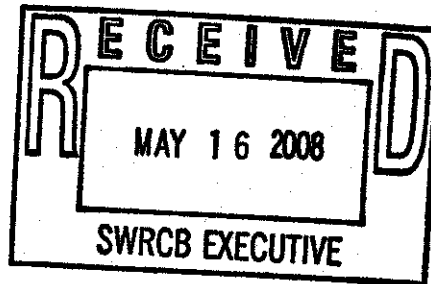


May 15, 2008



MBC

Ms. Jeanine Townsend  
Clerk to the Board  
State Water Resources Control Board  
1001 "I" Street, 24<sup>th</sup> Floor  
Sacramento, CA 95814

***Comments to SWRCB 316(b) Scoping Document and Proposed Policy (March 2008)***

Dear Ms. Townsend:

MBC *Applied Environmental Sciences* (MBC) appreciates the opportunity to participate in the scoping process for the State Water Resource Control Board's (SWRCB's) proposed 316(b) statewide policy. MBC is an environmental consulting firm currently involved in 316(b) compliance activities for 9 of the 13 coastal generating stations in southern California. Our recent 316(b) experience includes design and implementation of Impingement Mortality and Entrainment (IM&E) Characterization Studies, data analysis, document preparation, and compliance planning and support. Our experience with 316(b) spans three decades, as MBC biologists worked with representatives from state and federal resource agencies to design and conduct 316(b) demonstrations at California's coastal generating stations in the late 1970s.

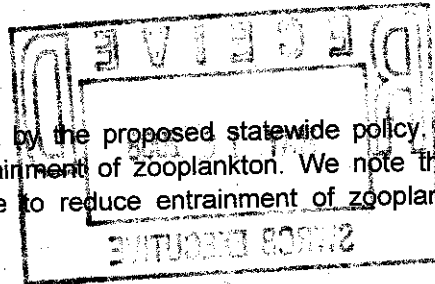
In September 2006 we submitted comments to the SWRCB on the first proposed statewide 316(b) policy. Since that time, 316(b) Impingement Mortality and Entrainment (IM&E) Characterization Study reports have been submitted for almost all of the coastal generating stations in southern California. In January 2008, complete 316(b) Comprehensive Demonstration Study (CDS) reports were submitted to the Santa Ana Regional Water Quality Control Board for the AES Huntington Beach Generating Station, and to the San Diego Regional Water Quality Control Board for Southern California Edison's San Onofre Nuclear Generating Station.

There are multiple errors and inconsistencies throughout the Scoping Document, and the rationale behind several of the requirements is unclear. Our specific comments are largely related to the technical approach of the proposed policy, and technical information presented in the Scoping Document.

**General Comments**

The proposed policy requires either (1) a retrofit to closed-cycle cooling, or (2) use of operational measures and/or technologies to reduce the level of adverse environmental impacts to a comparable level to that which would be achieved by retrofit to closed-cycle cooling. To date, no technologies have been identified that would provide the entrainment

reductions sought by the proposed statewide policy. The proposed policy also requires a reduction in entrainment of zooplankton. We note that there are no known technologies currently available to reduce entrainment of zooplankton other than retrofit closed-cycle cooling.



As in the previous Scoping Document, the SWRCB has not presented any quantitative technical information to describe the nature of fishery improvements that would be achieved by the proposed policy. A recent analysis of cooling water system effects on California's nearshore fisheries determined that a large-scale conversion to closed-cycle cooling may result in no measurable benefit to California fish populations<sup>1</sup>. Multiple investigations into nearshore fish populations in southern California have demonstrated that population sizes fluctuate independently of power plant operations, and population trends are better explained by changes in oceanographic conditions, commercial/recreational fishing pressure, or both. There are also several errors and inconsistencies throughout the document, including multiple "design flow" estimates for many facilities in Tables 1, 11, and 19, missing footnotes or endnotes, and missing references (such as "State Water Board 2005"). Lastly, it is unclear why there are only six data points shown in Figure 3 if the graph includes data from 18 of 21 facilities.

## Environmental Information

### IM&E Data

The Scoping Document indicates that "*biological impacts of OTC may not be adequately known since modern quantitative studies are difficult and costly.*" In January 2008, final IM&E Characterization Study reports were submitted for nearly all of the coastal generating stations in southern California. The studies performed at these facilities represent some of the most comprehensive IM&E studies ever performed in California, and most included weekly impingement sampling, biweekly entrainment sampling, and monthly source water sampling. Together, these studies were intended to provide the State and Regional Boards with results from modern, quantitative studies. In addition, most of these reports included detailed impact assessments that provide context for interpretation of impingement and entrainment data. Additionally, the Electric Power Research Institute (EPRI) submitted a report to the SWRCB in December 2007 entitled "*Assessment of Once-through Cooling System Impacts to California Coastal Fish and Fisheries*" that was available to the Board prior to finalization of the Scoping Document. The purpose of that report was to "*provide technical information to help inform California regulatory agencies and stakeholders currently deliberating the need for, and nature of, any California 316(b) regulatory structure that may differ from the Federal §316(b) Phase II Rule (Phase II Rule).*"

The section "*Biological and Cumulative Impacts from Once Through Cooling*" describes the estimated annual entrainment and impingement estimates from each facility in California, but it is unclear why the SWRCB did not include final data from comprehensive 316(b) demonstrations that were publicly available prior to issuance of the Scoping Document. In January 2008, 316(b) Impingement Mortality and Entrainment Characterization Study Reports were submitted to several Regional Water Quality Control Boards for many of

<sup>1</sup> Electric Power Research Institute. 2007. *Assessment of Cooling Water Intake Structure Impacts to California Coastal Fisheries*. EPRI, Palo Alto, CA. 132 p.

California's coastal generating stations. These studies provided recent entrainment and impingement estimates. Many of the impingement estimates presented in Table 8 are inaccurate, since they represent the number of fish and invertebrates collected in impingement samples during 2006-7, not the "annual" impingement. For example, the "Impingement Count (#/year)" for Harbor Generating Station in Table 8 is listed as "1,290" with the data source listed as "May 2007 LA DWP meeting material". However, in the May 2007 meeting presentation and handouts, the 1,290 individuals are listed in the "Sampled Abundance" column, denoting this was the number of individuals collected in impingement samples.

There is a section devoted to Cumulative Impacts, and a statement in the section that "A cumulative impact analysis will consider the presence and impacts of other power plants in a regional area." However, cumulative impacts are not addressed in the proposed policy, and it is unclear why this sentence is included in the Scoping Document.

The proposed policy states that MBC and Tenera (2005) "estimated that, for 12 coastal power plants in the Southern California Bight, there is an overall cumulative entrainment mortality of 1.4 percent." As stated in our previous comment letter, the 1.4 percent mortality was not based on empirical biological data, but several assumptions, including an assumed source water and maximum cooling water flow at the power plants. As illustrated by Table 2 in the Scoping Document, statewide cooling water flow in 2005 was about one-half of the permitted maximum. One other assumption in the analysis prepared for the CEC included a relatively long larval duration (exposure to entrainment) of 40 days.

### **Marine Mammals and Reptiles**

The latest Scoping Document provides information on entrapment of otters, seals, sea lions, and sea turtles at power plants, and seeks to eliminate the take of listed species through exclusion at offshore intakes. The document states: "In addition, 57 marine tetrapods (seals, sea lions, or sea turtles) are impinged annually. Of these tetrapods, roughly 50 percent are killed." It is unclear how the annual abundance was derived, and it should be clarified that marine mammal and turtle "impingement" is rare. Instead, animals are usually entrapped and subsequently removed from circulating water systems.

Nearly eight years ago, several power plant operators initiated consultation with the National Marine Fisheries Service (NMFS) regarding the incidental take of marine mammals and sea turtles at power plants. During initial meetings with NMFS, even the NMFS biologists concluded that there were no feasible measures to prevent occasional entrapment of pinnipeds or sea turtles beyond the marine mammal exclusion bars already in place at most, if not all, offshore intakes. Since the small take permit applications were submitted in 2001, we note that both the estimated stock sizes and the Potential for Biological Removal for Pacific harbor seal and California sea lion have increased.

It is unclear how the tetrapod "impingement" totals were compiled. The Scoping Document lists annual impingement for San Onofre as 47 tetrapods per year in Table 8. However, between 1978 and 2000, annual "entrapment" of seals and sea lions averaged less than 17

animals per year<sup>2</sup>. Additionally, average annual entrapment of sea turtles between 1983 and 2005 was approximately 1 turtle per year<sup>3</sup>.

The proposed policy requires installation of "large organism exclusion devices having a mesh size no greater than 4" square." There is no discussion in the Scoping Document regarding the derivation of the 4" mesh size. The SWRCB should consider the effects of installing such small mesh on an offshore intake. The increase in substrate at the intake would promote invertebrate fouling and clogging by vegetation and debris, leading to eventual loss of available cooling water. Once fouled or clogged, the intake velocity would increase, thereby increasing the potential for impingement at the offshore intake. At present, live animals that are entrapped can be collected, inspected for injury, rehabilitated if necessary, and released back to the ocean. However, this would not be possible if organisms were impinged at an offshore intake.

### **Water Quality**

A plant-by-plant analysis of potential impacts to water quality resulting from the conversion to wet closed-cycle cooling is provided in the Scoping Document. Most of the analysis is focused on each plant's ability to comply with effluent limitations. However, there is no analysis of the potential effect of reduced cooling water flow on various water bodies. A recent study examined circulation in Alamitos Bay and determined that cooling water flow rates at the AES Alamitos and LADWP Haynes Generating Stations greatly influenced circulation within the bay, as well as overall water quality<sup>4</sup>. Specifically the study determined that cooling water flow rate at AES Alamitos "has the most significant impact on circulation in Alamitos Bay since it removes some of the aging and poor quality water from upstream areas of the Bay..." This conclusion agreed with that reached more than 25 years ago during the first Haynes 316(b) Demonstration—that the circulation induced by cooling water flow (1) prevents the accumulation of contaminants, and (2) increases dissolved oxygen concentrations in Alamitos Bay, thereby improving water quality. Therefore, there is at least one instance where cessation of once through cooling has the potential for adverse effects to water quality and biological resources.

### **Alternatives to Once Through Cooling**

The Scoping Document provides short summaries of potential alternatives to once through cooling, including Impingement/Entrainment Control Technologies. There is now data available to the SWRCB on the biological effectiveness, feasibility, and costs of these alternatives and technologies specific to California's coastal generating stations. As mentioned previously, there are no known technologies that can effectively exclude zooplankton from cooling water intake structures. This could only be achieved by flow reduction or conversion to alternative cooling technology.

<sup>2</sup> Southern California Edison. 2001. Marine Mammal Protection Act Small Take Permit Application. Submitted by SCE San Onofre Nuclear Generating Station, Env. Prot. Group. Feb. 12, 2001. 33 p.

<sup>3</sup> National Marine Fisheries Service. 2006. Biological Opinion and Incidental Take Statement for the Diablo Canyon and San Onofre Nuclear Generating Stations. Prepared for the U.S. Nuclear Reg. Commission.

<sup>4</sup> Moffatt & Nichol. 2007. Alamitos Bay Circulation Study. Final Report. Prepared for City of Long Beach, Dept. of Public Works. Aug. 30, 2007. 41 p.

The Scoping Document indicates that traveling water screens with intake velocities of <0.5 feet per second "are considered acceptable controls to eliminate impingement." While EPA considered this best technology available (BTA) for minimizing adverse impacts, traveling water screens with low through-screen velocities may not necessarily "eliminate" impingement. They might lessen impingement compared with higher intake velocities, but since there is not a linear relationship between flow rate and impingement, this is not necessarily the case. Likewise, the Scoping Document states: "Flow reduction will reliably reduce both impingement and entrainment impacts of OTC" (p. 45). This is not necessarily true, especially for impingement. Both entrainment and impingement are largely dependent on the density of fish/shellfish at risk of entrainment/entrapment. Therefore, high entrainment and impingement can result from lower cooling water flow volumes.

### IM&E Studies

The preliminary draft 316(b) policy requires sampling for "all ichthyoplankton and zooplankton (meroplankton) species", and further requires preservation such that genetic identification could be possible at a later date. We questioned the reasoning behind the requirement to sample and quantify all zooplankton in our previous comment letter, and it is unclear why this requirement is still being proposed.

### Restoration

Based on the proposed policy, all facilities would be required to implement "interim restoration" until they could demonstrate compliance with the proposed policy. Based on historic and recent restoration projects, it is likely to take many years to identify and scale a restoration project, submit required restoration plans, obtain necessary permits, and construct the project. Therefore, it is highly unlikely that the project would accrue environmental benefits by 2015 when compliance for many facilities is required, and as such, restoration should be identified as an additional compliance requirement.

The restoration timeline could also be problematic. For instance, to scale an interim restoration project accurately, a power plant owner will need to know when the facility will come into compliance. This means that within one year of the effective date of a State Policy, each power plant will be required to submit a comprehensive compliance plan, including timelines for construction of the proposed compliance alternatives. Multiple power plant operators have previously conveyed the complexities of a state-wide retrofit to closed-cycle cooling, which would be a monumental task requiring coordination with multiple agencies and organizations to ensure continuous and reliable power production.

### Conclusions

Thank you again for the opportunity to comment. If you have any questions regarding this letter please feel free to contact me at (714) 850-4830 or [sbeck@mbcnet.net](mailto:sbeck@mbcnet.net).

Respectfully,

**MBC Applied Environmental Sciences**

A handwritten signature in black ink, appearing to read "Shane Beck". The signature is written in a cursive, flowing style.

Shane Beck  
President