



April 6, 2012

Ms. Joanna Jensen
State Water Resources Control Board
1001 I Street, 15th Floor,
P. O. Box 100, Sacramento, CA 95814
Submitted via email to jjensen@waterboards.ca.gov

RE: Comment Letter – Desalination Facilities and Brine Disposal

Dear Ms. Jensen:

On behalf of California Coastkeeper Alliance, Surfrider Foundation, Heal The Bay, Coastal Environmental Rights Foundation, Southern California Watershed Alliance, Pacific Coast Federation of Fisherman’s Associations, and California Coastal Protection Network, we welcome the opportunity to provide comments on the scope and content of information that should be included in the substitute environmental documentation for proposed amendments to the Water Quality Control Plan for Ocean Waters of California and the Water Quality Control Plan for Enclosed Bays and Estuaries of California to address desalination facilities and brine disposal (Desalination Policy). We offer our initial recommendations herein, and look forward to submitting more detailed comments once the findings and recommendations from the three “expert panels” are completed and made available for public review.

As described in the Informational Document on Desalination Facilities and Brine Disposal, the withdrawal of seawater for ocean desalination and the discharge of constituents from desalination facilities will have considerable impacts on marine ecosystems, the full extent of which remains unknown. Additionally, ocean desalination is one of the most energy intensive—if not the most energy intensive—sources of water available. Given the pace with which desalination projects are being proposed and sited in California, it is imperative that the State Water Board undertake a comprehensive environmental analysis of these and other impacts associated with desalination facilities.

We ask the Board to ensure that the range of actions, alternatives, and mitigation measures analyzed in the substitute environmental documentation (SED) are consistent with not only with the Porter Cologne Water Quality Act and the California Environmental Quality Act, but also reflect marine ecosystem protections established by the Marine Life Protection Act, and the greenhouse gas emissions reduction targets in Assembly Bill 32. Using these laws as a baseline, we urge the Board to determine what additional protections are needed in the Desalination Policy, based an analysis of the full range of environmental effects associated with 1) brine discharges, 2) intake systems, and 3) the energy demands and greenhouse gas emissions of desalination facilities.

I. Impacts from Brine Discharges

Although the question of applying water quality objectives to desalination discharges has been raised in Triennial Ocean Plan Reviews since 1998, there are currently no Ocean Plan Water Quality Objectives that apply specifically to brine waste discharges from desalination plants or groundwater desalting facilities. The discharge from desalination facilities, whether the source water is seawater, brackish groundwater or effluent from wastewater treatment facilities, contains numerous constituents of concern.

We urge the Board to thoroughly document salinity, acidity and potential constituents in each potential type of source water, and the potential impacts of their release into the environment. We also recommend documenting constituents of emerging concern that may be present in these discharges, and all available information on the adverse impacts of these constituents, as well as the “unknowns.” Finally, we urge the Board to thoroughly document an array of disposal alternatives, and include an analysis of the potential benefits of distinct “discharge streams” created during the treatment process.

To the extent any of the constituents, including the brine itself, are discharged to the ocean, we urge a thorough analysis of the short and long term fate of these constituents, with thorough documentation of how local physical ocean dynamics can affect the fate of the discharge. Further, the analysis should include a thorough review of technologies and practices to minimize the adverse impacts of the discharge. The analysis should thoroughly document not only the immediate and near-by impacts (including those in the Zone of Initial Dilution), but also the longer term and more distant impacts. We urge the Board to consider and document not only the adverse impacts of potential toxicity from the discharged waste, but include an analysis of the potential dislocation of endemic species resulting from salinity changes in the area of the discharge, and the potential adverse impacts of species dislocation on the ecological system.

We also recommend some analysis of the cumulative impacts that could result from discharges multiple desalination facilities in the same vicinity. California’s Ocean Protection Council and state agency partners have made significant investments in marine and coastal geospatial data collection, including seafloor maps, shoreline maps, and ecological and socio-economic data to support improved management of marine resources and human industrial activity. The State Water Board should work closely with the Ocean Protection Council and other relevant state agencies in development of this guidance to ensure that any proposed desalination projects are sited based on application of the best available scientific and geospatial information and to avoid conflicts with important ecological areas and other ocean and coastal uses.

The Desalination Policy Informational Document states that the SED will include “a narrative water quality objective for salinity to ensure that brine discharges from desalination facilities and other sources do not cause adverse impacts.”¹ There is no discussion of numeric standards in the informational document. Numeric standards are preferable to narrative standards because they provide a clear way to measure enforcement and ensure compliance of water quality objectives. We recommend that numeric

¹ CAL. STATE WATER RES. CONTROL BD., INFORMATIONAL DOCUMENT DESALINATION FACILITIES AND BRINE DISPOSAL 1 (March 2012) *available at* www.waterboards.ca.gov/water_issues/programs/ocean/desalination/docs/ScopingDesalMarch2012.pdf.

water quality standards also be considered for the Desalination Policy, and to the extent that the State Water Board chooses to institute narrative standards for salinity instead of numeric standards, we ask that the SED include a detailed rationale for this choice. If the Board crafts a narrative objective for salinity based on a percentage of natural background, we urge the Board to review the best available science to calculate a percentage of background levels that will protect marine species, with an added margin of safety.

Finally, we are aware of proposed desalination facilities in Huntington Beach and Carlsbad that intend to withdraw additional seawater in order to dilute the brine before it is discharged to the marine environment. This proposed discharge alternative should be analyzed for its effectiveness at eliminating potential impacts of all the constituents in the waste stream, and compared with alternative methods of disposal for the waste discharge in terms of their relative impact on marine life mortality.

II. Impacts from Intakes

Some desalination facilities propose to use the same open-ocean intake systems as once through cooled (OTC) power plants, continuing to suck-in billions of gallons of water and kill marine life after the use of OTC has been phased out. The Desalination Policy, and supplemental environmental documents drafted in support of the Policy, should be consistent with the approach taken by the Board's Once-Through Cooling Policy to phase out the use of open water intake systems. Open water intakes used for desalination can cause the same type and extent of impacts as when those intakes are used for once-through cooling of power plants. Multiple federal and state agencies, including the Environmental Protection Agency (EPA), California Energy Commission, California Ocean Protection Council, and California State Lands Commission, have recognized that OTC causes significant, ongoing damage to our valuable marine and coastal resources and contributes to the degradation of California's fisheries, estuaries, bays and coastal waters.

The Board has found that open-ocean intakes in California kill on average 79 billion fish and other aquatic species annually.² According to the U.S. EPA, impacts to species through entrainment and impingement can damage critical aquatic organisms, including important elements of the food chain, diminish a population's compensatory reserve, and reduce indigenous species populations, commercial fisheries stocks, and recreational fisheries.³ When considering only recreational fish species, impingement from the intakes of coastal OTC power plants in the Southern California Bight alone is between 8-30% of the number of fish caught in the Southern California Bight.⁴ Researchers have found that the threats to marine ecosystems from desalination plants using open-ocean intakes are "greater, harder-to-quantify [than other threats]...and may represent the most significant direct adverse

² See Cal. State Water Resource Control Board, Scoping Document: Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling 1 (2008), available at <http://www.energy.ca.gov/2008publications/SWRCB-1000-2008-001/SWRCB-1000-2008-001.PDF>.

³ See California Ocean Protection Council, Resolution of the California Ocean Protection Council Regarding the Use of Once-Through Cooling Technologies in Coastal Waters (2006), available at <http://www.opc.ca.gov/2006/04/resolution-of-the-california-ocean-protection-council-regarding-the-use-of-once-through-cooling-technologies-in-coastal-waters/>.

⁴ Clean Water Act Section 316(b); California Energy Commission Issues and Environmental Impacts Associated with Once-Through Cooling at California's Coastal Power Plants: Staff Report. (2005) www.energy.ca.gov/2005publications/CEC-700-2005-013/CEC-700-2005-013.PDF.

environmental impact of seawater desalination.”⁵ In adopting its 2010 Once-Through Cooling Policy, the Board acknowledged the extensive harm to marine life resulting from using this type of seawater intake. We ask the Board to document these types of impacts and analyze alternatives to open water intakes in the SED.

Further, the Porter Cologne Water Quality Act requires that industrial facilities use the *best* available site, design, technology, and mitigation measures feasible ... to minimize the intake and mortality of all forms of marine life.⁶ The feasibility of best site, design and technology should not be dictated by a pre-determined design production capacity and/or location.⁷ The environmental document therefore need not analyze self-imposed site or design constraints in assessing the feasibility of the best technology. The Board’s rigorous application of the Porter Cologne Act will ensure that technology for minimizing marine life mortality is built into the original site and design of ocean desalination facilities before permitting and construction begins.

We urge the Board to analyze the impacts of impingement and entrainment from desalination intakes, not only on specific fisheries, but on the ecosystem as a whole. An analysis of cumulative impacts due to intake mortality should include both the cumulative intake and mortality from facilities statewide, and the impact of more than one facility in close proximity to another within the affected ecosystem. Additionally, the Board should consider the cumulative impact to the coastal and marine ecosystem of desalination facilities and other industrial activities.

III. Energy demands and greenhouse gas emissions costs.

California’s current water supply systems represent a substantial portion of our state energy demand, and adding desalination facilities to the water supply portfolio would greatly increase this demand. The Inland Empire Utilities Agency, in a presentation before the State Water Board in March 2009, reported that ocean desalination uses *over ten times more energy* in its service area than water recycling.⁸ The Los Angeles Economic Development Corporation found that ocean desalination emits more greenhouse gases than any water source, thus undermining greenhouse gas emissions reductions mandates under AB 32. The Board should consider the energy demands of new freshwater supply alternatives on a local, regional and statewide basis, and ensure that efforts to develop future water supply alternatives don’t exacerbate climate change impacts.

The SED should provide a method for calculating the greenhouse gas emissions from the source(s) of electricity provided to a proposed facility. To the extent the proposed facility adds energy demand and associated greenhouse gas emissions to a local or statewide water supply portfolio, the

⁵ Heather Cooley et al., *Desalination, with a Grain of Salt, a California Perspective 59* (2006), available at www.pacinst.org/reports/desalination/desalination_report.pdf.

⁶ Section 13142.5(b) (emphasis added).

⁷ See Precise Development Plan and Desalination Plant Project for the City of Carlsbad (December 2005), available at http://carlsbaddesal.com/media/EIR_6.pdf.

⁸ Martha Davis, Inland Empire Utilities Agency, Presentation to SWRCB (March 2009), available at: http://www.swrcb.ca.gov/water_issues/programs/climate/docs/ieua_030409.pdf. See also California Energy Commission, “Life-cycle Energy Assessment of Alternative Water Supply Systems in California” (CEC-500-2005-101) available at http://www.energy.ca.gov/research/environmental/project_summaries/PS_500-02-004_HORVATH.PDF (evaluating the global warming potential of desalination versus recycling and import of water).

environmental document should fully document how a project will mitigate those impacts. In doing so, we caution the Board not to employ the “net” carbon neutral approach initially proposed for the Carlsbad Desalination Project. Instead, we urge the Board to require facilities to “*fully offset* direct greenhouse gas (GHG) emissions from the generation of electricity and other energy used for the construction and operation of the desalination facility,” as required of Poseidon by the State Lands Commission.⁹ This approach is consistent with the California Environmental Quality Act, which establishes that the appropriate baseline from which to measure impacts is zero energy demand.¹⁰

Finally, we note that the Announcement Note indicated that this policy would include analysis and guidance on both brackish groundwater and seawater desalination. However, treated effluent from wastewater treatment plants are also “source waters” for desalination. The Board’s analysis should fully document the energy demands of desalination of treated wastewater effluent, brackish groundwater and seawater. The environmental document should document which of these “source waters” for desalination best minimizes energy demand and the associated greenhouse gas emissions.

It is critical that Board staff ensure that the Desalination Policy is consistent with other efforts by the State to restore our coastal and marine ecosystems. As the Board considers this new industrial use of seawater, as with any water supply alternative, we must avoid adverse environmental impacts that would undermine gains we’re making to restore our threatened coastal and marine ecosystems. For example, California is spending an estimated \$60 million to designate networks of marine protected areas, and is expected to spend an additional \$24 million every year to manage these marine protected areas under the Marine Life Protection Act (MLPA).¹¹ Our state’s investment in the MLPA, and in our coast-dependent economy, is threatened if the Board does not protect marine life from water quality and intake impacts from desalination facilities.

Sincerely,



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⁹ State Lands Commission Meeting Notes “Poseidon shall, at all times during the term of the Lease, comply with the Energy Minimization and Greenhouse Gas Reduction Plan (the GHG Plan), as adopted by the California Coastal Commission on August 6, 2008, except that, notwithstanding the provisions of that Plan: Poseidon shall also, at all times during the term of the Lease.” (emphasis added). Available at archives.slc.ca.gov/Meeting_Summaries/2008.../R55ExhF.doc.

¹⁰ California Environmental Quality Act Guideline Section 15125.

¹¹ California Department of Fish and Game, “Estimated Long-Term Costs to Implement the California MLPA Master Plan Appendices,” (January 2008) Appendix L., Page L-1, available at www.dfg.ca.gov/mlpa/pdfs/revisedmp01081.pdf.



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