

Joe Geever
Surfrider Foundation
Water Programs Manager

(“Policy Guy” – not engineer or marine scientist)

- Regulating brine and other residual waste streams generated from ocean desalination.
- “Broad brush” recommendations on organization and content of report to SWRCB.
- We reserve our comments on report scope and content
 - Suggest broad peer review from engineers and scientists unaffiliated with project proposals.
 - Recommend “precautionary approach” where the science is uncertain or lacking.

Surfrider Foundation

Ocean Desalination Position

Ocean desalination raises numerous concerns about the adverse impacts to our coast and ocean ecosystem -- true “integrated water management” alternatives offer economic and environmental benefits.

Therefore, ocean desalination should be an “option of last resort”, and only considered when preferable alternatives have been **fully implemented**.

If ocean desalination is **proven** absolutely necessary, it must be consistent with the best site, design, technology available, and operational practices to minimize adverse impacts.

Surfrider Foundation

History of Involvement with Ocean Desalination

- Participation in the State Desalination Task Force.
- We have actively endorsed numerous research and pilot studies.
- We have opposed several production proposals and not others.
- We are actively developing our “Know Your H2O” program to educate the public about the multi-benefits of integrated water resources management.

Presentation Outline:

Possible “Outline” for Report to SWRCB

1. Defining multiple discharge “streams” and their unique environmental impacts.
2. Documenting ALL potential impacts of constituents in separate streams – cumulative (overlapping areas) and long-term accumulation.
3. Documenting all discharge/disposal alternatives.
4. Match the best disposal alternative to each stream and constituents. Identify engineering/science research needs to improve best disposal alternatives.
5. Recommend thorough monitoring technologies/practices(including “real time”) and permit provisions for immediate “shut down” and potential re-design.
6. Legal/Policy/Regulatory Sidebars (don't waste time on discharge/disposal alternatives that run afoul of the law)

Multiple Segregated Discharge Streams

- Intake Screen Disposal
- Pre-Treatment Cleaning, Flushing & Backwash Disposal
- RO Concentrate Discharge/Disposal (chemicals, salinity, concentration of harmful constituents already in seawater withdrawal)
- RO membrane cleaning/flushing disposal

Constituents of Concern in Waste Streams (partial list)

- Concentrated Salinity (cumulative ecosystem impacts)
- Concentration of constituents in seawater withdrawal (e.g., algal blooms, “red tide”, metals and other pollutants, etc)
- Density (long-term deposition on seafloor)
- Corrosion by-products
- Chemicals and biocides (in-plant and intake/discharge structures)
- **MORE???**

Documenting Impacts of Concern in Segregated Discharge Streams

(partial list)

- Toxicity
- Bio-accumulation
- Alteration of reproductive capacity
- Benthic habitat – short & long-term accumulation (and overlapping with other discharges)
- Dislocation of endemic and transient species
- Exacerbating algal blooms and red tides from concentration
- **MORE?**

Documenting Every Alternative for Disposal/Discharge

- Shoreline discharge
- Offshore open pipe discharge
- Offshore “directional spray brine” discharge
- Blend with WWTP discharge (why not recycle?)
- Blend prior to WWTP (distinguish brackish groundwater and seawater?)
- Zero Water Disposal/Landfill (additional treatment, terrestrial impacts, etc?)
- Subsurface ocean discharge (any data?)
- Deepwell injection
- Blend with cooling water discharge (not available in CA)
- Augmented intake for in-plant dilution (more E&I – Water Code?)

Matching Segregated Streams/Constituents with Best Disposal Alternative

(for example only)

- RO Concentrate
 - subsurface discharge gallery?, deepwell injection?, offshore spray brine?, etc?
- Pre-treatment Residuals
 - Segregate/treat/landfill?, blend with WWTP influent?
- Cleaning Chemicals
 - Blend with WWTP influent (permit?), segregate/treat/landfill?

Question: Do we need more R&D to make the preferable alternative disposal “feasible?”

Thorough Monitoring and Permit Provisions for Exceeding Limits

For example only:

Perth, Australia: Two-year Feed Back on Operation and Environmental Impact (Steve Christie, Véronique Bonnélye)

“[The] PSDP is therefore required to monitor DO levels in the deeper basin of Cockburn Sound (at 0.5m from the seabed floor), and is required to “shutdown” to 1/6th capacity when these levels fall to certain prescribed levels. This has occurred twice during 2008 (over 15 days in April and 12 days in May). The Water Corporation has 3 Real Time Monitoring Stations (RTMS) in the deeper basin of Cockburn sound, taking half hourly measurements of dissolved oxygen, temperature and salinity, and transmitting this data back to head office.”

Legal/Policy/Regulatory “Sidebars”: What ocean desal MUST do!

- Section 13142.5(b):

For each new or expanded coastal powerplant or other industrial installation using seawater for cooling, heating, or industrial processing, the best available site, design, technology, and mitigation measures feasible shall be used to minimize the intake and mortality of all forms of marine life.

READ THE ELEMENTS AS A WHOLE, NOT SEGMENTED PARTS!

THIS APPLIES TO INTAKE AND DISCHARGE!

Legal/Policy/Regulatory “Sidebars”: Same law, same technology, different source water

- Wastewater recycling and groundwater desalination produce same water quality at less operating expense, AND
- Section 13142.5(b) would not apply to intake and hopefully nobody would propose “augmented intake for in-plant dilution.”
- **Still face discharge challenges**

Legal/Policy/Regulatory “Sidebars”: What about IPR (or DPR)?

- Section 13142.5(e) says:

Adequately treated recycled water should, where feasible, be made available to supplement existing surface and underground supplies and to assist in meeting future water requirements of the coastal zone, and consideration, in statewide programs of financial assistance for water pollution or water quality control, shall be given to providing optimum water recycling and use of recycled water.

Questions: Isn't this a policy statement of preference? Isn't IPR/DPR economically and environmentally preferable?

Suggestion #1 for Developers: Invest in the Best First

- Wastewater recycling has much more “bang for the buck”
 - IPR is not “best” – but it’s allowed now and beats SWRO for price and “external values”
 - Plan for de-centralized WWTP and recycled water customized for near-by demand.
- If you want to invest in R&D, invest in “fail safe” systems for DPR -- and waste re-use &/or disposal
- If you want to form lobbying groups, lobby DPH for guidance/regs on Direct Potable Re-Use

Suggestion #2 for Developers: Sequence of Considerations for Project Proposals (if you reject #1)

- First Step: Identify “best” technology to minimize intake & mortality of marine life, and adverse impacts from segregated discharge streams;
- Second Step: Identify “best” site for technologies in First Step;
- Third Step: Design facility (including production capacity) to be consistent with First & Second Steps.

[To date, we have seen proposal developments start with Step 3, resulting in conflict over Steps 1 & 2.]

QUESTIONS/COMMENTS?

- I'm here to learn (as much if not more than add to the discussion.)
- I'm open to a policy debate.
- You're the scientists and engineers, SO:
 - Nothing is “out of bounds” for me.
 - I'll happily admit what I don't know.
 - I only request you not throw anything at me.