

## Water Supply Advisory Committee

Meeting April 30 and May 1, 2015

Both sessions at the Simpkins Family Swim Center

### Meeting Summary

#### ***Use and Meaning of the Meeting Summary:***

*The Summaries of the Water Supply Advisory Committee are intended to be general summaries of key issues raised and discussed by participants at meetings. The presentation of issues or items discussed is not designed to be totally comprehensive, or reflect the breadth or depth of discussions. However, it is intended to capture the gist of conversations and conclusions.*

*Where a consensus or other agreement was reached, it will be so noted. Where ideas or comments are from only one or several participants, or where a brainstormed list is presented the content of which was not agreed to by all Committee Members, the facilitators will to the best of their abilities note these qualifiers. Where the facilitators believe that the insertion of additional information would be useful to the group they insert it in this summary and indicate that the insertion comes from them, rather than from the Committee.*

*An early draft of this summary is sent to Committee Members so that they may provide comments to the facilitators and permit the preparation of a more reliable Presentation Draft for review at the Committee's next meeting. If the Members' comments conflict with each other the facilitators do their best to resolve the conflict in the Presentation Draft. When Members raise comments about the meeting Summaries, or make other suggestions or comments following meetings that propose changes that are more than "corrections" to the Summaries, the facilitators add these in a section at the end of the item or at the end of the meeting Summary captioned "Post Script".*

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This meeting consisted of two daily sessions. The first lasted 4½ hours, the second lasted 4 1/4 hours. Here is a list of the Members of the Committee. All Members attended both sessions except as specified.

David Green Baskin, Dana Jacobson, Charlie Keutmann, Sue Holt, Rick Longinotti, Sarah Mansergh, Rosemary Menard, Mark Mesiti-Miller, Mike Rotkin,

Sid Slatter, Erica Stanojevic, Doug Engfer, Peter Beckmann (absent from first session), Greg Pepping, David Stearns.

### **First Session, Thursday April 30**

#### **Public comment**

There was public comment including the following:

- Don't forget that a third of the rate payers live outside the city.
- A member of the public worked on the historic climate variability study using tree ring data – drought is highly unpredictable!
- Thanks to Rosemary Menard and the SCWD for all their hard work on this!
- Consider past dam recommendations
- Bank water underground – helps sea water intrusion concerns.

#### **Committee Member updates**

Members reported that

- The San Lorenzo River forum presentation – thank you!
- What is being done about illegal breaches at the confluence of the San Lorenzo?
- The Peak Demand will be having an enrichment session on May 21st at the Police Department from 7- 9:30
- May 20th: Business Adaptation to Water Shortages – more information to come
- Doug tabled at the Farmers Market – come try it!
- Monday Water Commission Meeting: Focus on CIP budget and revised System Development Charges.

In response to a question, Water Department Assistant Director Heidi Luckenbach explained that Soquel Creek Water District reports costs on the basis of Acre/Feet.

## Agenda review

The facilitator Nicholas Dewar reviewed the meeting's agenda with the Committee. The Committee agreed by consensus to accept the agenda. The Flow Agenda and the Official Agenda can be downloaded from the list of documents at [this link](#) and [this link](#).

## Sensitivity analyses of Demand Forecasts and results of System Reliability analyses

David Mitchell of M.Cubed answered questions about the low and high interim demand forecasts prepared by him. He was joined by Gary Fiske of Gary Fiske and Associates to answer questions about his memo "Baseline System Reliability with Revised Interim Demand Forecasts." The materials distributed in advance of the meeting can be downloaded at the following links:

[4a Low and High Interim Demand Forecasts](#)

[4b Analysis of Revised Interim Demand Forecasts](#)

Mitchell created a low/high demand forecast range based on a number of factors, including: price elasticity, income growth projections, slowed demand rebound post-drought, and new projections regarding UCSC growth. The new UCSC forecasts use a linear approach to full enrollment build out; the low and high ranges use different years at which full enrollment is achieved.

This forecast does not include climate change induced changes in Demand.

Demand can fluctuate plus or minus 10% in any 5 year period.

Several questions arose that will not be addressed until the econometric model comes out. Questions included: does increasing the size of homes effect demand? How has the change in the commercial sector changed demand?

Gary explained the shortage duration curve tables and how the model handles Felton pumping.

The Committee agreed by consensus that the set of water demand forecasts developed and presented by Dave represents a reasonable range of potential future demands that can be used for the Committee's water system planning work until the results from the planned econometric demand model are available.

The interim demand forecast corresponds to the midpoint between the low and high range forecasts.

### **Update on Tech Memos and analysis of the State of the Water System**

Heidi Luckenbach of SCWD and Bill Faisst of Brown and Caldwell explained the rehabilitation and replacement needs of the water system's backbone infrastructure described in their memo and the opportunities presented for associating these potential future investments with some supplemental supply or operational flexibility options. The materials distributed in advance of the meeting can be downloaded at the following links:

[5a State of the Water System](#)

[5b 10 year CIP](#)

Highlights include:

- The CIP as it is described today (through 2030) includes the majority of the raw water system in some fashion and these projects may be complementary to water supply alternatives being considered.
- The CIP through 2030 is \$200 M. The various projects have been developed to varying degrees; some to 10% feasibility while others to 90%+. There are placeholders for a water supply project and repair of the inlet/outlet pipe at Newell Creek Dam.
- The North Coast system was originally constructed in the early 1900s with additions and repairs in the 1950s and 1980s. The city contracted with Carollo in the early 2000s to evaluate the North Coast System and recommend improvements. The Majors segment is the only section they recommended upsizing and/or adding a pump. The alternative to push water up the North Coast System was not looked at in the Carollo study
- The WSAC/Stratus Team could consider the North Coast pipeline for Reuse/groundwater exchange up the coast.
- Felton Diversion Pump Station: rehab and replacement of this is in the CIP. There are pressure limitations on the pipeline between Felton Booster and Loch Lomond. It is mostly original construction (circa 1960), has several leaks, and is located in sensitive terrain with limited accessibility.

- Newell Creek Dam. Recognizing the need to repair or replace the inlet/outlet pipe as well as the pipeline from the dam to Felton Booster, there was discussion about the flexibility in timing of de-watering the reservoir to replace the pipe; whether or not we replace with two pipes; and, whether regulators would allow dewatering.
- GHWTP: fundamental rehab of this water treatment plant is in CIP in order to retain water quality and reliability; significantly increase treatment capacity is not included in the CIP. Do we continue to invest?
- Beltz system: the recently completed Beltz 12 well now has its own treatment plant. Limitations in developing more groundwater include declining groundwater levels and the distribution system surrounding the Live Oak treatment plant.
- What is the vulnerability of having only one treatment plan? What is the cost/benefit of redundancy? Operationally it would be great!
- The technical team was asked to overlay the GIS map of the system (which includes the raw water system and the locations of the CIP projects) with the fundamental components of the various CAs so the committee can begin to visualize how the two may relate to one another.
- The CIP will likely have large rate impacts. WSAC should not consider this at this time.
- Team still working on synergized cost projections comparing CIP projects and potential WSAC CAs.

### **Debrief of Climate Change Forum**

Karen Raucher of Stratus Consulting led a discussion of the Committee members' understanding of the effects of climate change on Santa Cruz.

Committee Members recognized that Climate Change information is uncertain and a limited number of approaches exist for dealing with this: to build water systems robustly or adaptively. They discussed the incremental costs and other tradeoffs of robustness.

Members discussed the intersection between the Extended Drought scenario and the Climate Change scenario. Karen explained that these scenarios do not overlap, and neither one describes the most extreme scenario that is plausible.

Members discussed the level of risk that the community is willing to accept, and how close to the edge they are willing to go. One member thought the scenarios could be harsher although less severe than Australia's recent experience. Another thought it was important to not go over the edge in terms of extreme climate conditions.

The Committee agreed by consensus that the "Climate Change" and "Extended Drought" scenarios provide plausible parameters to use in its water system planning, and that these are a useful point of departure for its scenario planning process.

### **Update on Consolidated Alternatives and analysis of Portfolios**

Bob Raucher of Stratus Consulting together with Bill led a discussion of the materials provided in the Committee's Packet. The materials distributed in advance of the meeting can be downloaded at the following links:

[8a-1 Winter Flows](#)

[8a-2 Winter Flow Attachment A](#)

[8a-3 Attachment B Winter Flows](#)

[8b-1 Recycled Water](#)

[8b-2 Attachment A Recycled Water Updates](#)

[8b-3 Attachment B Recycled Water Updates](#)

[8c-1 Program CRec](#)

[8c-2 Attachment A CRec](#)

[8d Key Findings Insights on CAs](#)

[8e UPDATED CA Technical Summary Sheets](#)

[8f Communicating Assumptions and Inputs about Demand Management 4.24.15](#)

[8g Graywater Alts](#)

Note also that the Technical Team provided an ERRATA Sheet available at [this link](#) to correct errors in some of these and other documents provided for this meeting.

This material utilized critical simplifying assumptions including infrastructure constraints or location or feasibility of storage.

Bill explained two important definitions:

- “Supply” This describes source production and indicates how much a Consolidated Alternative (CA) can produce in theory
- “Yield” This describes how much the CA can contribute to the peak season worst year gap

The presenters addressed questions about turbidity, explaining that there are no regulations against sending turbid water to Loch Lomond. Nor does turbidity affect infrastructure by fouling pumps etc. The pumping of turbid water to the Loch is only limited by the need to use the single pipeline to get water from the Loch.

#### Public Comment

The Committee recognized the significance of this topic and invited public comment. Members of the public commented on the following issue:

- Turbidity can eat pumps.
- Turbidity limits water diversion from SLR by over 40 days each year
- Climate change may result in more periods of turbid water.

The presenters made the following additional points:

Big uncertainties remain in these CAs. In particular they noted that it is not known whether any of the aquifers will hold water, nor whether we will be able to recover any water that we put into the aquifers

Using recycled water results in very few shortages and adding storage to the reuse of water removes all the shortages. Furthermore, water reuse requires less storage than winter flows.

C-Rec has different benefits under different hydrologic conditions.

Among the key findings is the viability of North Coast groundwater. However, Bob noted that there are many conditions that must be fulfilled for this viability to be proved, For example, are the famers interested in this proposal and what is

the quality and quantity of the groundwater Santa Cruz would receive in exchange?

A Committee Member asked for an explanation of the Present Value calculation. Bob referred him to an example included in document 8f in the Committee's Packet.

At the request of a Committee Member Karen agreed to keep a record of questions asked of the Tech Team during the Scenario Planning session on Friday.

When developing estimates of the energy required to provide water, it is vital to identify the water's end use. For example, each of the different levels of water quality associated with purifying water uses very a different level of energy, i.e. if the end use of the purified water is for irrigations it requires different energy input than if the end use is direct potable use.

Noting that there was insufficient time to work through all questions regarding the CAs, Rosemary asked Committee members to submit their outstanding questions to her; she would then forward them to the Technical Team for consideration and response (as appropriate).

### **Set up for Scenario Planning Task #2**

Karen explained to the Committee the instructions for the Scenario Planning task #2. The break out groups must develop a portfolio that resolves the Peak Season (May – October) “hump” of 700mg.

As they do this they should consider: Robustness, Adaptive Flexibility and supply diversity.

The materials distributed in advance of the meeting can be downloaded at the following links:

[9a Scenario Planning Task](#)

[9b Scenario Descriptions](#)

### **MCDS Evaluation Criteria**

Karen explained that the WSAC would use MCDS criteria as part of the Portfolio exercise and suggested they use them in Scenario Planning Task #2.



The materials distributed in advance of the meeting can be downloaded at the following links:

[10a Evaluation Criteria Doc](#)

### **Correspondence from the Community**

Mike Rotkin, Corresponding Secretary, reported that the community continues to send suggestions to the Committee and that he forwards all of them to the Committee Members.

### **Subcommittee and Working Group Reports and Technical Work Plan Update**

The materials distributed in advance of the meeting can be downloaded at the following links:

[12a WSAC Outreach 3.25.15](#)

[12b WSAC Sentinel Editorial #3](#)

[12c Planning Subcommittee Agenda 3-27-15.Notes](#)

[12d Planning Subcommittee Agenda 4-10-15.Notes](#)

[12e Tech Team Update April 2015](#)

### **Outreach Subcommittee**

Charlie Keutmann reported on behalf of the Outreach Subcommittee:

- The Subcommittee did not meet in March.
- Mike will join the Outreach Subcommittee.
- The op-ed series continues in the Sentinel and was provided in the Packet.
- Outreach Subcommittee members will present to the Rotary Club in June.
- Rosemary Menard was recently interviewed on KSCO.

### **Planning Subcommittee**

Doug Engfer reported that the Planning Subcommittee will reach the end of its term on May 8. Without making any recommendation he described how the

Committee could allow the subcommittee to expire without replacing it or could replace it with a subcommittee with a similar charge, but adapted to the current phase of the Committee's work in a number of ways. The Committee agreed by consensus to replace the Planning subcommittee with the Solution Framework Subcommittee that will perform the functions of the Planning Subcommittee and will also focus on the development of the framing of the Committee's recommendation.

The Subcommittee members will be: Doug Engfer, Erica Stanojevic, David Baskin, Mark Mesiti-Miller, Sarah Mansergh, Sid Slatter and Rick Longinotti.

#### Peak Season Demand Group

Sarah Mansergh reported on behalf of the Peak Season Demand Group. She referred to the infiltration study that had been circulated previously to Committee Members. In response to question as to whether these Low Impact Development measures would infiltrate water into the aquifers she proposed to ask Pueblo and Mike Cloud. The Technical Team agreed to ask them.

She explained that this group's approach is to use Maddaus information and go beyond C-Rec.

#### Technical Team Workplan Update

Committee Members commented that the technical materials from the March meeting were very useful.

## Materials resulting from March meeting

The Committee agreed by consensus to approve the Summary and the Action Agenda of the March Committee meeting. These documents are available at the following links:

[13a WSAC Action Agenda Mtg 3.18.15](#)

[13b Summary 1503 4.22.15](#)

## Overview of the June 11-12 meeting Agenda

The Committee reviewed the outline of the agenda for the June 11-12 meeting without substantial comment. This document is available at the following link:

[14a Draft June Preliminary Agenda](#)

## Public Comment

There was public comment including the following:

- Hydrologists have previously told the City Council that there is lots of storage available in the aquifers
- Where can the public find information about the cost of Ranney collectors and other CAs?
- The CAs need to be broken down into specific projects before being recommended to the City Council
- The CAs should include desalination approaches including chemical desalination, and processes that combine desalination with cement production

## Evaluation of the Session

Six Committee Members and one member of the public entered evaluations of this session at SurveyMonkey or by handing in hand-written evaluations.

- How well did the session meet your needs?
  - All responded “very well,” “great” or “exceeded expectations.”

- One appreciated the pace maintained in the meeting thanks to the reduced time spent describing back-ground material
- One appreciated how the Committee allowed short and timely interjections by the public so that public comment was more immediately relevant and useful
- How did this session help the Committee work towards its long-term goal?
  - Several respondents noted the significance of agreement on the demand forecast and the climate change scenarios
  - One appreciated the “re-booting” of the Planning Subcommittee
  - Several noted the value of the discussions that clarified valuable information, explored the pros and cons of CAs and demonstrated the complex relationships between the CAs
- What were the strengths and weaknesses of the session?
  - Several noted that the Committee is working well together with productive discussions
  - One noted that the Technical Team is well prepared to discuss the material
  - One appreciated the location of the meeting in Live Oak
  - Several noted a need for more time to discuss and question the analysis of CAs and especially to allow time for discussion of emerging areas of disagreement
  - One felt that the Committee could save time if Members would submit questions about packet materials ahead of the meeting so that they can be resolved in advance
  - One noted the need for better control of noise in the hallway
  - One noted that the Committee’s approach of evaluating groups of projects risks missing its October deadline because the component projects of each group are too dissimilar to allow effective evaluation. Also the projects are too vaguely described to be evaluated as buildable projects.
- What would you like to see at the next meeting?

- One Member requested more time for discussion, and asked that the meeting be organized on the assumption that all Members have read the Packet material.
- Another requested additional analysis of the relationship of CA costs to CIP costs and of the related cost/benefits

**Adjourn**

PRESENTATION DRAFT

## Second Session, Friday May 1

### Scenario Planning Task #2

Committee Members completed this task in four break-out groups.

### Public comment

There was public comment including the following:

- Question asked about winter water rights
- Appreciation for the Technical Team's hard work
- Concern that the Committee's recommendation will only contain consolidated alternatives. The recommendation should include specific projects.
- The more storage the Committee can find the better.

### Scenario Planning Report Out

Each of the four Scenario Planning break-out groups reported on their findings and suggested portfolio(s) for the two scenarios. This was followed by a general discussion among Committee Members and members of the public.

### Climate Change scenario group A

Doug Engfer, Sarah Mansergh and Greg Pepping reported on behalf of their breakout group.

- CA-16 SLR to Aquifer Storage
- CA-4 WaterSmart
- CA-1 Peak Season Demand Reduction (15%)
- CA-19 Ranney Collectors at Felton
- CA-3 C Rec (as needed along the way)

- [CA-12 IPR to Loch Lomond as our backup / fallback ]

CIP Components required:

- Newell Creek pipeline (2 pipes for redundancy, flexibility, volume) - \$12.5MM
- Felton Diversion pipeline to GHWTP (expanded capacity) - \$1.5MM
- Intertie upgrade to aquifer(s) - unknown

Logical flow of our decision hierarchy (adaptive pathways approach):

- Institute **CA-1** (Peak Season Demand Reduction @ 15%) and CA-4 (WaterSmart) immediately; initiate conjunctive use with target aquifer water agency(ies) immediately; start preliminary design/engineering work for CA-12 immediately (up to the point before construction, in order to reasonably minimize the “lead time” required to get a plant built and online if/when needed)
- Manage SLR to City flow regime pending build-out of CA-16 (obtain DFW agreement here)
- Start design/engineering work on CA-12; goal: shovel-ready project plan in parallel with CA-16 work.
- Build **CA-16** with pipes and pumps and Ranneys (**CA-19**) to accommodate DFG-5 flows, but with only enough extraction capacity to accommodate City flows
- DO Operate the system (this is a status-monitoring / system operation loop)
  - If the City and State reach an agreement on SLR flows that exceed City flows
    - Upgrade the extraction capacity to offset the lost SLR water
  - If the supply/demand gap is not being met sustainably (that is, if the storage trend looks unsustainable)
    - Implement some more components of **CA-3** (C Rec) in order to reduce demand
    - IF supply/demand gap still cannot be met sustainably
      - If there is additional capacity to expand extraction
        - Upgrade the extraction capacity to cover supply/demand gap
      - Else if there is no remaining capacity to expand

- Build **CA-12** (recycled water to LL/aquifer), scaled to current needs, but with a ability to expand as needed

### **Climate Change scenario group B**

David Baskin, reported for this group that also included Mike Rotkin and Rick Longinotti.

- C-Rec is a given 90
- CA-16 Aquifer Restoration/ Storage

Interim: Negotiate with NOAA & DFG to get relief from fish flow requirement as needed

Other information:

- If the aquifer restoration/storage pilot is not successful, explore raising Loch Lomond
- Desal and reuse not considered due to community resistance
- If aquifer storage won't work for winter flows it won't work for recycled water either

### **Extended Drought scenario group C**

Sid Slatter reported for this group that also included Dana Jacobs, Sue Holt and Peter Beckmann

#### Portfolio A:

- CA-16 Aquifer Restoration/ Storage: most cost-effective and uses least energy

#### Portfolio B:

Sue reported this second portfolio: Merge with Soquel Creek Water District and obtain much greater operational flexibility as well as a jurisdiction that is a closer geographic match with the physical extent of the water sources.



## Extended Drought scenario group D

Erica Stanojevic reported for this group that also included David Stearns, Charlie and Mark Mesiti-Miller

### Portfolio A:

- C-Rec – 100
- C-16 Aquifer restoration/ storage 1100 (reduce capacity and cost to lower)

Cost summary \$23M and \$55M =\$78M

### Portfolio B:

- C-Rec            100
- CA-13 Water Reuse for Non-Potable – 530

Cost summary \$23M and \$106M =\$129M

## Discussion

In the discussion that followed the presentations members of the public were invited to join in the discussion with Committee Members. The following points were raised:

- Winter flows and storage are a great solution IF it works
- There was a great deal of discussion about timing and information needs to solve the big IF.
- Because of the general agreement to use winter flows it was proposed that the WSAC accept winter flows and storage as its primary approach. After discussion it was recognized that the information was still too uncertain to reach this type of agreement and the Committee should continue its process of developing portfolios and analyzing them. However, at the conclusion of the meeting Rosemary announced that MCDS would not be used to analyze the results of this Scenario Planning session but would still be used following the June meeting.
- Many Committee Members described their concern about the uncertainties regarding the viability of aquifer storage and or retrieval. Members of the Tech Team noted that the first round opinion from Pueblo

using previous research is not a clear agreement that this CA will work. The Pueblo work will be shared during the next month.

### **Oral Communication**

There was oral communication from the public including the following:

- Strong support for C-16 Aquifer restoration/ storage noting that backup solutions need to be explored in case CA-16 is found not to work.
- When considering Sue's Portfolio B, note that Soquel Creek Water District has a large water right to Soquel Creek
- In considering all the options, experiencing a change of heart about desal and considering that, as better technology reduces its energy requirements, there may be a time when it is necessary to use it.
- There is as much public concern over water reuse as there is over desal. The Committee should explore all other options first.

### **Evaluation of the Session**

Five Members of the Committee and one member of the public entered evaluations of this session at SurveyMonkey or by handing in hand-written evaluations.

- How well did the session meet your needs?
  - Almost all reported that this meeting met their needs very well
  - One noted that there was inadequate time at the end of the meeting to discuss the needs for a public opinion survey to determine public acceptance of drought-proof supply options
  - One considered the sessions the best and most productive WSAC meeting ever.

- How did this session help the Committee work towards its long-term goal?
  - Some noted the improving sense of the complexity of factors that play off each other in the Confluence model as well as progress made towards a consensus favorite
  - One noted concerns that the elimination of drought-proof options seems unhelpful
- What were the strengths and weaknesses of the session?
  - One appreciated the responsiveness of the Committee so that it was able to change course in response to Members' suggestions
  - Some noted the quality of small-group interactions, public engagement and the development of shared criteria and thoughtful and realistic perspectives
  - One appreciated the emergence of agreement on preferred CAs once drought-proof CAs had been eliminated
  - The same Member regretted the lack of willingness to consider those drought-proof CAs or to survey the public to see if there has been any change in attitude about them
  - One noted that the volume of material in the Packet makes preparation difficult, but recognized that circulating the material in advance of the meetings helps Members prepare
  - One appreciated that the Committee now appears to have the resources and focus to individuate projects, engage stakeholders and meet its October deadline
- What would you like to see at the next meeting?
  - One asked for more data to be presented on spreadsheets
  - Two underlined a need discussed in the meeting: more details from the Technical Team regarding the feasibility of the preferred alternative to show its real viability and timelines and to describe how it interacts with other CAs so that the viability of back-up alternatives can also be properly considered
  - One hoped for individuation of projects that will allow effective evaluation of them.

**Adjourn**

PRESENTATION DRAFT