

DRAFT Q&A

Regarding the DRAFT Agreement

Issues that we already know are up for discussion are put in brackets. But, of course, everything in this Q&A is draft until the Ctte takes a formal vote on the Agreement. Consider it to be all in brackets!

Note: this ToC is here only for reviewer's benefit, so you can see the organization of the questions.

The Water Supply Augmentation Plan

Q: What Plan is the WSAC recommending?

The Groundwater Strategy

Q: Why did the Committee choose the Groundwater Strategy?

Q: Why did the Committee choose groundwater as the strategy to pursue first?

Q: How does it 'strengthen the whole community?'

Q: Does the groundwater strategy actually produce any water?

Q: What are the odds of the groundwater strategy working?

The Back-Up Plan

Q: Why spend money preparing for a back-up plan if you might not need it?

Q: Did the Committee make a recommendation about the kind of supply that would be developed if the back-up plan becomes necessary?

Adaptive Management Strategy

Q: How will the Plan deal with all the unknowns and future decisions?

Q: Decisions are only based on Cost, Yield and Timeliness?

Q: How can we be sure that we won't move to the back-up plan before we've given groundwater strategies a chance to succeed?

Q: What is the decision-making structure for moving to a Back-up Plan?

Q: Do we have to wait 5 years to switch to the Back-up Plan--or back away from it?

Q: If the back-up plan is used, will the groundwater strategies still go on?

Q: How has (and will) cost-effectiveness be evaluated?

Q: What happens if the climate is dryer (or wetter) than predicted?

Other Options Considered

Q: Did the Committee investigate options other than those described above?

The Water Supply Augmentation Plan

Q: What Plan is the WSAC recommending?

A: The Committee has developed a consensus Plan that includes the following three essential supply augmentation elements:

- A. Increased conservation that will save between 200 and 250 million gallons of water a year by 2035;
- B. Capture of 'excess winter flows' from the San Lorenzo River. This is water that the City does not currently use for drinking water supply. Those excess flows would be stored in regional aquifers. This in turn has two benefits: Santa Cruz can tap some of this water in times of drought, and the water can contribute to restoration of over-drafted aquifers. To achieve this, the WSAC recommends that the City to simultaneously and diligently pursue two approaches to groundwater storage:
 - Transferring treated available winter flows from the San Lorenzo River to our neighboring water districts, Soquel Creek Water District and Scotts Valley Water District so they can serve it directly to their customers and rest their wells, helping to recover higher ground water levels and stop salt water intrusion into the aquifer we share with Soquel Creek. This strategy is called in lieu or passive recharge.
 - Injecting treated available winter flows from the San Lorenzo River into one or more regional aquifers to store it for future use. This strategy is called aquifer storage and recovery (ASR) or active recharge.

If successful, either or both of these strategies would build a reservoir of water that could be tapped by Santa Cruz customers to reduce and eventually eliminate significant curtailments during drought conditions.

- C. Begin studying options for a back-up plan using either purified recycled water or desalinated water, should that prove necessary.

The Committee also recommended that the City implement the Water Supply Augmentation Plan using an Adaptive Management Strategy that includes a staggered implementation approach, a structured process for decision-making as the plan is implemented, and a change management strategy to incorporate new information as it is developed.

The Groundwater Strategy

Q: Why did the Committee choose the Groundwater Strategy?

A: Santa Cruz has a unique situation: the City's surface water sources, the North Coast streams and the San Lorenzo River, produce more water than needed to meet customer demand in the winter. However the City does not have any place to store this available water and it just flows out to the ocean.

The groundwater strategy recommends that the City invest in efforts to store the available winter water in the ground, in the aquifers. If this strategy is successful, it is basically like building a second reservoir the size of Loch Lomond, but having that storage be underground rather than above ground.

Q: Why did the Committee choose groundwater as the strategy to pursue first?

A: The Committee chose winter water to enhance groundwater storage because it provides multiple benefits as a water supply solution. New supply comes as we bank winter water to use during drier summers, so that even during dry years there is winter water available for harvesting. Storage in our aquifers will counter a threat to regional seawater intrusion issues. This solution also allows us to start now with existing infrastructure, increases flexibility in our water supply, enhances environmental quality, and creates a regional water supply solution that strengthens the whole community.

[If the groundwater strategy works, it has the potential to provide not just the current yield targets, which allow for a certain level of curtailment, but a quantity that is plentiful enough to mean that curtailments would be quite rare.]

Q: How does it 'strengthen the whole community?'

A: The groundwater strategy works because of the mutual benefit that could be created between Santa Cruz, Scotts Valley and Soquel. Santa Cruz has enough winter water to last through a drought, but it doesn't have enough storage. It is like having rain, but no bucket. Scotts Valley and Soquel have storage: natural aquifers. But their aquifers are depleted. For them, it is like having a bucket, but not enough rain. If Scotts Valley and Soquel would loan Santa Cruz their buckets, Santa Cruz would loan Scotts Valley and Soquel their rain. As long as Santa Cruz can get some of that water back in the peak season when it is most needed, then the mutual benefit could be tremendous socially, economically and environmentally.

That is the concept. However, getting those agreements in place and determining appropriate cost shares is an unknown at the moment. Scotts Valley and Soquel may have more favored options for solving their water supply problems. Allowing the City time to figure out these agreements is one of the reasons the Committee recommends an adaptive strategy (described below).

Q: Does the groundwater strategy actually *produce* any water?

A: By capturing winter water and storing it in an underground reservoir, the groundwater strategies would ideally make more water available to the system at the time Santa Cruz needs it most—in the peak summer season. So it ‘produces’ water.

But *production* only matters for estimating things like operating costs and energy usage. What we’re buying with the money we’re spending is *yield*. That’s what we really care about, since it is *yield* that measures the reduction in water shortages to Santa Cruz customers.

The yield is not the annual volume the new source(s) produce. Instead, it is a function of how the new supply/infrastructure interacts with the rest of the Santa Cruz system. If two alternatives generate the same yield, but one does it with much less production, the two are of equal value to Santa Cruz.

Q: What are the odds of the groundwater strategy working?

A: We don’t know yet. The aquifer storage and recovery approach is logical. It has worked elsewhere. But aquifers are natural systems; their performance can’t be predicted off of an engineer’s blueprint.

Just as the natural system can be unpredictable, the Committee cannot know with certainty whether neighboring communities will want to partner with Santa Cruz, or to what extent. Many aspects of the groundwater strategy depend on such partnering.

To be able to predict the cost, yield and timelines to production of the groundwater strategies with certainty will take about five years of additional work in the form of field studies, pilot testing and work with regional partners.

The Back-Up Plan

Q: Why spend money preparing for a back-up plan if you might not need it?

A: The investment in the groundwater strategies is considerable: once the Council adopts the Agreement, the City is committed and has every interest in making it succeed. But there are unknowns about the groundwater strategy and having confidence that there *will be* water is vitally important. Therefore, it makes sense to take out an insurance policy. If you take out an insurance policy on your house, you still love it. And if you have an insurance policy, you actually don't *want* to use it. The Back-up Plan is that kind of insurance policy.

Q: Did the Committee make a recommendation about the kind of supply that would be developed if the back-up plan becomes necessary?

A: The Committee [expressed a preference for indirect potable reuse as the back-up approach, but left open the possibility of developing direct potable reuse of treated wastewater or a desalination plant.] The Committee didn't make a firm selection because the Water Supply Augmentation Plan is set up for learning what is needed and then making a decision based on the updated information.

Adaptive Management Strategy

Q: How will the Plan deal with all the unknowns and future decisions?

The Committee's agreement contains an adaptive management strategy to guide future decision-making. This strategy creates a transparent framework to support future decision-making based on updated information. It includes direction to ensure that the implementation stays true to WSAC's consensus about core principles.

The adaptation is a classic Plan-Do-Check-Act approach. Anticipated decisions and timeframes are identified and communication and decision-making procedures are described. In addition, specific thresholds for Cost, Yield and Timeliness have been established and defined and will be used to inform and guide decision-making.

Q: Decisions are only based on Cost, Yield and Timeliness?

When cost, yield or timeliness thresholds are exceeded, the Plan may need to be reviewed and adapted. But once the decision-makers are in review mode, they should also take into consideration the guiding principles, which include public health, public acceptance, regional collaboration and environmental benefits.

Q: How can we be sure that we won't move to the back-up plan before we've given groundwater strategies a chance to succeed?

A: The Committee was concerned about this issue and worked to develop an adaptive approach to deal with it:

1. Begin by studying/starting the groundwater strategy
2. Study the back-up plans; and
3. At around the five-year mark, when enough information is gathered, use the Agreement's decision-making structure to decide whether or not a Back up is needed at all.

Q: What is the decision-making structure for moving to a Back-up Plan?

There are numerous decision points in the Agreement, but the one that gets the most attention would occur in about 5 years. At that point the Plan will be adapted based on yield and timing thresholds. If the groundwater strategies will meet the yield and timing targets and cost no more than [130%] of the cost of the Back-up Plan, then there will be no need for a Back-up Plan.

Current cost numbers are irrelevant to this decision. The decision to be made in 5 years will be based on updated numbers, practical experience, [future] costs using the 'average-year cost per unit of yield' described below and the [130%] 'lean' in favor of groundwater.

Q: Do we have to wait 5 years to switch to the Back-up Plan--or back away from it?

A: The decision could be made earlier. The adaptation strategy is set up so that decisions can be made when the appropriate information becomes available. If it becomes clear that the yield, cost or timing thresholds will be exceeded, and the

information is of sufficient certainty, a decision to accelerate the Back-up plan could be made earlier. For instance, if there were to be an earlier decision point for in lieu, it would likely occur if the nature (or lack of) partnering agreements cause the in lieu approach to exceed a threshold.

Q: If the back-up plan is used, will the groundwater strategies still go on?

A: The groundwater strategies that are already in place would continue if doing so is cost effective, even if the a decision is made to use the Back-up Plan.

Q: How has (and will) cost-effectiveness be evaluated?

A: After much consideration of the range of cost metrics that could be developed and used to evaluate cost-effectiveness, the Committee concluded that though all cost metrics have their strengths and weaknesses, the *average-year cost per unit of yield* is the favored (but not the only) cost metric to help us compare which options at any point offer us the lowest cost for additional water. The average-year cost per unit of yield starts with amortized capital investment and the average annual operation and maintenance expense (in other words looking at every last dime over 30 years). Then, divide that number by yield.* This approach is important because looking at \$/gallon makes it easier to compare different projects, so it levels the playing field.

[Cost will always be evaluated 'looking to the future.']

*Yield, not production, as discussed above.

Q: What happens if the climate is dryer (or wetter) than predicted?

A: Having an 'adaptive' plan means that the plan can handle changes. First, the Plan envisions reassessing the plan targets every 5 years—that means looking at demand, climate, system improvements—the whole range of issues. If it turns out that conditions are more difficult than expected, then the yield and timing thresholds will be set higher. If the system demands overall are in better condition, then the yield and timing thresholds can be relaxed. This in turn will affect future decisions about the Plan.

Other Options Considered

Q: Did the Committee investigate options other than those described above?

A: Almost a year ago, the WSAC held a water convention and invited interested parties to submit ideas about how we might best meet our community's water needs. Almost 90 individual proposals were submitted and subsequently studied by the WSAC.

Many of the submittals were variations of the same idea. The WSAC's technical team combined similar ideas into roughly 20 distinct projects for further study. Out of all of these proposals, the WSAC fairly quickly arrived at a consensus that the water supply augmentation strategies looked the most promising.

Many of the proposals that initially looked promising turned out to have unanticipated problems. An example of a solution that initially seemed promising and was later not selected is the idea of using several old quarries in Santa Cruz that many members of the public and the WSAC thought would be a good location for off-stream water storage. As it turns out, most of those are limestone quarries and limestone dissolves in water. Even if an impermeable liner could be developed, which was technically more difficult and expensive than originally imagined, it is doubtful that these limestone quarries could hold the weight of billions of gallons of water without collapsing into the extensive subsurface holes that exist below the quarries.

A more complete discussion of the reasons that WSAC did not select these other alternatives is available on the WSAC website [See agenda item 7a for September 10-11 meeting at www.santacruzwatersupply.com.]