will nominate members to the 14-seat Water Supply Advisory Committee and appointments will be made in February.

MANAGING SUPPLY

The county's water resources division is expected in January to issue a report on the potential for sharing water among the area's multiple agencies.

The city also is expected next month to release details of its new water conservation master plan. Already a leader in conservation, Santa Cruz has been laying the groundwork to save more aggressively in coming years, noting the greatest savings can be found in higher-efficiency clothes washers.

Meanwhile, dry weather -- seasonal rainfall is just 15 percent of normal in Santa Cruz – has caused the city to drain Loch Lomond Reservoir to about 66 percent, the lowest level since the mid 1990s.

The city has extended restrictions on daytime landscape irrigation and other measures set to expire in October, a month that also saw the city bring online a new 6-million-gallon tank at the Bay Street Reservoir after 18 months of construction. A second replacement tank is expected to be completed in 2014.

In addition to low rainfall, the city also saw a cutback in supply as it halted its diversion of Laguna Creek as part of ongoing negotiations with fisheries regulators to restore habitat in the North Coast streams and San Lorenzo River watershed for threatened and endangered species.

A group called Habitat and Watershed Caretakers prevailed in its legal fight against the city and university to block an expansion of water and sewer service on hundreds of undeveloped acres identified for growth. In a 2008 agreement that settled lawsuits between the university, city, county and preservation groups, UCSC agreed to house two-thirds of new students through 2020 on campus in an effort to reduce traffic, water, property rental and other impacts in town.

The state Supreme Court declined to hear an appeal of a lower court's findings of fault with an environmental analysis of the project, but the city and university have not announced their next step.

In the Pajaro Valley Water Management Agency, officials released a draft environmental impact report saying a plan to boost groundwater supply would cost 30 acres of farmland. The proposal calls for deeper conservation, as well as storage and recharge projects for an agency whose finances got a boost in October after a court struck down challenges to its fees.

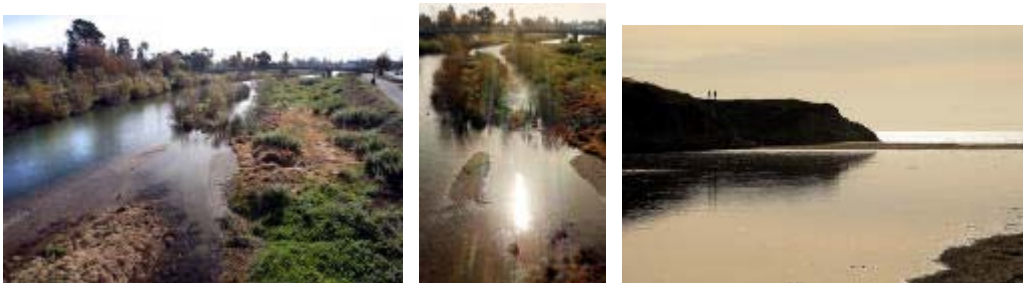
Follow Sentinel reporter J.M. Brown at Twitter.com/jmbrownreports

Santa Cruz Sentinel.com

Santa Cruz begins early planning for deeper water restrictions

By J.M. Brown Santa Cruz Sentinel

POSTED: 01/03/2014 05:04:42 PM PST



the San Lorenzo River is at its lowest level since 1991. (Dan Coyro/Sentinel) (Dan Coyro)

«

SANTA CRUZ -- Receiving just 10 percent of average rainfall since July, the Santa Cruz Water Department announced Friday it has begun planning for the possibility of water rationing for the first time in nearly a quarter century.

With the San Lorenzo River, the primary water supply, flowing at low levels unseen since 1991, Santa Cruz faces the potential of a third consecutive dry year. Average rainfall, recorded from July to June, is typically 12 inches by this point of rain year, but so far only 1.3 inches has been recorded.

"Weather conditions can change quickly in winter, but it will take a lot of rain to make up for not only this recent dry spell but the two previous years, as well," said Toby Goddard, administrative services manager and head of the water conservation program.

In late January, the Water Department will issue an initial supply outlook for 2014, offering a forecast that takes into account expected weather patterns, stream flow conditions and reservoir levels.

Officials will revise the report in late February before finalizing the assessment in late March. The department may then ask the City Council to take steps to further cut water use.

The council agreed last year to extend restrictions on daytime irrigation and other measures put in place in May 2013 to reduce water use among customers by 5 percent. The city also now asks customers to shut off automatic irrigation systems.

Goddard said the Water Department is working to modify its billing system should rationing be required. He cautioned it is too early to say whether rationing is a real possibility, but said the cutbacks, if necessary, would take place by setting a water-use limit for households and businesses that, when exceeded, would trigger a price increase per unit of water.

The last time the city rationed water was toward the end of a six-year drought in 1990. It has a range of voluntary reduction levels it can put in place depending on the seriousness of the water shortage.

The dryness in Santa Cruz is representative of a statewide problem.

On Friday, the California Department of Water Resources released its first winter snow survey. Readings of the snowpack statewide, which when melted each spring provides critical stream flow, indicates water content is a fifth of the average typically seen this time of year.

The snowpack has no bearing on the water available to Santa Cruz because all of the city's sources are driven by local rainfall. But the readings confirm 2013 is the driest year on record for many parts of the state.

"While we hope conditions improve, we are fully mobilized to streamline water transfers and take every action possible to ease the effects of dry weather on farms, homes and businesses as we face a possible third consecutive dry year," said the state's water resources director, Mark Cowin. "And every Californian can help by making water conservation a daily habit."

NEXT STEPS

The specter of rationing comes as the city is on the cusp of major developments in its long-term supply planning, including the expected release of findings from a yearlong master conservation planning process. The city's Water Commission could discuss the plan in February.

At 7 p.m. Monday, the commission will discuss its role in the 14-member Water Supply Advisory Committee approved by the council in November to lead a public exploration of options for the city, which serves 90,000 customers from the North Coast to Live Oak.

The city created the panel after suspending its pursuit of a controversial seawater desalination project amid growing public opposition. Although the city will not pursue an election in 2014 on whether to proceed with the project, it has left desal on the table as a potential solution for the committee to consider.

Applications to serve on the committee are available at www.cityofsantacruz.com, and the deadline to apply is Jan. 13.

Meanwhile, neighboring Soquel Creek Water District also is considering rationing for its 35,000 customers from Capitola to La Selva Beach.

The city's partner in the stalled desal project needs to reduce groundwater pumping by about 30 percent for 20 years to restore a basin threatened by saltwater intrusion. The governing board voted last year to implement rationing if a new supply isn't found, but staff has encouraged a closer examination of the financial implications before committing to that path.

The board will discuss rationing at 7 p.m. Tuesday in the Capitola Council Chamber, 420 Capitola Ave. During the past few months, the board also has explored the potential for interagency water transfers, wastewater recycling and other measures for supplementing supply.

Follow Sentinel reporter J.M. Brown at Twitter.com/jmbrownreports

IF YOU GO

SANTA CRUZ WATER COMMISSION

WHAT: Discussion of commission's role on new Santa Cruz Water Supply Advisory Committee
WHEN: 7 p.m. Monday
WHERE: Council Chamber, 809 Center St.
INFORMATION: www.cityofsantacruz.com

CONSERVATION INFO

The Santa Cruz Water Department offers conservation tips and information about rebates for high-efficiency devices at www.surfcitysaves.com. Or visit the conservation office, 212 Locust St., Suite B, is open from 8 a.m. to 5 p.m. Monday through Friday. For information, call 831-420-5230.

Santa Cruz Sentinel.com

Santa Cruz commission calls for completing desal analysis

By J.M. Brown Santa Cruz Sentinel
POSTED: 01/06/2014 09:05:35 PM PST

SANTA CRUZ -- The Santa Cruz Water Commission called Monday for the city to complete an environmental analysis of a seawater desalination proposal while a separate committee explores alternatives amid impending drought.

Chair Andy Schiffrin, a longtime UC Santa Cruz lecturer and policy aide for Santa Cruz County, said, "It's extremely irresponsible on the part of the City Council and City Manager's Office not to go forward" with addressing 400 comments and questions submitted by the public and regulators. He noted certifying the report does not require project approval.

"If no EIR is completed and another year is added to the process, we may not have that other year," said Schiffrin, whose comments were echoed by other commissioners. "We may be having to do something expeditiously."

With just 10 percent of normal rainfall to date since July, the city faces a third consecutive year of dry conditions without some meaningful change during the next three months. Residents and businesses have been under a water-shortage alert since May, and the Loch Lomond Reservoir and San Lorenzo River flow are at their lowest levels in at least 15 years.

The commission will consider a formal recommendation on the EIR in February. Facing growing opposition to desalination, the council approved in November the formation of a 14-member advisory committee, two of whose members will come from the commission.

However, commissioners raised concerns Monday about how their duties will intersect with the committee during the year or longer that it reviews options for stabilizing and managing supply. The commission -- seen by desal opponents as supportive of the controversial project -- expressed skepticism about the committee's composition and charge, saying it won't contain the expertise needed to generate sound recommendations.

"The challenge is how you work that depth into a time-condensed project," Commissioner David Green Baskin said, adding he hopes the committee will do more than just reject desalination.

"How do you make this community open to all alternatives?" he asked. "When we are talking about fact-finding, it's called an EIR process." Assistant City Manager Tina Shull acknowledged

a "duplication of effort" between the commission and committee, the latter of which can't possibly go into the depth reached by the Water Commission over the years dealing with curtailment, rate impacts, capital improvements and other topics related to a supply affected by drought, fish habitat protection and planned growth.

However, Shull said the committee is needed because, although officials have been studying how to generate new supply for two decades, the community "hadn't been coming along with this all the way."

She added, "We do want lay people on this committee; we think it's important to have a range of perspectives."

Santa Cruz Sentinel.com

Worries grow over Santa Cruz County's bone dry conditions

By Shanna McCord Santa Cruz Sentinel

POSTED: 01/10/2014 05:46:56 PM PST

Berry fields off riverside Drive in Watsonville get a soaking Thursday. (Dan... (Dan Coyro)

APTOS -- The flawless winter weather has turned from enjoyable to worrisome as Santa Cruz County continues to experience its driest days on record.

At a time of year Santa Cruz County should be soaked from rainstorms, the ground is parched and rivers and reservoirs are substantially below normal -- all of which pose a serious threat to the region's water supply, fire conditions and water-reliant industries such as agriculture.

The Loch Lomond Reservoir, a large water source located in the Santa Cruz Mountains, is at 66 percent of capacity, the lowest it's been in 15 years.

The county saw the least amount of rain in 2013 than it had since 1929 when only 11.86 inches fell, according to the National Weather Service in Monterey.

Rainfall totals were a fraction of normal last year, meteorologist Diana Henderson said.

Santa Cruz received 5 inches last year compared with about 29 inches during a normal year. Ben Lomond received 7.62 inches of rain versus the usual 49 inches. Watsonville saw about 3.5 inches compared with 21.5 inches in a normal year.

In 2013, the National Weather Service lists Santa Cruz County as having received 4.78 inches of rain.

"It's awful actually," said Live Oak resident Justin Frey, 33. "I'm really concerned on the bigger scale about the water tables and going into next summer."

Frey and some of his friends took advantage of the warm, dry weather on Thursday to ride mountain bikes in Aptos. The three agreed the summer conditions are nice, but a wet spell would be welcome.

"I can't complain, but at the same time it's a little frightening," Frey said.

His friend Allison Oliver, who lives in Truckee, pays close attention to the climate through her work as an aquatic ecologist.

She worries the sparse snowfall in the Sierra Nevada has taken a toll on the ski industry, fish, native species and spring runoff.

"There's no way we're going to make up the deficit," Oliver said. "Even with a miracle March."

DESPERATE FOR RAIN

In 52 years as cattle ranchers in the foothills outside of Watsonville, Frank and Loretta Estrada have never been so desperate for rain.

Only 1.9 inches fell at the ranch last year. Usually they get upward of 19 inches, Loretta Estrada said.

Two of the four creeks on their 1,500-acre ranch, which usually run year-round, have dwindled to a trickle and not an inch of green grass exists for cattle to graze, she said.

The small lake in front of their house is bone dry, something she's never seen in more than five decades.

"It's really, really bad," Estrada, 70, said. "It's a horrible feeling. I pray to God we get some rain sometime soon. For us, it's affects everything."

The Estradas have resorted to hauling water to the ranch along with three or four bales of hay daily to keep their 65 cattle alive.

They've sold some older bulls to help cut costs, Estrada said.

"You get rid of your weakest ones," she said. "You have to."

Estrada said her friends in the cattle industry statewide, particularly the San Joaquin Valley, are also feeling the pain of no rain.

Undoubtedly, she believes the long-term impact for consumers will be higher prices for meat and milk products at the grocery store.

"It's not going to be a good year," Estrada said. "It's not just us. It's everyone."

The dry winter is also forcing fruit and vegetable farmers in the Pajaro Valley to pump water at a time they would normally rely on rain to irrigate fields.

Pumping water from underground to feed the farm fields only exacerbates the ongoing overdraft problems facing Soquel Creek Water District.

"It's really a double whammy," said longtime farmer Dick Peixoto of Lakeside Organics in the Pajaro Valley. "We're pumping more and not getting the recharge in the aquifer. We had a similar situation in 1977."

WHY OH WHY

Meteorologists say the summer weather in January is due to a stubborn ridge of high pressure parked over the Pacific Ocean.

Normally, such high pressure zones come and go every few weeks in the winter, meteorologist Henderson said. This one has sat off the West Coast for more than a year, the longest since 1948.

Storms that would normally move eastward are hitting the ridge and being pushed around it to Alaska and British Columbia, instead of bringing rain to California.

There are about two months left of winter for the high ridge to dissipate, allowing rain to drench the state in February and March thus preventing water rationing and fallowed farm fields come summer.

However, meteorologists say there's no sign of change any time soon.

"There's a slight chance of sprinkles on Saturday more north of the Golden Gate (bridge)," Henderson said. "But no one's holding their breath here. Models are just sort of hinting at it right now."

Follow Sentinel reporter Shanna McCord at Twitter.com/scnewsmom

RECORD DRY CONDITIONS

2013 RAINFALL NORMAL

Santa Cruz 5.07 inches 29.33 inches
Watsonville 3.51 inches 21.52 inches
Ben Lomond 7.62 inches 49.25 inches

SOURCE: National Weather Service

SantaCruz.com

Soquel Creek Water District Considers Rationing

With desal plant off the table, officials put hopes in conservation

by Steve Palopoli on Jan 14, 2014

"Back in the late 1990s, how were the water supply options chosen?" Soquel Creek Water District Board president Thomas LaHue asked a crowded house at the Capitola City Hall.

One person said "a public advisory committee," and—congratulations!— engineering assistant Vaidehi Campbell awarded her a water meter to keep track of their water use in the garden. (A later contestant won a shower timer.) Periodic trivia questions like this one added moments of levity to a tense meeting rife with accusations.

Now that Santa Cruz city leaders have announced they'll abandon a desalination plant they would have shared with Soquel Creek Water District, mid-county residents are growing even more worried about their already drying wells.

The board re-examined mandatory water rationing at its Jan. 7 meeting, after approving a preliminary plan to study increased conservation last year as a back up to the desal plant.

"If you're a high water-user, you're going to have to go lower," board vice president Bruce Daniels said. "It's not going to be fun and games."

Conservation is once again at the center of discussion, and we might call this Santa Cruz Desal Alternatives' wet dream—if the situation weren't so dry.

Some people in the audience called for a moratorium to new development and studies into recycled water. A few suggested the possibility of suing neighboring water districts—like the City of Santa Cruz's—or one of the county's golf courses for using up shared well water. Others yelled at the board and water staff for not taking action in the 1990s.

Between 1995 and 2010, Soquel Creek Water District reduced its water use from 95 daily gallons per person to 68. That has since climbed up to around 80 gallons per person daily—an increase the board attributes to the economic recovery. It's still well under the state average. But in order to restore its wells, the board estimates users need to cut their daily usage 35 percent down to a daily 53 gallons each.

The district hasn't had the best track record for cutting use recently. This past year, the board asked ratepayers to cut water use 15 percent, and they cut back only .5 percent. The previous year, the board asked for a 5 percent decrease and got a 5 percent increase instead.

An upcoming meeting, which will address the possibility of water rationing, falls on April 1. We can’t wait to see how LaHue lightens up that one.

Santa Cruz Sentinel.com

Drought imperils California salmon, steelhead

By Aaron Kinney

POSTED: 01/14/2014 06:10:30 AM PST

Beachgoers walk near the lagoon of the San Lorenzo River, where it stops at the Santa Cruz main beach, Jan. 11, 2014. (Patrick Tehan, Bay Area News Group)

SANTA CRUZ -- The sensitive populations of fish that spawn in Northern California's creeks and rivers are starting to suffer from the brutal drought threatening the state's water supplies.

In Sonoma and Santa Cruz counties, the National Marine Fisheries Service has heard reports of anglers catching endangered coho salmon trapped by low water flows. In the American River, water levels have dropped to a 20-year nadir, endangering the redds, or nests of eggs, laid by chinook salmon, a consumer staple that supports hundreds of Bay Area fishermen.

"We're sitting on pins and needles looking at the long-term weather forecast," said Jon Ambrose, a biologist with the fisheries service, "and it's not looking good."

A sandbar on Scott Creek north of Davenport is apparently is preventing coho from getting to the top spawning ground south of the Golden Gate. (Patrick Tehan, Bay Area News Group)

Droughts are always bad news for salmonids, a group of fish that spend most of their lives in the ocean but reproduce in rivers and streams. In Northern California these fish include chinook and

coho salmon as well as steelhead, an oceangoing relative of rainbow trout that is listed as federally threatened.

But this year's historically dry conditions are making life especially tough, not just for fish but for water managers who face unyielding demand from municipalities and farmers. When regulators mete out water from dwindling reservoirs, people usually take precedence over fish.

For coho, sandbars and dry creekbeds are blocking their passage to inland spawning grounds. On the San Lorenzo River, which empties into the Pacific Ocean in Santa Cruz, there are reports of anglers accidentally hooking coho. Even if the fish are released, these struggles sap their energy, reducing their likelihood of reproductive success.

"Many fish are probably being caught again and again," said Chris Berry, who enforces environmental regulations for the Santa Cruz Water Department. He argues state and federal regulators should consider a temporary shutdown of fishing on the river.

California does not have a policy for low-flow fishing closures south of the Golden Gate, said Kevin Shaffer, a fisheries manager for the state Department of Fish and Wildlife. The Fish and Game Commission may discuss expanding the state's closure policy in February, he said. Low water levels are plaguing salmonids in waterways throughout the state, Shaffer added, including the American, Eel and Russian rivers.

"If we don't get some rain," Shaffer said, "this spawning season is going to take a hit."

A poor spawning season could bring more hardship for the beleaguered chinook and people who catch them for a living. The commercial fishery has been slowly recovering since the population of fall-run chinook crashed in 2008, leading to three consecutive canceled or abbreviated fishing seasons.

John McManus, executive director of the Golden Gate Salmon Association, a fishermen's advocacy group, said it's too early for fishermen -- and consumers of local wild salmon -- to panic. Heavy rains could still build the Sierra Nevada snowpack to levels approaching normal.

But with each day the situation grows more desperate. A National Weather Service forecaster said Monday there is no rain in the seven-day forecast and the outlook for January calls for below-average precipitation.

Ambrose, of the National Marine Fisheries Service, knows a watershed restorationist who gave $100 to the Mission San Juan Bautista in San Benito County, seeking prayers for rain.

"I hope our weather service is wrong," Ambrose said of a recent National Oceanic and Atmospheric Administration forecast. "And it could change. It could change at any minute."

GOOD TIMES

Rallying for the River

WEDNESDAY, 15 JANUARY 2014 00:00
JESSICA M. PASKO

New alliance takes aim at making over the San Lorenzo River

Could the San Lorenzo River become a draw to Downtown Santa Cruz, offering opportunities for recreation, picnicking, and more? A quick look at the riverfront in its current condition certainly doesn't inspire much confidence. In recent years, the San Lorenzo River has become a sore spot in the Santa Cruz community with a reputation for being dirty and crime-ridden. But a coalition of local community and environmental leaders and organizations wants to change that perception and remake the area into a riverfront we can all enjoy and be proud of.

It isn't going to be an easy task, however.

Santa Cruz Police Department statistics show a high concentration of criminal activity along the river, and many of the recommendations of the 2013 Public Safety Citizen Task Force focus on improving the river way. On a recent Saturday afternoon, a tour of the river saw illegal campsites and garbage throughout the levee, though a handful of bicyclists and bird-watchers were also present.

Additionally, the river is currently on the state's impaired waters list due to its levels of nutrients, pathogens and sediment, and it doesn't currently meet federal and state water quality objectives. Despite this, it's the primary source of water for the City of Santa Cruz and water supply levels remain a continued concern. Although the water quality needs to be improved, some, such as Greg Pepping, executive director of the Coastal Watershed Council, believe concerns may be inflated.

"I think it's cleaner than people think," he says.

Pepping and the Coastal Watershed Council are leading the charge to revitalize the river. In the fall, the organization kicked off the campaign to revamp the river with a sold-out San Lorenzo River paddle that brought dozens of people, including then-Mayor Hilary Bryant, out on kayaks and stand-up paddleboards. That event, hailed as a success by the council, helped encourage city councilmembers to look into lifting the prohibition on floating and paddling in the river.

On Tuesday, Jan. 7, the Coastal Watershed Council and Pepping officially announced the formation of the San Lorenzo River Alliance. The coalition will focus on creating a thriving Santa Cruz riverfront, and its members include the City of Santa Cruz, the county, the Museum of Natural History, and dozens of other community and environmental leaders.

"We are shaping the fate of the rivers," says former mayor Bruce Van Allen. "We need to revitalize the river."

Van Allen, a longtime Santa Cruz resident and community activist, has earned a reputation as being “the river guy” when it comes to his boosterism for the San Lorenzo River. He imagines the levee becoming an urban park that’s “beautiful from every way you approach it.”

This is hardly a new idea. In 2003, the city council adopted the San Lorenzo Urban River Plan, itself an update to the San Lorenzo River Design Concept Plan of 1987 and the San Lorenzo River Enhancement Plan of 1989. The urban river plan provided a 20-year comprehensive plan for the areas of the river, Branciforte Creek and Jessie Street marsh within city limits. It included recommendations for increasing public access and recreation opportunities, flood control and vegetation restoration, among others. The San Lorenzo River Alliance plans to re-engage with those plans, which—halfway through—have seen little come to fruition.

Supporters, however, feel that can—and should—change.

“I refuse to believe we don’t have the resources to have that here,” says Pepping.

Pepping points to successful waterfront revitalization efforts in cities such as Austin, Texas, Boulder, Colo., and, closer by, Paso Robles. The Salinas River is a central feature of Paso Robles, but access has long been severely limited
As executive director of the Coastal Watershed Council, Greg Pepping is leading the charge to revitalize the San Lorenzo River.due to an assortment of physical barriers and private development. With support from the National Park Service’s Rivers, Trails and Conservation Assistance Program, community leaders there have worked tirelessly to improve that city’s riverfront. The advocacy group founded to work on it has managed to purchase 150 acres of land dedicated to improved public access, restored five acres of river corridor, constructed a 1.5-mile parkway trail and installed bilingual interpretive signs along the trail, according to Paso Robles city officials.

Members of the San Lorenzo River Alliance see such successes as proof that similar efforts can become a reality here, as well.

The 2013 Public Safety Citizen Task Force outlined a number of recommendations for improving the area in its report. Many of those recommendations included increasing and improving lighting, a goal already being undertaken by the city’s Public Works Department. Lighting was upgraded with energy efficient LED lights in the parking lots near the Kaiser Permanente Arena, the San Lorenzo Benchland Park and along the pedestrian bridge over the San Lorenzo River. City staff have also walked with volunteers who clean up the levee regularly to explore the existing conditions there, according to city officials, and have been meeting with property owners in the area to discuss collaborative efforts that could be taken.

Pepping and others within the alliance believe the biggest step will be to get people actually using and enjoying the area. He believes the city council’s unanimous support for exploring lifting the current no-paddling policy is a great step forward.

“Use dissuades disuse,” says Pepping.

The big push to promote the river’s revitalization will include holding more outreach events for the public. This past weekend, local organizations held a series of talks and events focused on the story of the river, both past and present. Randall Brown, a local historian, and Fred McPherson, who organized the 1970s citizen group Save the San Lorenzo, spoke about human impact on the river and citizen action to restore it. The county’s water resources director, John Ricker, also spoke, joined by watershed expert Brock Dolman, the founder of the Occidental-based Watershed Advocacy, Training, Education and Research Institute.

Longtime fisheries biologist Don Alley, who has been taking samples from the rivers for the past three decades, also led a walking tour of the river focused on its steelhead and coho salmon populations. He says he’s seen the fisheries’ quality continually decline and has been disappointed by how comparatively little effort has been made to enhance them.

“You saw a lot of positive stuff at the talks but the bottom line is these fish haven’t shown any improvement since I’ve been studying them,” says Alley, referring to the weekend’s events.

Steelhead is a threatened species while coho is on the endangered species list.

Alley, who led a group of about 30 around the levee on Saturday, Jan. 11, says he is encouraged by this latest effort to improve the river, however, and believes there is now “a group of people who actually seem to care about the fish.” He wants to see aspects of the federal recovery plan for the fish species incorporated in the river management plan.

He hopes that if residents begin using the riverfront more often, that will help foster a stronger connection to the natural resource and encourage a renewed interest in fishery enhancement.

Regular meetings about the river will resume after a four-year hiatus, and working groups will be formed around topics such as water quality, recreational access and wildlife habitat. Though those meetings haven’t been scheduled yet, Pepping says he hopes to start them in February. The meetings will provide an opportunity for residents to share their ideas, be reminded of the urban river plan and the progress that’s already been made, and encourage more of an invested interest, he says.

Santa Cruz Sentinel.com

Former Reno-area official Rosemary Menard named new Santa Cruz water director

By J.M. Brown Santa Cruz Sentinel
POSTED: 01/16/2014 06:26:00 PM PST


Rosemary Menard (SCS)

SANTA CRUZ -- City Manager Martín Bernal announced the appointment Thursday of Rosemary Menard, a former Reno, Nev.-area water resources official, to be Santa Cruz's new water director.

Menard, 62, has more than 30 years experience in water planning and management, as well as regulatory and environmental issues, Bernal said. She will start Jan. 27 and be paid $159,984 annually.

"We are very pleased to have Ms. Menard come aboard at a critical point in our water supply discussions," Bernal said in statement. "She brings a wealth of leadership and experience in water operations, conservation, administration and policy to our organization.

Menard was selected from among 54 applicants, only two of whom were local. Interim Water Director Linette Almond, who was appointed to the post in August after longtime director Bill Kocher retired, was not a candidate for the permanent assignment.

Menard served in two leadership positions within Washoe County, Nev., government before resigning her post in March 2013. Since then, she has worked remotely for the San Jose-based Management Properties consulting firm and resided at a family cabin in Calaveras County.

In an interview Thursday, Menard said she pursued the Santa Cruz job because "I feel like the kind of strategic and analytical and public participation experience I have lend themselves to tackling big thorny issues."

Menard takes the post as Santa Cruz undertakes a new public-led study of how to manage its

drought-prone water supply for 90,000 customers with an eye toward long-term sustainability. Since 2005, the Water Department has been following a City Council directive to pursue seawater desalination as a primary water supply project, but in November the council suspended the controversial joint project with Soquel Creek Water District amid growing political opposition.

Menard said she expects to spend her first few months on the job "listening and learning."

"I don't have an outcome in mind," she said. "I am going to sit and talk with people so I can get my arms around what is going on in the community."

Previously, Menard served in various management positions in the Portland (Ore.) Water Bureau and Seattle Water Department. As recently as last month, she was a candidate to head the Incline Village, Nev., General Improvement District.

In Washoe County, which is located in the far northwestern corner of Nevada and includes Reno, Nev., and the Nevada side of Lake Tahoe, Menard led the consolidation of the county's water utility with the Truckee Meadows Water Authority. She also helped to combine several county offices, including public works, parks and building and safety, into a single division.

Menard has received the Distinguished Service Award by the Association of Metropolitan Water Agencies. The San Leandro native received bachelor's and master's degrees from the University of Washington and has a son who lives in Portland.

Follow Sentinel reporter J.M. Brown at Twitter.com/jmbrownreports

Biography

ROSEMARY MENARD

WHO: New Santa Cruz water director, previous administrator in Washoe County, Nev., and water departments in Portland, Ore., and Seattle
EDUCATION: Bachelor's degree in zoology, master's degree in public administration from University of Washington
FAMILY: Son, parents and six siblings

Santa Cruz Sentinel.com

A river runs nearly dry: San Lorenzo at lowest January levels ever

By Jason Hoppin Santa Cruz Sentinel
Posted: 01/17/2014 05:45:12 PM PST



Than San Lorenzo River flows through downtown Santa Cruz on Thursday at a level usually reserved...

SANTA CRUZ -- One sign that something is going enormously awry are the coyotes in Paradise Park.

The riverside hamlet is home to all manner of wildlife, but coyotes are an infrequent guest. Yet with no winter to speak of -- the U.S Drought Monitor this week declared the entire Central Coast under an extreme drought -- the coyotes have been improvising.

"It's so dry up in the hills, they come down looking for water," said Mark Hasey of Paradise Park, where this time of year usually brings big rains and the threat of floods. "Last year, we had a big flood the day before Christmas Eve, a lot of our people had to (evacuate). This year, nothing."

But the San Lorenzo River isn't much relief. Usually a winter menace, the backbone of the county's second-largest watershed is at its lowest January level since U.S. Geological Survey measurements began 77 years ago, and lower even than famous drought years of 1991 and 1977.

The San Lorenzo is not alone. The Sacramento, Trinity, Russian, San Joaquin, Eel and north fork of the American rivers have all set January records, while the Yuba, Tuolumne, Merced and more have approached and, absent sudden rains, still could surpass them.

Friday, Gov. Jerry Brown declared a statewide drought following weeks of pressure, including from Assemblyman Luis Alejo, D-Watsonville. Brown asked residents to cut water use 20 percent and the declaration makes water transfers between agencies easier, but what the county needs is rain, and on that front politicians can offer little more than prayer.

SEVERE PROBLEM

Brown's action came a day after the U.S. Drought Monitor downgraded drought conditions on the Central Coast to "severe," and said many of the conditions for the most serious designation -- "exceptional" -- are already in place. Those designations forecast major crop losses and severe water restrictions.

The problem is being driven by a massive high pressure cell off the West Coast steering storms north before dumping them onto the Midwest. Snowpack in California is less than 20 percent of normal, fire officials have issued red flag warnings across large parts of the state, and no relief

is in sight -- a three-month National Weather Service forecast predicts warmer and drier weather than normal.

Farmers praised Brown's drought declaration, with Tom Nassif, president and CEO of the industry group Western Growers Association, calling on state and federal officials to convey even moderate rainfall from the Delta south and "to operate at the highest end of their discretion within the existing rules limiting water exports to protect fish species" -- a statement that underscores the competition between farmers and fish.

Local resource managers have been tightly focused on the water problem, particularly in Santa Cruz where residents depend on the San Lorenzo as a primary source of drinking water.

"These kind of conditions are unprecedented. We don't even have these in our modeling," said Chris Berry, a watershed compliance manager with the city of Santa Cruz.

NATURAL DILEMMA

The lack of rainfall is taxing Loch Lomond, a 9,200-acre-foot reservoir meant to help get the city through dry summer months. To maintain stream flows, the city is spilling more water into the San Lorenzo River tributary of Newell Creek than is coming in, and Loch Lomond is 15 feet lower than at this time last year.

In places where rivers are shoaled up by sandbars, dry weather is also placing state fishery managers on the horns of dilemma. At Scott Creek, officials haven't breached the river to let endangered Coho salmon in, instead protecting the hundreds of lagoon smolts waiting for a path to sea that could be jeopardized by a sudden rush of water.

"There's 1,000 fish that are ready to head out, but they're stuck," said John Ricker, county water resources division director.

That has led to another anomaly as strange as coyotes in Paradise Park -- fish swimming up the wrong river. Berry said he's seen photographic evidence that Coho, presumably shut out of Scott Creek, are making their way into the San Lorenzo River.

Throughout the county, residents and businesses divert water from overtaxed streams, a water source protected by strict state water rights laws. Ricker said the county would begin talking to some of those users about cutting their water use.

"It does help focus people's attention to really try to do something," Ricker said.

It is not completely bleak. Soquel Creek hasn't dried up as it did in the early 1990s, and no one has talked about a building moratorium, which was effectively put in place in the early 1980s when the Soquel Creek Water District implemented a ban on new water hookups.

But several water districts, including Soquel Creek, the Pajaro Valley Water Management Agency and Santa Cruz Water Department, have tightened water restrictions. Toby Goddard, Santa Cruz' water conservation manager, said they'll likely be in place through winter.

"We're looking at something we've never seen before," Goddard said, estimating at least 2 feet of rain is needed to replenish the watershed.

Santa Cruz Sentinel.com

Drought underlines need for recycled water at Santa Cruz golf courses

By J.M. Brown Santa Cruz Sentinel

POSTED: 01/26/2014 03:40:41 PM PST


A golfer walks down the first hole fairway Thursday at Pasatiempo Golf Club (Photo Dan Coyro)

SANTA CRUZ -- Water officials won't know until April all that's involved in implementing a long-delayed plan to wean Pasatiempo Golf Course off fresh water. But a forthcoming engineering review couldn't be more timely as a statewide drought shows no signs of easing.

Rain typically keeps the privately owned Santa Cruz course and the city's DeLaveaga course from irrigating in winter. But record-low rainfall -- 8 percent of average for the season to date -- underlines the need to complete a four-sided deal to irrigate Pasatiempo with recycled wastewater and consider a similar switch at DeLaveaga.

According to city records, DeLaveaga used 10 times more water in December 2013 as it did the previous December, when the National Weather Service reported the monthly rainfall at 7.95 inches compared to 0.29 this December. Pasatiempo used 12 times as much water in December 2013 compared to the same month in 2012.

Still, the demand for fresh water hasn't sped up the recycled wastewater project.

"Certainly since it stopped raining, I thought the process would go faster, but it's not," Pasatiempo's General Manager Scott Hoyt said.

The arrangement -- requiring approval from governing boards for Santa Cruz, Scotts Valley, Pasatiempo and the Scotts Valley Water District -- is complicated.

An existing outfall pipeline carrying treated wastewater from Scotts Valley to Monterey Bay could be used to divert recycled water to Pasatiempo during the peak summer period. Because the course would stop using Santa Cruz water, the city would wheel back an equivalent amount of fresh water to Scotts Valley during winter to recharge that city's aquifer.

But regional public health and water officials must sign off on dual use of the pipeline because wastewater for the course would not be treated to the same standard as what flows to the bay.

Pasatiempo has paid $40,000 for Walnut Creek-based Carollo Engineers to examine safe use of the pipeline, a report that should be ready by April.

But arranging for Scotts Valley to sell and transmit recycled wastewater to a property outside its service area at a time of growing demand for recycled water among its own customers represents only half the battle. It will cost an estimated $4 million to build a pipeline to move fresh water to Scotts Valley, a groundwater-based system, from surface-water driven Santa Cruz, which in dry winters like the present may not have water to spare.

"Definitely, the main benefit for the Scotts Valley Water District is to be able to get potable water in the winter time," said General Manager Piret Harmon. "But we have to have an agreement from the Santa Cruz Water Department to do that and work out what are the terms and conditions every year. In a three-year drought, could we live with not taking it back?"

Harmon said a great deal will rest on the direction set by the incoming Santa Cruz water director, Rosemary Menard, who begins Monday. In the meantime, Eileen Cross, a spokeswoman for the Santa Cruz Water Department, said, "The city fully supports the (recycled water) project and the work of the city of Scotts Valley, the Scotts Valley Water District and Pasatiempo to develop their agreement."

EFFICIENCY IS KEY

On Tuesday, the Santa Cruz City Council will consider declaring a drought in keeping with Gov. Jerry Brown's statewide declaration Jan. 17 and supporting his request for Californians to reduce water use by 20 percent. The council won't be asked until April whether to extend or increase water restrictions in place from May-October 2012 and again from May 2013 to the present.

The Pasatiempo and DeLaveaga courses historically have used 2 to 3 percent of Santa Cruz's total water consumption. Yet, they are routinely targeted by conservationists as a non-essential use.

A new water supply advisory committee to be appointed by the Santa Cruz council in February is expected to study using recycled wastewater at DeLaveaga, Cross said. In the meantime, Pasatiempo is doing what it can to keep its proposal moving forward -- designing 500,000 gallon storage tank and pumping station -- because it seeks supply security as much as efficiency.

Santa Cruz's drought plan calls for cutting supply to the two courses as much as 80 percent during the worst-case drought, with residential and commercial uses taking priority.

Hoyt said course managers watered the turf 25 percent less in 2013 than what it needed, "borderline starving" the grass most recently. The course also has upgraded its irrigation system

and cut 30 acres of irrigated turf.

"We are doing everything possible during this dry period to keep our business thriving and respect the water issues in Santa Cruz at the same time," Hoyt said.

Santa Cruz Sentinel.com

Santa Cruz County water officials unite in drought response

By Jason Hoppin Santa Cruz Sentinel

Posted: 01/28/2014 06:25:28 PM PST



Soquel Creek Water District Board President Tom LaHue makes a 'zero' hand gesture... (Dan Coyro)

SANTA CRUZ -- With one local water district on the cusp of going dry and most considering steep cutbacks in water use, county water officials Tuesday joined in a show of unity as Santa Cruz County addresses a statewide drought that threatens everything from endangered species to local farming.

"Realistically, this is a shared issue that all of our districts are facing, not just in this county but in the region and state," Board of Supervisors Chair Zach Friend said, stressing the impacts of the drought would be significant. "We all are in this problem, and all, therefore, in the solution together."

County elected officials, city officials and local water district representatives joined for a press conference on the steps of the county courthouse. Many districts have passed or are considering voluntary 20 percent cutbacks in water use, following a call by Gov. Jerry Brown.

But the event also came as the state Department of Public Health announced the Lompico Water District is one of 17 statewide facing a severe shortage in as soon as 60 days.

"We have been unable to take water out of the creek since August and well production is down, and we didn't have that much water to begin with," said Lompico board member Lois Henry, who was not at the press conference.

The district has had long-standing water supply issues and is exploring a possible merger with the San Lorenzo Valley Water District, but so far has been stymied by nearly $3 million in needed upgrades -- a hefty bill for the district's 500 customers.

Henry said she was notified the district was on the state list Tuesday, and hopes it comes with funding to help the agencies find more reliable water. The crisis affects property values and the

district could have to begin trucking in water, she said, with the district recently approving a steep 30 percent voluntary cut.

"I'm frankly worried," Henry said. "I know people turn their faucet on and say, 'Oh, everything's fine.' And I know it's not."

Friend called for an end to local politicization of water, which has often served as a proxy for battles over growth and land use. The Santa Cruz City Council recently tabled a proposed desalination plant, even though the district's primary supply, the San Lorenzo River, is at record-low levels for this time of year.

"We (need) very honest discussions, without the politics, about what we're going to do moving forward throughout this county because realistically we've allowed water to become too politicized and it's just a requirement," Friend said. "Water is a necessity of life, for everything we do."

Tom LaHue, a board member of the groundwater-dependent Soquel Creek Water District, said it would take two decades of customers cutting their use 35 percent to get overdrafted aquifers back to normal and stop seawater intrusion. When Santa Cruz shelved desal, the district -- which had been a partner -- held meetings to find a new water source and a solution.

"We're going to continue to have them, on finding a supplemental water supply, so that we can get that situation taken care of," LaHue said.

The county's water systems are essentially self-contained, disconnected from the larger state water network and the battles that go with it. That has forced residents to become among the most efficient water conservers in California, but it likely makes it more difficult to reach the 20 cutbacks local officials are calling for.

The last long-term water cutbacks occurred in the 1970s, before low-flow showerheads and drought-tolerant landscaping became part of the county's lexicon. That could spell trouble if -- as some predict -- the drought lasts for years.

County Water Resources Director John Ricker said further conservation efforts aren't the answer.

"That's not going to be enough to take care of all of our problems," Ricker said. "We need to do supplemental supply, either through recharge enhancement, recycled water, desalination, water transfer or most likely a combination of all of those sorts of those things."