



April 8, 2015

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**SENT VIA FEDERAL EXPRESS and
ELECTRONIC MAIL**

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State Water Resources Control Board
c/o Jeanine Townsend, Clerk of the Board
1001 I Street, 24th Floor
Sacramento, CA 95814

RE: COMMENTS ON PROPOSED FINAL AMENDMENTS TO THE WATER QUALITY CONTROL PLAN FOR OCEAN WATERS OF CALIFORNIA (OCEAN PLAN) ADDRESSING DESALINATION FACILITY INTAKES, BRINE DISCHARGES, AND OTHER NON-SUBSTANTIVE CHANGES (DESALINATION AMENDMENTS), AND THE DRAFT FINAL STAFF REPORT (SR), INCLUDING THE DRAFT FINAL SUBSTITUTE ENVIRONMENTAL DOCUMENTATION (SED)

Dear Chairwoman Marcus and Members of the Board:

On behalf of Mesa Water District (Mesa Water), we offer the following comments on the State Water Resources Control Board's (State Board or Board) Draft Final Staff Report (SR) including the Draft Final "Amendment to the Water Quality Control Plan for Ocean Waters of California" (Ocean Plan), addressing "Desalination Facility Intakes, Brine Discharges, and the Incorporation of Other Nonsubstantive Changes" (Amendment). This correspondence supplements Mesa Water's comment letter dated August 18, 2014.

Mesa Water appreciates the Board's careful consideration of the comments and supports the following modifications that were made to the Amendment:

- (1) The inclusion of the term "available" into the determination of a range of feasible alternatives for the best site, design, technology and mitigation measures. (Section L.2.a.2);
- (2) The addition of the requirement to consider whether a proposed facility site is the best available site "feasible,"¹ as defined in the California Environmental Quality Act (CEQA) in determining the best available site (Section L.2.b);

¹ For the purposes of Section III.L, "feasible" is defined as capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors. (Public Resources Code §§ 21061.1; 30108).

- (3) The reduction in time required to conduct a marine life mortality study period from 36 months to at least 12 consecutive months to demonstrate the effectiveness of an alternative method of preventing entrainment (Section L.2.d.1.c.iii); and
- (4) The removal of the requirement to collect additional samples with a 0.2-mm mesh net to provide a broader characterization of entrained organisms and the potential requirement to mitigate for entrainment of organisms 0.2–0.335 mm in length (Section L.2.e.1).

Even with the above modifications, Mesa Water remains concerned that the Amendment favors subsurface intakes over surface intakes as the preferred technology for seawater intakes for all new or expanded desalination facilities. Mesa Water again respectfully requests the Board to revise the Amendment to provide applicants with greater site design flexibility in selecting the most appropriate and economically and technologically feasible intake for new projects, including the latest available technology for new desalination projects. As described below, desalination projects require site-specific analysis that will not be achieved if applicants are required to overcome a preference for subsurface intakes. In addition, the Amendment's mitigation requirements violate CEQA by requiring replacement of all marine life and by assuming a level of entrainment inconsistent with scientific studies and project-specific factors, such as surface intake screen design. This conclusion is supported by an analysis from experts at MBC Applied Environmental Sciences that addresses the Amendment and SR/SED's technical analysis of impacts to marine life. (See attached Exhibits A and B.)

As the State Board knows, given the severe drought, California must seek out multiple water supply sources to meet its future needs. Additionally, desalination facilities must be made available quickly. These two requirements are highlighted in Mesa Water's August 18, 2014 letter, and are further underscored by Governor Brown's 2015 Executive Order requiring Californians to reduce water consumption. Just one day after the Governor issued that Executive Order, the State Board informed water users that they could expect water curtailment orders in the months to come. In addition to drought conditions, the recently enacted Sustainable Groundwater Management Act will increase groundwater use planning and oversight, and will likely require steadily decreasing reliance on groundwater over the next twenty years.

The drought emergency is immediate, and additional water supplies are needed as soon as possible to meet California's growing water needs. With this in mind, Mesa Water's fundamental concern is that the SR/SED and Amendment, as proposed, may jeopardize, delay, or add unnecessary or unclear regulatory and economic burdens to this essential water supply source, thereby impacting the ability of the state and Mesa Water to meet water supply needs.

Mesa Water supports the development of new sources of water, including desalination. As you know, ocean desalination offers a variety of benefits, including: (1) a safe and reliable water supply source functionally independent of regional water conveyance systems; (2) a reduced dependence on limited State Water Project supplies and sensitive Delta habitat; (3) less reliance on both freshwater sources which have associated environmental and regulatory constraints, and groundwater supplies, which are often limited due to contamination, overdraft or water rights issues; (4) a supplemental source of groundwater recharge to restore groundwater levels and prevent subsidence and seawater intrusion to crucial aquifers; and, (5) the opportunity for local agencies to exercise more control over their water supplies.

Mesa Water recognizes and appreciates the enormous task that the State Board has undertaken in this effort, and understands that the intent was to create guidance that protects the environment and “seeks to ensure an efficient approach to permitting desalination facilities to address needed water supplies,” with the limited resources at the Regional Water Board level. However, Mesa Water believes that if the Amendment to the Ocean Plan is adopted as it stands now, the unintended effect of the regulations would result in greater regulatory burden at the state and Regional Water Board levels.

I. THE AMENDMENT SHOULD CONSIDER BOTH SURFACE AND SUBSURFACE INTAKES EQUALLY, DEPENDING ON THE SITE’S LOCATION, TOPOGRAPHY, AND SPECIFIC IMPACTS

The Amendment as currently drafted provides that Regional Water Boards "shall require subsurface intakes" unless they make an affirmative finding of infeasibility under Section L.2.a.2. (Section L.2.d.) In its response to comments, the State Board explained why it does not take a technology-neutral approach—namely, that subsurface intakes are the environmentally preferred technology because they do not impinge or entrain marine life and that construction of subsurface wells will have minimal to no impact on marine organisms. (Response to Comments, 15.2.)

The Amendment and the environmental community continue to prefer subsurface intakes because of their potentially lower impingement and entrainment impacts on marine life. However, this narrow analysis ignores that subsurface intakes have found limited application to date, especially to medium- and large-scale desalination projects. In addition, specific conditions in California militate against this preference, including (1) water quality contamination; (2) lack of favorable aquifer conditions; and (3) potential beach aesthetic and erosion impacts. As noted in Mesa Water’s August 18, 2014 letter, the SR/SED fails to adequately analyze the impacts that will result from subsurface intakes.

A. The Amendment and SR/SED Do Not Adequately Analyze the Impacts of Subsurface Water Intakes

As noted previously by Mesa Water, the SR/SED fails to adequately discuss in detail the types of construction/operational impacts associated with subsurface intakes or the magnitude of those impacts. Instead, the Project’s significant environmental impacts are limited to a less than one page discussion for five topical impacts (Aesthetics, Air Quality, Biological Resources, Greenhouse Gas Emissions and Hydrology and Water Quality). (SR/SED, Section 12.4, pp. 207-223.) Specifically, the SR/SED fails to adequately consider recent coastal desalination projects which are supported by readily available scientific literature and environmental documents. By failing to conduct this analysis, the State Board has created a conclusory document which supports its Amendment instead of complying with CEQA and providing an analysis of environmental impacts that the State Board must consider before approving or denying the Amendment.

The State Board’s explanation for analyzing only five impacts in detail violates CEQA because the Project that must be analyzed is the Amendment (including the preference for subsurface intakes) and not desalination projects in general. (See State Board’s response to comment 13.48.) Because the Amendment proposes to require subsurface intakes, the impacts of this specific policy decision must be analyzed. Alternative 2, which purports to be the

“Proposed Project,” is not accurately described because the SR/SED provides it “would consist of an amendment to the Ocean Plan that allows a greater range of intake methods and discharge technologies than Alternative 1 (subsurface).” (SR/SED, p. 209.) In reality, the Amendment requires subsurface intakes, unless infeasible.

Mesa Water understands that SED is a programmatic document and is not looking for a project-level review. However, at a minimum, the State Board must consider additional resource areas and comprehensively analyze its policy change (Amendment 2) because an EIR must discuss and analyze the significant environmental effects of the entire project. (CEQA Guidelines, §§ 15124, 15126.2, 15165.) This analysis must be consistent with Section III.L.2.d.(1)(a) of the proposed Desalination Amendment, which includes a lengthy list of considerations in determining feasibility of subsurface intakes, including: geotechnical data, hydrogeology, benthic topography, oceanographic conditions, presence of sensitive habitats, presence of sensitive species, energy use, impact on freshwater aquifers, local water supply, and existing water users. This conclusion is supported by an analysis from experts at MBC Applied Environmental Sciences that addresses the physical and biological effects of infiltration galleries on marine life. (See Exhibit B.) In sum, the State Board’s policy decision to prefer one type of intake may only be made after a comprehensive analysis is completed and the impacts between the two types of intakes are compared.

B. Additional Information re Technology Infeasibility of Subsurface Intakes and Their Impacts

The SR/SED fails to cite recent reports that analyze desalination plant intake alternatives. For example, the WaterReuse Association’s 2011 report notes that “while it is typically stipulated that subsurface intakes yield better seawater water quality than open ocean intakes, this assumption holds true for very site specific conditions...” (WaterReuse. 2011, “Overview of Desalination Plant Intake Alternatives, p. 6.)² The report goes on to explain that existing seawater desalination beach wells in California “indicate that some desalination plants using subsurface intakes may face a costly challenge – high concentrations of manganese and /or iron in the intake water...The treatment of beach well water....requires chemical conditioning and installation of conservatively designed “green sand” pretreatment filters...This costly pretreatment requirement may significantly reduce the potential cost benefits of the use of beach wells as compared with an open sea water intake.” (*Id.* at 7.)

In addition, while the State Board’s Response to Comments cites to the recent report “Technical Feasibility of Subsurface Intake Designs for the Proposed Poseidon Water Desalination Facility at Huntington Beach, California,”³ it notes only that “[s]hould the ISTAP [the Independent Scientific Technical Advisory Panel] determine that subsurface intakes are not feasible, the proposed Desalination Amendment provides a mechanism whereby surface intakes may be permitted.” (Response to Comments, 15.92.) The report is the product of coastal development permit (CDP) review, California Coastal Commission (CCC or the Commission) recommendations, and a scientific and technical review conducted by an independent expert panel (ISTAP). ISTAP itself was convened by staff of the Commission and Poseidon Resources LLC in September 2014. This report evaluates whether any of several subsurface intake designs would be technically feasible to build and operate as part of the Poseidon seawater desalination

² Available at https://www.watereuse.org/sites/default/files/u8/Intake_White_Paper.pdf.

³ Available at http://www.coastal.ca.gov/pdf/ISTAP_Final_Phase1_Report_10-9-14.pdf.

facility proposed for the City of Huntington Beach. The report focuses on technical “feasibility” as defined by CEQA, namely: (1) geotechnical data for the site, (2) hydrogeology, (3) benthic topography, (4) oceanographic conditions, (5) impact on freshwater aquifers, and (6) other site and project-specific factors.

ISTAP identified all possible subsurface intake options that use currently available technology, regardless of economic considerations or the other factors identified under the CEQA definition of “technical feasibility.” The ISTAP evaluated nine types of subsurface intakes⁴ for technical feasibility at the Huntington Beach site. ISTAP concluded that seven subsurface intake options for the desired capacity range (100-127 MGD) had at least one technical fatal flaw that eliminated it from further technical consideration. ISTAP recommends that consideration be given solely to seabed infiltration galleries (SIG) and beach gallery intake systems in the Phase 2 assessment. This report demonstrates that, contrary to the Staff Report’s findings, most types of subsurface intakes for medium- to large-scale desalination projects in California are often technically infeasible, and are narrowly limited to more expensive gallery intake systems (which may be financially infeasible). In light of this recent study, we urge the State Board to remain neutral instead of continuing to favor subsurface intakes.

C. The Mandate that a Project Use a Subsurface Intake Unless Infeasible Will Increase Project Costs and Discourage Desalination, which Conflicts with the State Board’s Own Goals and Mission

As the SED and the Staff Report make clear, the Amendment establishes a regulatory preference for use of subsurface intakes over open ocean intakes, and requires desalination facilities to use subsurface intakes if feasible possible. Because subsurface intakes are often infeasible, this conflicts with both the Project goals and the State Board’s mission. While one of the Project goals is to “provide a consistent statewide approach for minimizing intake and mortality of all forms of marine life, protecting water quality, and related beneficial uses of ocean waters,” the Amendment ignores the second Project goal: to “support the use of ocean water as a reliable supplement to traditional water supplies while protecting beneficial uses.” (SR/SED, pp. 27-28.) The Amendment also ignores that the State Board’s Water Rights Mission Statement is “to establish and maintain a stable system of water rights in California *to best develop, conserve, and utilize in the public interest the water resources of the State* while protecting vested rights, water quality and the environment.”

While the State Board’s response to comments provides that “there are multiple opportunities for an owner or operator to seek an alternative compliance pathway in the proposed Desalination Amendment” (Appendix H, 13.10), requiring the owner to design and study a subsurface intake would substantially increase Project costs, which would be passed on to ratepayers (see below), and could potentially discourage development of new desalination projects during a severe drought period.

⁴ The subsurface feasibility options included: (1) vertical wells completed in the shallow aquifer above the Talbert aquifer, (2) vertical deep wells completed within the Talbert aquifer, (3) vertical wells open to both the shallow and Talbert aquifers, (4) radial collector wells tapping the shallow aquifer, (5) slant wells tapping the Talbert aquifer, (6) seabed infiltration gallery, (7) beach gallery (surf zone infiltration gallery), (8) horizontal directional drilled wells, and (9) a water tunnel.

II. THE NEW ECONOMIC ANALYSIS DOES NOT ADEQUATELY ACCOUNT FOR THE ECONOMIC IMPACTS OF SUBSURFACE INTAKES

Mesa Water appreciates the State Board's inclusion of the Economic Analysis in the SR/SED by Abt Associates Inc. (Appendix G), which purports to provide an economic analysis with cost estimates for methods of compliance with the requirements set forth in the proposed Desalination Amendment, in order to more fully inform public comment and the decision-making process.

However, the SR/SED's Economic Analysis is flawed in its analytical approach and its conclusions are not supported by concrete data. The analysis fails to account for the potential costs created by increased regulatory burden and compliance requirements associated with subsurface intakes. Higher capital and construction costs of subsurface intakes are acknowledged, but the Economic Analysis does not provide a side-by-side comparison to illustrate how significant the difference is. The qualification that elevated capital costs will be offset through reduced operating and maintenance (O&M) costs is a unsupported conclusion, and there is no side-by-side data comparison to support it. As a result, the Economic Analysis undervalues the extent of the elevated economic costs associated with subsurface intakes.

The costs for subsurface intakes are likely to be greater than just the capital costs of constructing a subsurface intake at a desalination facility and will include the costs associated with the environmental impacts that flow from use of that method. The Economic Analysis fails to account for the potential costs created by the increased regulatory burden and compliance requirements associated with implementing subsurface intakes instead of surface intakes. The longer permitting and approval process impacts the timing of construction, which in turn has implications for financing and construction costs. None of these factors are reflected in the Economic Analysis. These considerations should be discussed in Section 9 of the SR/SED and analyzed in the Economic Analysis.

Further, the Economic Analysis plainly states that capital and construction costs of subsurface well intakes are greater than those of surface intake structures. The facility-specific details included at pages G-30 through G-38 support that finding. Even if the \$33,174,664 cost of retrofitting surface intakes with screens is factored in, the cost of subsurface intakes is significantly greater than screened surface intakes.

The Economic Analysis qualifies the difference in capital costs by stating that the O&M costs of subsurface intakes are less than those of screened surface intakes, and will therefore offset construction costs. The Economic Analysis concludes that total project capital costs may be 2-9% less because of reduced pretreatment costs. The data sets on pages G-30 through G-38 do not provide a direct comparison of O&M costs to support that conclusion. In addition, as explained above, pretreatment costs for subsurface intakes may actually be higher than surface intakes based on the presence of manganese and /or iron. The absence of specific examples to support the conclusion that increased capital costs will be offset by reduced O&M costs indicates hopeful thinking without solid support.

In short, the Economic Analysis is incomplete and foundationally flawed. Without accounting for all costs involved in subsurface intakes, from land acquisition to environmental compliance costs, the analysis is incomplete.

III. THE AMENDMENT'S PROPOSED MITIGATION VIOLATES CEQA

Section III.L.2.e defines "mitigation" as the *replacement of all forms* of marine life or habitat that is lost due to the construction and operation of a desalination facility *after* minimizing mortality of all forms of marine life through the best available site, the best available design, and the best available technology measures. This requirement violates CEQA, which only requires that an EIR propose mitigation measures that will lessen or avoid a project's significant impacts. (Pub. Res. Code, §§ 21002; 21100(b)(3).) Mitigation measures must be designed to minimize significant environmental impacts, not necessarily to eliminate them. (Pub. Res. Code, § 21100(b)(3); CEQA Guidelines, §15126.4(a)(1).) Any action that is designed to minimize, reduce or avoid a significant environmental impact or to rectify or compensate for the impact qualifies as a mitigation measure. (CEQA Guidelines, §§ 15126(a)(1), 15370.)

Under CEQA, lead agencies have the option of addressing potential significant project impacts either by imposing their own mitigation measures through a Mitigation Monitoring and Reporting Plan or including project design features which would minimize any potential impacts by virtue of the project design and management. (See, e.g., *Association of Irrigated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1397-98 (lead agency entitled to make its own determination that mitigation measures would mitigate potential impacts to listed species).)

The Amendment limits mitigation to replacing habitat, which, as MBC points out in the attached comments, cannot adequately account for the entrainment of smaller organisms such as phytoplankton. Pelagic fishes, invertebrates, and algae, including phytoplankton, are aquatic rather than terrestrial. In compliance with CEQA, other forms of mitigation should be permitted on a project-by-project basis. (CEQA Guidelines, §§ 15126(a)(1), 15370.)

In addition, the requirement that mitigation must *replace* all forms of lost marine habitat violates Water Code section 13142.5(b), which includes required mitigation as one of four elements, requiring "best available site, design, technology, and mitigation measures feasible . . . to minimize the intake and mortality of all forms of marine life." The State Board's dictionary definition of "minimize" does not comport with CEQA and the lead agency's discretion to identify mitigation measures. As the First District Court of Appeal recently recognized, an EIR must include "[m]itigation measures proposed to minimize significant effects on the environment." (*Lotus v. Department of Transportation* (2014) 223 Cal.App.4th 645, citing Pub. Resources Code § 21100(b); see also CEQA Guidelines § 15126. "For each significant effect, the EIR must identify specific mitigation measures ... " *Lotus*, citing *Sacramento Old City Assn. v. City Council* (1991) 229 Cal.App.3d 1011, 1027.)

In addition, the Amendment's alternative proposed language assumes a level of entrainment using screens that is not rooted in science or actual project impacts: "The regional water board may apply a one percent reduction to the APF acreage calculated in the Marine Life Mortality Report to account for the entrainment reduction when using a 1.0 mm slot size screen." (Section L.2.e.1.a.) As explained in the attached comments from MBC, the citation is mischaracterized. (Exhibit A.) Further, CEQA requires that each individual project analyze project impacts based on project design and actual impacts.⁵ (CEQA Guidelines, §15064.) Therefore, it is premature to assume a level of impact (99% entrainment) from a surface intake

⁵ Discussion of an impact may not be dispensed with if the agency later receives information that is inconsistent with the initial study's finding that the impact was insignificant. (CEQA Guidelines §15143.)

screen, especially as surface intake technology evolves. Instead, the Amendment must allow project applicants to analyze individual impacts and obtain mitigation credits based on the project site, water source, presence of plankton, and intake technology.

Lastly, Mesa Water is open to a mitigation fee (Section L.2.e.4), but believes it is critical that the fee have a direct nexus to the potential impacts of a project and be calculated and applied one time to cover all marine organism mitigation requirements for a project, inclusive of all state permitting agencies. Assuming the Board is able to develop a mitigation fee that Mesa Water and other stakeholders support, Mesa Water submits that each desalination project proponent should have the option of paying the mitigation fee, or developing its own mitigation program or utilizing an existing restoration project. Moreover, Mesa Water is ready to work with the appropriate state agencies to draft legislation that frames the mechanics for a mitigation fee. In addition, the magnitude and significance of the impacts of desalination on the overall marine environment should be understood in context of the more significant issues facing our oceans: overfishing and pollution.

Thank you for your consideration of Mesa Water's supplemental comments.

Respectfully submitted,



Diane C. De Felice

DCD:ibc

Enclosures: Exhibit A – MBC Comment Letter
Exhibit B – MBC Seafloor Intake Comments

cc: Paul E. Shoenberger, General Manager of Mesa Water District
Shane Beck, President of MBC Applied Environmental Sciences
Ron Davis, Executive Director of CalDesal

EXHIBIT A



6 April 2015

Paul Shoenberger, PE
General Manager
Mesa Water District
1965 Placentia Ave.
Costa Mesa, California 92627
(949) 631-1206
PaulS@MesaWater.org

Re: Comments on Ocean Plan Amendment

Dear Mr. Shoenberger:

Attached are MBC *Applied Environmental Sciences'* comments on the proposed Ocean Plan Amendment covering desalination intakes and brine discharges (proposed policy). MBC is an environmental consulting firm that was established in 1969, and has been involved with more than a dozen desalination projects in the last 15 years. Our participation has included entrainment/impingement studies, environmental impact analyses, CEQA support, interfacing with Regional Board and State Board staff, and toxicity studies. In addition, MBC has performed the NPDES receiving water monitoring for most of southern California's coastal power plants since the 1970s. This has included water quality surveys (including temperature and salinity measurements), biological surveys, and permitting support. We have also performed 316(b) entrainment and impingement assessments at southern California's coastal power plants. MBC operates an ELAP-certified toxicity laboratory, and has performed toxicity tests on discharge samples from desalination pilot plants. We have worked on multiple desalination projects, and served on the following:

- WaterReuse Research Foundation, Technical Advisor (DSB) "*Improvements to Minimize Impingement Mortality and Entrainment at Existing Intakes*" (2011-2012)
- WaterReuse Research Foundation, Project Advisory Committee (DSB) "*Methodology for Development of an IM&E Mitigation Program*" (2013-present)

Our comments reference the relevant section of the proposed policy (or Substitute Environmental Document [SED]).

1. All Forms of Marine Life

Section L.2.a.1. (Water Code Section 13142.5(b) Determinations)

"*All forms of marine life*" is a term that was added to the Draft Amendment, and is defined as "*all life stages of all marine species*". This differs substantially from the SWRCB's OTC policy, which requires: "Entrainment impacts shall be based on sampling for all ichthyoplankton and invertebrate meroplankton species"

http://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/otc_2014.pdf). Thus, the SWRCB is now considering impacts to marine organisms, such as phytoplankton and holoplankton, even though it has removed the requirement to sample holoplankton. There is no evidence of potential significant impacts to these organisms, and as long as a mesh size of $\leq 335 \mu\text{m}$ is required, impact and mitigation analyses should be limited to ichthyoplankton (and potentially some invertebrate meroplankton), which would be consistent with the OTC policy.

2. Mitigation

Section L.2.e.1.a (Mitigation)

The APF analysis is required to be calculated using the one-sided, upper 95% confidence bound for the 95th percentile of the APF distribution (95% confidence interval, or 95% C.I.). The SED states: “A key assumption in the ETM/APF approach is that the APF estimates for specific species are representative of all species present at that location, even those that were not directly measured. As with any technique for calculating mitigation habitat area, it is not possible to be 100 percent confident the calculated APF will fully compensate for impacts” (p. 89).

First, we recommend less prescriptive requirements in the policy. While the ETM and APF are useful for wetland assessments, they would be of limited use if considering pelagic species with no particular affiliation to substrate or habitat other than water. Second, there are multiple assumptions that are part of ETM/APF analyses, including estimates of larval movement, survival, and growth that are subject to error. Even if these parameters are available, they are likely still estimates at best. Moving beyond those sources of error in the policy does not make sense. Instead, owners/operators should work with regional boards when developing study plans. Lastly, mitigation projects usually result in multiple indirect benefits. For example, wetland restoration can result in increased water quality, reduced sedimentation, enhance breeding habitat for non-impacted species (such as birds), and recreational and aesthetic opportunities for the public. In summary, the use of APF and the 95% C.I. should be discussed at the project level, not in the policy.

3. 1% Credit for Screened Intake

Section L.2.e.1.a (Mitigation)

“The regional water board may apply a one percent reduction to the APF acreage calculated in the Marine Life Mortality Report to account for the entrainment reduction when using a 1.0 mm slot size screen.” The SED summarizes the following (p. 62):

“Some studies on screen efficacy are contradictory. The majority of studies that examine the efficacy of wedgewire screens only looked at impacts on ichthyoplankton; yet there are many other organisms that are abundant in the water. Pilot studies on wedgewire screens have indicated that the total number of aquatic organisms that are entrained at screened intakes is not statistically different compared to entrainment at an uncontrolled intake. (Kennedy/Jenks Consultants 2011; scwd² 2010; Foster et al. 2012) Modeling data

demonstrates that even though screens may preclude a small portion of the larval population from entrainment, a significant percentage of the population (e.g., all of the smaller sized organisms) can still pass through the screen slots. (Tenera Environmental 2012,2013a) The portion of organisms that are not entrained because of the wedgewire screen is relatively small compared to the number of organisms in the water. (Foster et al. 2012) Consequently, there is only an approximate one percent reduction in entrainment mortality between screened and unscreened intakes. (Foster et al. 2013)."

The ineffectiveness of wedgewire screens is mischaracterized. The actual text from Kennedy/Jenks (2011) is as follows:

"For fish and marine organisms that are larger than the 2 mm screen slot size, the passive screened intake prevents entrainment. [Note: For fish and marine organisms that are smaller than the 2 mm screen slot size there would likely be no statistically significant difference between the entrainment of a screened and unscreened intake (Tenera 2010)]."

(scwd² is not listed in the reference section of the SED.)

The actual text from Foster et al. (2013) states *"For the small mesh screens being considered, the reduction in entrainment mortality (and APF) is likely to be less than 1%."*

Note that this statement is not based on any data or studies. However, Foster et al. (2012) includes calculated reductions in entrainment from use of 1-mm slot size wedgewire screens on two species, and the reductions in entrainment of Age-1 equivalents were 40% and 75%, respectively (http://www.waterboards.ca.gov/water_issues/programs/ocean/desalination/docs/erp_intake052512.pdf). The calculated reduction in gobies, the most commonly entrained taxon at the Huntington Beach Generating Station, using 0.5-mm wedgewire screens was 64% (Alden Research Laboratory, Inc. 2007). Therefore, the 1% reduction seems arbitrary and likely inaccurate.

If it was the intent of the SWRCB to account for the entrainment of smaller organisms, such as phytoplankton, realize that for pelagic fishes, invertebrates, and algae, including phytoplankton, no amount of coastal habitat restoration would offset entrainment losses because these organisms rely on water as habitat.

4. New Information in the SED

Page 45. There is new data regarding the salinity tolerance of the European squid (*Loligo vulgaris*). This squid does not occur in the Pacific Ocean, and market squid (*Doryteuthis opalescens*) is no longer in the same genus. Mantle lengths of *D. opalescens* reach 17–19 cm (about 7 inches), whereas those of *Loligo vulgaris* reach 64 cm (about 25 inches). Therefore, the relevance of this new information is questionable.



Conclusion

Please feel free to call myself (sbeck@mbcnet.net) or David Vilas (dvilas@mbcnet.net) if you have any questions or need anything else.

Respectfully,

MBC Applied Environmental Sciences

Shane Beck
President

David Vilas
Senior Scientist

Reference:

Alden Research Laboratory, Inc. 2007. Preliminary Alternative Intake Analysis for the Huntington Beach Generating Station. Appendix A in: Comprehensive Demonstration Study for the AES Huntington Beach Generating Station: Final Report. Prepared by EPRI (D. Bailey, Proj. Mgr.). Jan. 2008.

EXHIBIT B

19 February 2015



Ind. Scientific and Tech. Advisory Panel (ISTAP)
Phase 2 Public Meeting
Huntington Beach Central Library
7111 Talbert Avenue
Huntington Beach, CA

Re: Phase 2 Analysis
Poseidon Huntington Beach Desalination Plant

Panel Members:

My name is Shane Beck, and I am President of MBC Applied Environmental Sciences.

MBC has studied the nearshore environment off the Huntington Beach Generating Station since the early 1970s, and continues to do so as part of the required NPDES monitoring. MBC and Tenera Environmental also performed the entrainment and impingement assessment required by the California Energy Commission (CEC) as part of the repowering project in 2003.

The impingement and entrainment assessment for the screened seawater intake alternative is fairly straightforward, and this has already been prepared. The data we collect every year for the HBGS could be used for the assessment for the seafloor infiltration gallery.

The Phase I report estimated an offshore infiltration gallery would require approximately 30.5 acres of seafloor. In 2013, our scientists recorded macrofauna (observable to the naked eye) offshore of Huntington Beach at five stations at a depth of about -25 feet.

The density of observable invertebrates was 32 individuals per m². This translates to roughly 4 million macroinvertebrates affected within the footprint of the intake gallery.

We do not collect data on the smaller infauna (microinvertebrates) within the sediments off Huntington Beach. However, in 2013 we collected infauna from nearby locations (off Seal Beach and in Santa Monica Bay) at similar depths and habitat, and densities at both locations were between 6,500 and 7,000 invertebrates per m².

Therefore, as a rough approximation the footprint of the infiltration gallery would likely affect 800 to 900 million infaunal invertebrates.

At this stage, it is not clear from the material I have reviewed what the seafloor sediments would consist of and look like after construction of the gallery, but the production of seafloor fauna would be lost for an unknown period of time during construction, and if maintenance of the intake gallery is taken into consideration, additional losses or disturbance would continue into the future.

In closing, the physical and biological effects of infiltration galleries can be calculated, and should be considered by the ISTAP.

Please feel free to contact me if you have any questions at (714) 850-4830 or sbeck@mbcnet.net.

Respectfully,

MBC *Applied Environmental Sciences*

A handwritten signature in blue ink, appearing to read "Shane Beck". The signature is fluid and cursive, with the first name "Shane" written in a larger, more prominent script than the last name "Beck".

Shane Beck
President