



QUESTIONS and ANSWERS
Water Conservation Community Informational Meeting
May 27, 2010

[The questions that follow were asked through written format at the event mentioned above. These questions were copied here verbatim. Occasionally, the exact nature and intent of the question had to be interpreted. When applicable, the agency to which the question was directed is shown in *(italics)*. For more Questions and Answers, visit www.scwd2desal.org]

Q: What is the indoor consumption of the HUGE house with the desert front landscaping? (Note: this question is in reference to a photo shown in a PowerPoint presentation during the meeting.)

A: Usage information is protected and may not be publicly disclosed without the customer's written permission. A typical single-family home uses approximately 80,000 gallons of water per year. About 75% (60,000 gallons/yr) is for indoor use and about 25% (20,000 gallons/yr) goes toward landscaping. Indoor use for a single-family home is determined by the number of people in the household and the efficiency of water use fixtures rather than the size of the building.

Q: What about new conservation technologies that are on the horizon? Why are the water agencies producing less?

A: Both agencies continue to evaluate new water saving fixtures and technologies and offer incentives for customers to continue improving water use efficiency. Both agencies have been able to produce less water and meet demand over the past several years for a number of reasons that include, but aren't limited to, water conservation, recent weather patterns, infrastructure improvements to minimize leaks and water loss, and the effects of the recession (less tourism, houses/rentals vacant, business closures, etc.). However, even with the reduction in water production, Soquel Creek Water District (District), for example, still needs a supplemental water supply to reduce groundwater pumping even more to prevent seawater intrusion.

Q: I understand that current water savings (offsets) are used to justify new construction. In other words, what I save is used to increase the County population and not necessarily to conserve water in our aquifers. Is this true? (District)

A: The District adopted the water demand offset (WDO) requirement for all new development in order to avoid increasing demand on overdrafted aquifers during the interim before a supplemental water supply is developed. The water saving retrofits associated with this program must directly result in savings equal to 120% of the development's projected demand, and they are distinct from all other conservation programs that have a community benefit. Only those customers who have voluntarily signed up for free toilets under the WDO program are saving water that is then available for new development. The District also offers our "Go Green" program as part of the

WDO program that encourages developers to incorporate water savings measures into their proposed development.

Q: Why not put some teeth into conservation, such as banning lawns. It is a well-known fact that landscape watering is a major factor in stressing our water supply. Given the City of Santa Cruz's promise to supply UCSC expansion plans, won't this cancel out much of our conservation efforts? What about gray-water rebates? Enhanced storm water run-off? There are so many conservation measures that are simply not happening.

A: The City of Santa Cruz (City) and the District have policies establishing best practices for managing both indoor and outdoor water use that are more restrictive than the State of California standards. Restrictions on turf for new development, including grass types, coverage area and irrigation systems are being implemented. Both agencies also provide educational materials and incentives focused on reducing outdoor water use on existing landscapes such as literature about waterwise gardening, lawn watering guidelines, and water use audits specific to outdoor watering. Additionally, the District offers rebates for rain catchment, drip irrigation, weather based controllers, and, beginning in July 2010, graywater. Both agencies continue to look at new conservation measures that become available and incorporate them into their programs as appropriate.

Regarding UCSC, approximately 120 million gallons of additional water will be needed at the buildout of the LRDP. This amount is actually much less than the amount of water the City's water plans anticipated the University would use by 2020. That 120 million gallons is about one-third of the amount of water called for in the City's long-term conservation plan.

Q: There are numerous non-fossil fuel technologies being developed i.e. solar, nano tubes, evaporation chambers & thermo ionic. Why opt for reverse osmosis with so many other eco-friendly, non-fossil fuel dependent options coming down the pike? Can toxins such as personal care products, hormones, drugs, viruses, bacteria and chemical contaminants pass through the RO membranes? Does the desalination process strip ocean water of much needed nutrients?

A: Desalination with reverse osmosis (RO) membranes, nanotube membranes or distillation processes all require energy to remove the salts from the water. The energy does not need to come from fossil fuel. The Perth Australia RO plant has a nearby wind power facility that meets its energy demands. Nanotube membranes offer the promise of desalination at lower energy compared to RO but are still in the research lab phase of development. The filtration processes and RO membranes used in desalination remove contaminants such as personal care products, viruses and bacteria from the water. Because the RO process is so good at removing contaminants, it also has very few salts in the treated water. Similar to other forms of water treatment, minerals such as calcium are added to the treated water.

Q: What is the City's success rate/penetration rate for residential retrofit (toilets, showerheads)? In other words, how much is left that can be done? (City)

A: In-home replacements of toilets and showerheads to more efficient fixtures are estimated around 60% and 80%, respectively. The City is scheduled to perform a more in-depth statistical analysis later this year to reassess how much more can be saved through existing programs and will evaluate new and additional programs to consider.

Q: You define water "needs" based on current and past use. Are prior increases/decreases being factored into future use projections?

A: Water Demand projections (or needs) are primarily calculated with current water use plus anticipated growth under the current General Plans. These demands are modified, and in both of our agencies cases, have or will be adjusted downward due to the current trend of improved water use efficiency by our customers.

Q: Why are you afraid/resistant to say "no" – to users – commercial, Ag & residential?

A: The actions that may be taken by the water agencies with respect to limiting water service and use are restrained by the constitution and laws of the State of California and must conform to property and water rights that have been granted by the State. Generally speaking, the laws provide authority for water agencies to take actions to provide water for present and future beneficial use. The ability to restrict new and existing water use is limited to periods of temporary shortage while the agency continues to fulfill an obligation to adequately replenish or augment the water supply. The vital role that water plays in the economic well being and quality of life for a community must also be factored into policies. In summary, to some extent its not up to a water agency to say "no" to users; water agency planning must also abide by state and other regulatory requirements.

Q: The faucets in restrooms in this building (men's room) do not have aerators, waste a lot of water. Most city and county restrooms are like this (city hall, for example). Why? A 100-unit subsidized housing complex in Live Oak has had a malfunctioning boiler for 6 years; water is run for ½ hour by all residents before getting hot. Santa Cruz water department can do nothing, why?

A: Both agencies work hard to identify and correct water waste. The City and District offer free water survey audits where a trained water conservation specialist can visit homes or businesses to check for leaks, install water saving devices (aerators, showerheads, etc.) and recommend water-wise changes to help customers save money and water. The City and District have very limited ability to effect changes to interior plumbing unless there are leaks, which code requires be repaired within 24 hours of notice. If anyone brings what they consider to be wasteful practices (like those referenced in the question) to the attention of our water conservation departments, we will contact the property owner/manager to offer any help we can to eliminate waste. To notify the City or District's Water Conservation Department, please call the City at 420-5230 or District at 475-8500 depending on the service area.

Q: Why can't the City and District establish conjunctive use with surface and groundwater? For example: Winter surface water from the City to the District and then groundwater from the District to the City during drought. Please comment.

A: Wheeling water is not as easy as opening a valve to let water flow from one system to another. The San Lorenzo River has been declared by the State as fully appropriated from June through October. The recently released draft NOAA Coho recovery plan recommends that status be extended for all 12 months meaning no more water would be taken from the river at any time all year than is now covered by existing water rights. Beyond this, there are many winters (including three of the last four) when flows in the river are so low the City can barely meet its demand and turbidity issues affect water quality. Also, there is no 'surplus' groundwater that could be provided to the City from the District during drought periods. In simple terms, the water budget available from existing surface and groundwater resources falls short of the need. Finally, and most importantly, all surface sources in the County are home to threatened and endangered species and it is clear that we cannot look to divert any more water from any of them. Beyond conservation and use curtailment in droughts, if we need additional supply, it must come from a source other than the creeks, streams and rivers in our county that support aquatic habitat.

(Link to the NOAA Coho recovery plan:

http://swr.nmfs.noaa.gov/recovery/coho_recovery_plan_031810.htm)

Q: What about other technologies used for desalination besides reverse osmosis (RO). For example, what about flash vaporization?

A: Typical desalination distillation technologies include thermal distillation, multiple-effects evaporation, and mechanical vapor recompression. These processes essentially boil the seawater to produce freshwater and are often used when there is waste heat energy available such as in combination with a power plant. When there is not waste heat available, these systems are much more expensive and energy intensive than RO desalination.

Q: Australians' average use is 30 gal/day. Why couldn't we do that too?

A: Much of southeastern Australia, including Queensland in 2007/08 had consumption close to 30 gal/day/person, (however later in 2008 the usage was back up to 40 gals/day/person). The Queensland people are experiencing the worst 10+ year drought in the region's history, with major dams at 16.5% capacity and the majority of farms fallowed. Thus it was mandated they cut back to the levels cited. The cutbacks are seen as an interim/temporary measure as the Queensland Government is increasing supply sources through building of dams, a desalination plant and recycled water plants. Similarly, The City and District instituted 15% temporary water restrictions in 2009 and are looking to diversify their water portfolios like Queensland. Based on previous studies, including the City's Integrated Water Plan, most residents are comfortable with temporary water restrictions of up to 15%, but do not want to be mandated to use only 30gal/day.

Q: Why doesn't the City of Santa Cruz have rain water catchment rebates? (City)

A: Conservation programs implemented by the City have demonstrated the ability to make a quantifiable and dependable difference in terms of long-term water savings. Water shortages for the City are during drought conditions when outdoor watering is already restricted; therefore, supplemental water supply is needed for non-landscape purposes. The use of rain catchment systems is legally restricted to irrigation. While an individual may find it beneficial to store water for irrigation during drought events, unless storage containers are very large, rain catchment only provides a limited amount of supply - until the next rain.

Q: Realizing dams/reservoirs are so political, aren't they more environmental friendly and less costly than desalination?

A: Dams and reservoirs do not necessarily have fewer or less significant environmental impacts or cost less than desalination. Moreover, the infeasibility of dams and reservoirs is more a response to the need to reduce withdrawal of water from streams and rivers for the benefit of aquatic species (per regulations) than it is political.

Q: Why was the 1976 drought more important than late 1980 – early 1990?

A: Both droughts are important in that water shortages during these periods caused impacts (lifestyle and financial). 1976-'77 was a more critical period of drought as it was characterized by much less winter rainfall, albeit for a shorter duration, and is used as a measure of reference since the City has also not increased water supply with any additional water projects since the '70's but population has increased.

Q: Why is Soquel water supply in such dire straits? (District)

A: The District's sole source of water supply is groundwater from local coastal aquifers. The cumulative pumping from the Soquel/Aptos area groundwater basin has exceeded recharge (i.e. the amount of precipitation that percolates into the aquifers) for many years resulting in depressed groundwater levels that could lead to seawater intrusion. If this were to occur, the groundwater will be irreversibly contaminated.

Q: Why not natural reservoirs?

A: There are no naturally occurring lakes within Santa Cruz County that could be developed as a reliable source of water supply. Both the City and the District considered the option of building more dams/reservoirs in their water supply plans; however, this was not a viable water supply alternative for either agency given existing environmental and regulatory constraints.

Q: Will there be changes to landscape requirements? (Such as requiring only drought tolerant/xeriscape landscapes.)

A: The agencies have either just revised or are in the process of revising and promoting stricter landscape requirements. These may be viewed on-line at <http://www.cityofsantacruz.com/index.aspx?page=411> and

http://www.soquelcreekwater.com/Draft_Ordinance_InOut.htm

Q: How can we implement more greywater use from showers, sinks? Facilitate toilet change out more rapidly?

A: The best way is for customers to install a graywater system and new high-efficiency toilets and then share your success with your neighbors. Check with the City and District for the various rebates that may apply for additional monetary incentives. Local ordinances requiring retrofitting toilets at the time property is sold are enforced by the City and District and have accelerated the number of high efficiency toilets within our service areas. For more information on graywater regulations and applications, visit http://sccounty01.co.santa-cruz.ca.us/eh/Water_Resources/laundry-landscape.pdf

Q: Why do we not keep water curtailment in place every year/all years?

A: Curtailment (aka mandatory rationing) is permissible only as a response to declared water supply emergencies and restrictions need to be legally supported by evidence of need. During non-drought periods, the City of Santa Cruz does not have a water supply shortage; and without a method of enforcing curtailment on non-District users of the Soquel/Aptos groundwater basin, year-round mandatory restrictions would inequitably and unfairly impact District customers. Summer time curtailment is easier to achieve because outdoor watering is more discretionary than indoor use. Coincidentally, 2010 water use for the District has so far been below the same months of 2009 even though curtailment levels are not in force.

The effectiveness of restrictions is completely dependent on the voluntary cooperation of all of the water consumers, and that cooperation is far more likely when customers understand the emergency and expect their actions are temporary. Permanent reductions in water use are best accomplished through our conservation efforts, not through mandating restrictions when the public does not see a reason for it.

Q: What is the potential for interagency transfers, i.e. conjunctive use of surface and groundwater at appropriate times of the year?

A: The City is currently working with Scotts Valley on a water exchange for recycled water use at Pasatiempo Golf Course. It is not as easy for the District to engage in interagency transfers as there is not "excess" groundwater for them to provide to a neighboring agency.

Q: What about increasing water storage (Bay Street or Loch Lomond)?

A: Bay Street Reservoir is a treated storage facility, not a raw water source. Even restructuring it to store more treated water would not change the fundamental problem: shortage of raw water. Increasing the capacity of Loch Lomond has been studied in the past, though it cannot provide much more water without completely tearing down the existing dam and reconstructing it to make it more structurally sound and high enough to make a difference. From an operational perspective, this would be impossible as the City cannot take Loch Lomond out of service for the length of time such construction would require.

Q: What about turf replacement – since stopped as a part of Soquel Creek Water District’s program? (District)

A: The District temporarily tabled the turf rebate program due to funding constraints. Funding for this program has been restored in the 2010/11 budget and the rebate will be re-established within the next few months albeit some modifications are anticipated to assure greater cost benefit.

Q: What infrastructure investments are in the horizon to maintain/improve supply considering seawater intrusion?

A: The City and District are evaluating a 2.5 million-gallon per day desalination facility to provide water during periods of drought and to alleviate groundwater pumping that can lead to seawater intrusion. In addition, the District is completing the environmental review process for a Well Master Plan that would provide new, inland wells to enable redistributing pumping away from vulnerable coastal areas.

Q: Will the proposed desalination project go to a public vote? Will the public get to voice their concerns?

A: A public vote, though not required, could be considered and initiated by policymakers. The agencies are currently in the ‘Evaluation Phase’ of the project and have not made a final decision. The proposed project will soon be reviewed under CEQA (California Environmental Quality Act) for evaluation of environmental impacts. This process will include several opportunities for public input.

Over the last ten years, while exploring and evaluating alternatives toward expanding water supply, there have been over 200 public meetings held and dozens of public presentations made to provide the community with background information and to garner public input. More informational meetings are planned for this fall. For more information, visit the website www.scwd2desal.org.

Q: Are you familiar with Naturally Wallace Co’s patented, aerated system to clean and percolate tertiary treated sewage? Are you aware this can be used to create water for Ag use? How can the County ignore 2 HUGE water problems: 1) polluting Monterey Bay with 12 mg/d of dumped sewage and 2) salt water intrusion in Pajaro with 15,000 AF/year overdraft?

A: Yes, the agencies have been informed of this system. Currently, there are very limited opportunities to use highly treated wastewater (also known as recycled water). Recycled water for groundwater recharge within the Soquel/Aptos area is limited by the regulatory requirements. Recycled water for Ag. irrigation is currently being done in the Pajaro Valley, which is the predominant agricultural region of the County – but again is not as feasible for the District since they do not have any agricultural accounts. scwd² recently drafted a white paper on recycled water viability within our service areas, which can be viewed on-line at:

http://www.scwd2desal.org/documents/WhitePapers_Fact_Sheets/Recycled%20Water%20White%20Paper_Final.pdf

Recent improvements/projects have been implemented in regards to the County issues that are referenced in this question: 1) the City of SC has completed upgrades at the wastewater treatment facility from advanced primary treatment to full secondary treatment and 2) The Pajaro Valley Water Management Agency (PVWMA) partnered with the City of Watsonville to introduce the Watsonville Area Water Recycling Project that will provide nearly a quarter of the water needed to halt seawater intrusion on coastal lands.

Q: What percentage of potable water is “lost” annually from “manufactured” to delivery end point of use. More storage? Covered for evaporation losses?

A: Overall both agencies have excellent water loss records, far below the average at around 5% total. The generally accepted level is 10%. Also, all finished water storage tanks are covered for health/safety issues which virtually eliminate losses to evaporation.

Q: What steps have been taken to eliminate surface storage as a component of long-range water planning, specifically the use of abandoned sand/rock quarries? Specifics on Soquel’s elimination of dams, storage as a solution.

A: In the course of preparing its Integrated Resources Plan (IRP), the District examined an on-stream reservoir (i.e., surface storage) in the Glenwood area. The District concluded that this was not a viable water supply alternative given existing environmental and regulatory issues. A list of factors that contributed to the decision to dismiss this project is provided on page 7-4 of the IRP, which can be accessed at <http://www.soquelcreekwater.org/content/irp-2006>.

The City does sit on a Technical Advisory Committee that continues to evaluate the feasibility of using abandoned quarries in the Scotts Valley area to recharge the Santa Margarita aquifer.

Q: Please explain the analysis of waste disposal of desalination bi-products especially if the waste is to be dumped into Monterey Bay.

A: While direct discharge of brine into the ocean has been demonstrated to have negligible impact to the receiving environment, (ref Australia and Hawaii), scwd² intends to blend brine with effluent from the Santa Cruz Wastewater Treatment Facility. A dilution study is being conducted to evaluate and analyze the effects and blending ratios of using existing wastewater effluent to blend with the salty water concentrate (or bi-product) of the desalination process.

For more information: visit www.scwd2desal.org