

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

Response to Written Comments
Item No. 5A

Tentative Resolution to Adopt the Tomales Bay Mercury TMDL

The Regional Water Board received timely written comments from the U.S. Environmental Protection Agency, dated April 10, 2012, on the Tentative Resolution and supporting Staff Report. This Response to Comments begins with the comments (in *italics*) quoted where possible or paraphrased for brevity. Regional Water Board staff responses follow the comments.

U.S. Environmental Protection Agency

Comment 1. Please reference the Staff Report as the underlying document for Attachment A, Summary of Tomales Bay Mercury TMDL, of the Tentative Resolution.

Response: We agree and added the following explanatory sentence:

This table summarizes the TMDL elements supported by the *Total Maximum Daily Load (TMDL) for Mercury in Tomales Bay, Staff Report*, dated April 2012.

We also changed the title of the summary in the resolution (from ‘Attachment A’ to ‘Exhibit A’).

Comment 2. Please include a description of the legal size of halibut, such as a range of fish length. This will clarify the numeric target.

Response: We included the current legal size limit (Cal. Code of Regs., tit.14, § 28.15(b)), which is a minimum of 22 inches total length, in a description of the numeric target in Exhibit A. However, from time to time as fisheries science advances and as fishery management practices change, the California Department of Fish and Game makes changes to legal size limits.

We also added the following sentence to the first paragraph of Staff Report Section 4.4:

The target to protect human health is 0.2 mg methylmercury per kg fish tissue, average wet weight concentration, measured as total mercury in skinless fillets of legal size halibut. The current legal size limit (Cal. Code of Regs., tit.14, § 28.15(b)) is a minimum of 22 inches total length. This is also described in Ocean Sport Fishing Regulations issued by the California Department of Fish and Game, and available on its website at www.dfg.ca.gov/marine/.

Comment 3. The linkage analysis, which describes the relationship between numeric targets and sources, in the Tentative Resolution and in the Staff Report, states that there is a "one-to-one relationship between changes in methylmercury levels in prey fish and

changes in surface sediment total mercury concentrations." Please explain more specifically what is meant; our understanding is that if surface sediment concentrations are reduced 50%, then fish methylmercury levels will be reduced by the same percentage. Please include an explanation of the basis for this assumption.

Response: Your understanding is correct that reducing particulate sediment concentrations in the Walker Creek Delta by 50%, from 0.9 mg/kg to 0.5 mg/kg, is expected to result in a 50% reduction in concentrations in prey fish tissue from 0.1 mg/kg (current conditions) to 0.05 mg/kg (the numeric target). This is what we mean by a one-to-one relationship in the linkage analysis. This same one-to-one assumption was applied in both the San Francisco Bay Mercury TMDL and the Walker Creek Mercury TMDL. While we recognize that methylmercury production is variable due to many factors, including seasonal variations in bacterial activity, flow, and sediment transport, over the long term, a one-to-one relationship is plausible. In addition, this is an area of active research and the scientific literature does not suggest an alternative approach.

In response to the comment, we made changes to the first paragraph on p. 27 in Section 6.6 of the Staff Report (and similar edits to the fourth paragraph of Section 6.3).

... These data, and current scientific understanding, are insufficient to calculate future sediment methylmercury concentrations at the Walker Creek Delta with statistical confidence. Consequently, we applied the same assumption used in the Walker Creek Mercury TMDL, which is to assume a conservative one-to-one relationship between reductions changes in methylmercury in prey fish and reductions changes in sediment inorganic (total) mercury concentrations.

We also made a corresponding edit to the last paragraph in Section 7.3, as follows:

... Assuming a ~~conservative~~ one-to-one relationship...

Comment 4. Please include an explanation as to why it is reasonable and appropriate to express the TMDL in annual terms, rather than in daily time steps.

Response: We added the following two paragraphs to the Staff Report Section 7.2.

A daily or average daily TMDL is inappropriate for the proposed allocations and TMDL due to both (1) the temporal component embedded in the applicable water quality standards that the allocations were developed to protect, and (2) the nature of mercury transport and methylmercury production in estuaries. The allocations protect wildlife and human health beneficial uses related to consuming Bay fish. The water quality objective that protects these uses is the narrative bioaccumulation objective. This objective reflects environmental exposure over months to years; in other words, exposure is integrated over time, and therefore it is preferable to express the TMDL as an annual average rather than in daily time steps.

The largely episodic nature of mercury transport was described in Section 5, (Source Analysis). Consequently, the allocations are intended to represent long-term averages and account for long-term variability in mercury transport and methylmercury production in estuaries. Therefore, the allocations are established on an annual, rather than daily, basis.

Comment 5. The Staff Report indicates the TMDL will be achieved because the sediment from Walker Creek [allocation of 0.5 mg/kg] is only 3.4 % of the Bay (Figure 7-1). Please include more detail explaining how the TMDL will be met with the proposed allocations.

Response: The caption of Figure 7-1 includes a table, to which we added a column with “Area (sq km)”. We also revised the wording for the calculation in the caption to correspond with the text in the last paragraph of Section 7.2, as follows:

The area-weighted average mercury concentration is calculated by taking the sum of each allocation multiplied by its respective area of the Bay, ~~and~~ dividing the sum by the total area of the Bay, and rounding to one significant figure. That area-weighted average is 0.21; rounded up, this average is 0.2. The additional loading from atmospheric deposition, as described in Table 5-1 of the Staff Report, is considered a de minimis load.

Area	Allocation (mg/kg)	Area (sq km)	% Area of Bay
Walker Creek Delta	0.5	<u>1.12387</u>	3.4%
Lagunitas Creek Delta	0.2	<u>5.06882</u>	15.4%
Other	0.2	<u>26.7903</u>	81.2%

Comment 6. For completeness, we suggest including more detail in Attachment A.

Response: We have added some additional details to Attachment A, as requested.