

## Comments on the Draft EIR, Pure Water Soquel Project

The Draft EIR for the Pure Water Soquel Project concludes that the Project is the environmentally superior alternative among those that are analyzed in the Draft EIR. The conclusion results from:

- A. Outdated District goals for pumping reduction
- B. Inadequate examination of alternatives to the Project
- C. Inadequate analysis of energy use of the Project compared to alternatives
- D. Lack of clarity about system resiliency, including impacts of plant failure on public health

### **A. Need to Update District Goals**

The Draft EIR is the first District planning document that has incorporated information from a new groundwater model. In contrast to previous District understanding of its overdraft problem, the Draft reports that groundwater levels are estimated to recover over time *without building the Project*:

*“The results show that groundwater levels would increase over time and show recovery to long term stable groundwater levels in the District’s coastal wells...”*

These results demonstrate that the District’s goal to achieve 1500 acre-ft per year of supplemental supply is based on outdated information. The District needs to update their goals for pumping reduction.

The news that the No Project Alternative would result in aquifer recovery creates more breathing room to consider alternatives to the Project. The alternatives, alone or in combination, don’t need to meet the minimum 1500 acre ft./year criterion to be worthy of consideration. *Any* supplemental water will hasten an aquifer recovery that is expected to happen even without the Project.

Even the new groundwater modeling has incorporated some outdated information. The model adopts the estimate for future District water consumption from the 2015 Urban Water Management Plan. That Plan estimates 2020 water consumption of 3900 acre-feet per year and decreasing to 3200 af/y by 2045. The District’s plan to reduce consumption in spite of growth over time is admirable. However, the starting point for the estimate is significantly overestimated. Actual consumption in 2017 was 3324 af/y. There has not been a pronounced rebound from the 2015 drought year consumption of 3106 af/y. This represents a cultural shift in customer use of water as a result of the drought that is widespread in Northern California. (Southern California, not so much.)

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**Rick Longinotti, Co-chair**

Adjusting the groundwater model to reflect the actual cultural shift in water use would result in even more favorable estimates for aquifer recovery under the No Project alternative.

The EIR needs to revise the Project Objectives, as stated below, based on this new information.

*The overall goal of the Project is to recharge the local groundwater basin with 1500 afy of purified water for indirect potable reuse and thereby improve its reliability as a water supply source.*

Under CEQA guidelines, the goal of a project needs to be formulated in a way that does not unnecessarily narrow the pathways to achieve that goal. Otherwise alternatives to the project will be rejected on the basis that they are not within the narrow pathway to the goal.

Stating that the goal of the project is to recharge the basin with *indirect potable reuse* excludes other ways to recharge the basin, for example, with river water. In order to comply with CEQA guidelines, the mention of 1500 afy and indirect potable reuse need to be stricken from the project goal

The EIR states a specific objective of the project as follows:

*Replenish the local groundwater basin to prevent further seawater intrusion and develop a sustainable water supply in a timely manner that meets the District's supply objectives and the State's mandate under the SGMA.*

As stated above, the District's supply objectives need to be revised in light of the information from the new groundwater model. Otherwise there is a discrepancy between the District's supply objectives and what the latest information indicates is required to replenish the basin.

**B. Alternatives Analysis: The EIR needs a thorough and accurate analysis of Large-Scale Water Transfers**

The Draft includes large-scale water transfers in section 7.5, Alternatives Considered, But Rejected from Further Analysis. It is a mistake to exclude this alternative from further analysis since it is the policy of the City of Santa Cruz to partner with the District to pursue this alternative and since the City and County and District have already conducted extensive research that demonstrates the feasibility of water transfers (aka conjunctive use). (See Kennedy/Jenks, *Conjunctive Use and Enhanced Aquifer Recharge (2011)*; County of Santa Cruz, *Conjunctive Use and Water Transfers Phase II Final Report (2015)*; Water Supply Advisory Committee Final Report (2015) Pipe loop study (2018)

**Santa Cruz Desal Alternatives**  
**Rick Longinotti, Co-chair**

The Draft EIR states:

*The primary objective of the Project is to recharge the local groundwater basin with 1500 acre-feet per year of purified water....*

The Draft acknowledges that an equivalent amount of water for recharge could be available from the San Lorenzo River.

*If the pilot project proves successful... the District may consider...participating in the City's In-Lieu and/or Aquifer Storage and Recovery Project(s) that they are pursuing...*

*The In-Lieu and/or Aquifer Storage and Recovery Project(s) could include a larger amount of treated river water (1500 afy)*

The Draft needs to acknowledge that this river water would be available at a much lower energy consumption than from a reverse osmosis plant, according to energy analysis by Brown and Caldwell for the Water Supply Advisory Committee . In fact, the energy intensity of treated river water is lower than the District's current energy intensity of pumping water from several hundred feet below ground. (Water is heavy.) The lower energy intensity of river water versus treated wastewater is one reason the former is a lower-cost solution.

Why does the Draft EIR reject the river water alternative? (The Draft names this the *Large Scale Surface Water Purchase as a stand-alone alternative supply source*).

The Reasons for Rejection of this alternative are listed in the Draft as follows:

- 1. May not substantially lessen environmental impacts*
- 2. Feasibility remains uncertain, as availability (i.e. quantity and legal) and certainty of water supply would be managed by City of Santa Cruz.*
- 3. Does not meet key project objectives of timeliness, affordability, and drought resistance*

I address each of these below.

- 1. May not substantially lessen environmental impacts*

Judging from the Draft EIR's discussion of Alternative 2, this statement probably refers to the impact on river flow.

*Alternative 2 results in new long-term surface water use that would result in reduction in overall surface water supplies and stream flow volumes and, particularly during drought conditions, and could affect fisheries and other aquatic species....*

## Santa Cruz Desal Alternatives

Rick Longinotti, Co-chair

This statement reflects a lack of understanding of the water transfer strategy, as recommended by the City of Santa Cruz Water Supply Advisory Committee (WSAC). The National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife endorsed the water transfer concept for two reasons, according to Jon Ambrose, staff member of NMFS, in a presentation to the Water Supply Advisory Committee.

- River water during high flow periods would be used to replenish local aquifers. This would increase the base flow in area streams, benefiting wildlife.
- The transfer of water to Santa Cruz from the District and Scotts Valley Water District during drought periods would enable Santa Cruz to adhere to a Habitat Conservation Plan that restricts stream diversions even in drought years.

*2. Feasibility remains uncertain, as availability (i.e. quantity and legal) and certainty of water supply would be managed by City of Santa Cruz.*

The water transfer strategy is at least as feasible as the Pure Water Soquel project. The quantity of water available has been analyzed by Gary Fiske Associates for the Water Supply Advisory Committee. (See Agenda document 8a-2 from WSAC April 2015 meeting). Fiske concludes that within current surface water rights constraints (but no constraints on infrastructure), storage of 3.5 billion gallons can be amassed within 3 years. There is no shortage of river water for the purpose of aquifer recharge. The actual amount of time to recharge local aquifers depends on existing infrastructure constraints.

A legal opinion from the County's water rights attorneys, Best, Best & Krieger (2013) as well as the District's attorney indicate that the water transfers (aka conjunctive use) are legal, and in fact encouraged by the State Dept. of Water Resources.

The concern that the City would manage the certainty of the water supply can be addressed through contract negotiations. The Draft should note that the City policy prioritizes water transfers for aquifer recharge above the back-up plans of direct potable reuse and desalination. The Water Supply Advisory Committee Final Report anticipates agreements between the City and District that would detail quantities of water to be transferred as well as sharing of capital and operating costs.

*3. Does not meet key project objectives of timeliness, affordability, and drought resistance*

Transfers of water from Santa Cruz to customers in Soquel Creek Water District are planned for this winter (2018-19), according to both districts. The *Water Supply Advisory Committee Final Report* notes, "Even without agreements to return water to Santa Cruz Water Dept. in the future, in lieu recharge strategies can start immediately with existing infrastructure."

The District has at its disposal the tool of water rationing that could be employed immediately if the District Directors are concerned about the time it takes to implement

## Santa Cruz Desal Alternatives

Rick Longinotti, Co-chair

*any of the alternatives.* The EIR should note that water rationing has an immediate impact on water consumption, as is evident with recent experience in Santa Cruz. The EIR should note that a reduction in pumping in District wells in recent years has resulted in significant rise in groundwater levels at District wells. Water rationing pending implementation of any supplemental supply would be protective of groundwater levels.

It is not clear why affordability is mentioned as an obstacle to opting for large-scale water transfers. The operational costs of a wastewater reuse facility are significantly higher than surface water costs due to the energy intensity of reverse osmosis, as well as the costs of replacing membranes.

Water transfers are not drought resistant in the sense that a reliable amount of water is available for transfer each year. Yet it is a mistake to think that they should be. Aquifer recharge is not diminished by drought years so long as the average amount of river water is available over a period of years. Given the large quantities of river water available *on average*, the amount of time it takes to recharge the aquifer using river water should not disqualify this alternative.

The Draft needs to report that the 1500 afy average estimated river-water transfer is not an upper limit. The District has the option to collaborate with Santa Cruz in investing in larger treatment and distribution capacity, thereby accelerating the aquifer recharge process. The *Conjunctive Use and Water Transfer Phase 2 Final Report* identified the capacity to treat turbid water and to divert river water as constraints that could be reduced with further investment. The *WSAC Final Report* lists a number of City operational constraints that could be reduced, allowing for higher amounts of water for transfer, such as changing the operational rule for reserving water in Loch Lomond.

In summary, the EIR needs to present an accurate picture of the potential of river-water transfers to restore the aquifers to safe levels.

### **Alternatives Analysis: Include Transfers from Purisima to Aromas**

The Draft discusses the District's "proactive groundwater management." In order to be more complete, this section should discuss the alternative of transferring water from the Purisima Aquifer section of the District to the Aromas Aquifer section. Hydrometrics memo (2015) reports, "current consumptive use in the Purisima is below the pre-recovery goal for that area, so this shows that the District can actually increase its pumping in the Purisima if non-District consumptive use remains constant." The memo suggests that the District "may facilitate Aromas recovery with a transfer of water from the Purisima to other users in the Aromas."

### **C. Energy Use**

## Santa Cruz Desal Alternatives

Rick Longinotti, Co-chair

The Draft acknowledges that “implementation of the Project would increase the District’s total electrical demand by approximately 3600 MWh per year.” The Draft needs to put this 10MWh/day in context. What is the Project’s electrical power consumption per acre-ft. of water produced compared to the District’s average power consumed by pumping an acre-ft of water?

The Draft’s Impact 4.6.1 reads, “The Project could use large amounts of fuel or energy in an unnecessary, wasteful, or inefficient manner.” The Draft reports that this impact is reduced to “less than significant with mitigation”. Yet the only mitigation proposed in this section has to do with the energy impact of construction, not the energy impact of operating the plant. Surely the energy consumption of operating the plant for its fifty-year life expectancy dwarfs the energy consumption in constructing the plant. Yet no mitigation for this very large energy expenditure is offered.

To fairly compare the energy use of the Project to the alternatives, the EIR needs to explain that the reverse osmosis plant needs to operate 24 hours a day 365 days a year in order to prevent membrane deterioration. This means that the plant would be operating during the time of the year when there are large amounts of water in the San Lorenzo River available for transfer to the District both for direct consumption and for direct injection into the aquifer. That scenario is equivalent to a homeowner keeping the lawn sprinklers running during a rainstorm. Surely this qualifies as an unnecessary, wasteful, or inefficient use of energy.

### **D. Resiliency**

The Project Objectives include “enhances resiliency.” The EIR would benefit from a discussion of resiliency (or resilience) as applied to the Project and the alternatives.

I suggest that resilience means the ability of a system to adapt to stress under a variety of present and future conditions. A reverse osmosis wastewater treatment system that is at least twice as energy intensive as the District’s current water supply does not enhance resilience. Such a treatment plant would make the District even more dependent on industrial levels of electricity. There are many risks and uncertainties that accompany reliance on high levels of electric power due to the depletion of cheap fossil fuel energy sources. This depletion could have profound impact on the price and even the availability of electric power.

The Draft EIR takes into account a future in which climate change reduces aquifer recharge. The proposed Project is at least in part a climate adaptation strategy. Such an adaptation strategy should not increase the burning of fossil fuels that are the cause of the problem in the first place.

A reverse osmosis wastewater treatment plant is a step away from resilience for another reason. The following observation was raised by local civil engineer Jack Schultz

## Santa Cruz Desal Alternatives

Rick Longinotti, Co-chair

regarding the reverse osmosis desalination proposal, but it also applies to the Pure Water Soquel Project:

“It is a general principle of engineering that after a certain threshold, an increase in level of complexity of an engineered system is often accompanied by an increase in vulnerability to failure. A simple light switch always functions until it wears out. But as anyone who owns a PC knows, a new computer can crash.”

The vulnerability of a plant due to its complexity puts water users at risk. Treatment of wastewater needs to be error-free in order to protect public health. A failure of plant treatment effectiveness for just a day or two can introduce contaminants into the aquifer.

### **Affordability**

The Project Objectives include the development of an “affordable” water source. Hence the EIR should analyze the affordability of the Project in comparison to alternatives. Under CEQA a project is not “feasible” if there are serious doubts as to the ability to afford the project. At a public meeting, the District heard from wastewater treatment consultants who questioned whether the District had a large enough customer base to afford the Project.

Any analysis of affordability should include the impact on increased water rates on customer water use. The City of Santa Cruz’s consultant, David Mitchell, reports a high degree of water demand elasticity based on price. Future water consumption projections including price elasticity should be factored into the groundwater model.

The District should also consider the impact of higher water prices on lower income customers. The EIR reports that residential customers averaged 53 gallons per person per day in 2017. What is not reported is how many district customers use below that amount. Based on earlier analysis for the District by Sue Holt, it is likely that the median residential water use is now below 53 g/p/d. If the customers at the high end of consumption brought their water use down to the current median, how close would the District be to reaching its pumping goal?

The beneficiaries of the Project are not the customers who are already consuming water at or below a level that would achieve the District’s goals (if all customers were consuming at that level). The beneficiaries of the Project are those who are consuming at higher levels. Yet the cost burden would fall on all District customers. The Project fails the equity test when the question is asked, “Who pays and who benefits?”

### **Conclusion:**

The Draft EIR's conclusion that the Pure Water Soquel Project is the environmentally superior alternative rests on outdated District goals, inadequate analysis of alternatives

**Santa Cruz Desal Alternatives**  
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to the Project, and lack of clarity about resilience and energy intensity of the Project compared to alternatives. It is therefore incomplete and should be revised accordingly.

The District's formulation of an aquifer recharge strategy would benefit from prioritizing the values for minimizing energy dependence, complexity and financial cost. With these values as a priority, the District would be avidly pursuing an agreement with the City of Santa Cruz to purchase water in lieu of pumping District wells during periods of high river flow. The District would be conducting vigorous cost-benefit analysis of collaborating with Santa Cruz on infrastructure investments to enhance aquifer recharge through surface water transfers.