

Appendix C

Responses to Comments

THIS PAGE IS INTENTIONALLY LEFT BLANK

Total Maximum Daily Load
for
Mercury
in the Walker Creek Watershed

Responses to Comments



**California Regional Water Quality Control Board
San Francisco Bay Region**

January 16, 2007

THIS PAGE IS INTENTIONALLY LEFT BLANK

RESPONSES TO COMMENTS

Introduction

Part I a Staff responses to written comments submitted in response to
November 20, 2006, proposed Basin Plan amendment and Staff Report
Jan07-1 U.S. EPA
Jan07-2 Marin Municipal Water District
Jan07-3 Marin Municipal Water District

Part I b Staff initiated changes to November 20, 2006, proposed Basin Plan
amendment and Staff Report

Part II a Staff responses to written and oral comments submitted in response to
the August 4, 2006, proposed Basin Plan amendment and Staff Report
Aug06-1 U.S. EPA
Aug06-2 Marin Municipal Water District
Aug06-3 Marin Municipal Water District

Part II b Staff initiated changes to August 4, 2006, proposed Basin Plan
amendment and Staff Report

References

THIS PAGE IS INTENTIONALLY LEFT BLANK

INTRODUCTION

In this document, we respond to two sets of comments received on the proposed Basin Plan amendment to establish two mercury water quality objectives and a TMDL for mercury in the Walker Creek watershed.

On August 4, 2006, we released a proposed Basin Plan amendment and supporting Staff Report for public comment. We received written comments from U.S. EPA and Marin Municipal Water District (MMWD). We also received oral comments from MMWD at an October 11, 2006, Water Board testimony hearing. In response to comments received, we modified the proposed Basin Plan amendment and Staff Report and released these revised documents for public review on November 20, 2006. The public comment period for the revised proposed Basin Plan amendment and Staff Report closed on January 4, 2007.

In Part I, we provide responses to comments received on the November 2006 revised proposed Basin Plan amendment and Staff Report and describe all staff initiated changes.

In Part II, we provide responses to comments received on the August 2006 package and elucidate changes made to the August 4, 2006, proposed Basin Plan amendment and Staff Report and incorporated into the November 2006 revised proposed Basin Plan amendment and Staff Report.

PART I a
STAFF RESPONSES TO WRITTEN COMMENTS ON THE
November 20, 2006 STAFF REPORT
AND PROPOSED BASIN PLAN AMENDMENT

Comment Letter no. Jan07-1: U.S. Environmental Protection Agency, Diane Fleck

U.S. EPA stated their strong support for the proposed TMDL and Basin Plan amendment.

“The Basin Plan Amendment includes new water quality objectives for mercury for the protection of wildlife and aquatic life in fish tissue, as well as the TMDLs for Walker Creek and Soulajule Reservoir. We commend your staff for their hard work on developing these mercury objectives and on completing these difficult TMDL analyses. We can support both the new water quality objectives and the TMDLs, and urge their adoption at the upcoming hearing on January 23, 2007.”

We note and greatly appreciate U.S. EPA’s support and input while developing the TMDLs.

Comment Letter no Jan07-2: Marin Municipal Water District (MMWD), Paul Helliker

MMWD expressed appreciation for “changes that the Board staff have made in the document to reflect our previous comments. We also continue to strongly support the efforts by the Regional Board to characterize and address mercury contamination in water bodies throughout the watershed, including in Walker Creek.”

MMWD’s other comments reiterate or expand upon comments made to the earlier Basin Plan amendment and Staff Report. See our responses in Part II a of this document.

Comment Jan07-2-1: MMWD expanded on their its comment (Aug06-2.3a), “MMWD is very willing to participate in a partnership...to address...problems created by naturally-occurring mercury in the San Francisco Bay Region. To this end, MMWD will participate in a joint monitoring program to characterize the sources of mercury contamination and identify potential cost-effective measures that can be taken to reduce this contamination. MMWD is willing to provide matching funding for this effort.”

We appreciate MMWD’s cooperation. The information from this potential effort will be helpful for characterizing the extent and severity of the mercury problem in Bay Area reservoirs and creeks.

Comment Jan07-2-2: MMWD requested clarification of requirements for Soulajule Reservoir. "The proposed TMDL for mercury in Walker Creek appears to specify a requirement that MMWD develop and submit for a monitoring program for mercury in Soulajule Reservoir. It also appears to specify that MMWD will prepare and implement a plan to control methylmercury in Soulajule Reservoir at a level necessary to meet the TMDL targets."

We confirm that the Implementation Plan requires MMWD submit to the Executive Officer of the Water Board a monitoring and implementation plan and schedule to:

- 1) characterize fish tissue, water, and suspended sediment mercury concentrations in Soulajule Reservoir and Arroyo Sausal Creek, and 2) develop and implement methylmercury production controls necessary to attain both in-reservoir and downstream TMDL targets.

As we stated in Part II a, in response to comment Aug06-2-3b, "The first action will confirm whether there is a problem with mercury bioaccumulation in Soulajule Reservoir. If MMWD identifies and quantifies a problem then, the next step is to identify solutions". The necessity and scope of any implementation plan will be dependent on the information gained from monitoring.

Comment Jan07-2-3a: MMWD asked whether there was inconsistency in the proposed Basin Plan amendment: "While we are pleased to note that the targets in the TMDL are listed under load allocations, rather than wasteload allocations, and are thereby recognized as contributed by natural sources, we are concerned about the inconsistency of this listing in the targets section of the TMDL with the measures specified in the implementation section."

Perhaps MMWD misapprehends the distinction between load allocations and wasteload allocations. *Wasteload* allocations apply to entities operating under an NPDES permit. *Load* allocations apply to all other dischargers these terms apply regardless of the origin of the pollutant. Water Board staff assert that mercury mining wastes *and* background (naturally occurring mercury in soil and atmospheric deposition) may be contributing to the elevated mercury levels in Soulajule fish. As discussed in Part I a, Aug06-2.3b, remnants of the historic mining operations can still be seen on the shores of Soulajule Reservoir, including a small oven. Figure RTC-1, from Marin Municipal Water District staff, shows the former mercury mine at Soulajule Reservoir in December 1978. This photograph was taken during the construction phase of the impoundment expansion. The location shown in the photo has since been inundated by the reservoir waters (McGuire 2006).



Figure RTC- 1. Inactive mercury mine at Soulajule Reservoir. Reservoir waters have since inundated this location. Photo by MMWD staff during reservoir construction (McGuire 1997 2006)

We find no inconsistency between the TMDL targets and the Implementation Plan. Numeric targets describe desired future water quality conditions. A TMDL's implementation plan describes the control actions necessary to reach the proposed targets and describes 1) specific monitoring mechanisms that will be used to evaluate progress towards meeting targets, and 2) a process for gathering and evaluating new information as it becomes available. It is not only appropriate, but required that we develop an implementation plan to meet the desired future water quality conditions in Soulajule Reservoir and Walker Creek.

Comment Jan07-2-3b: "Furthermore, there appears to be an inconsistency in the description of the proposed implementation measures for Soulajule Reservoir between the TMDL, which specifies submittal of a monitoring and implementation plan, and the staff report, which states that such plans must be approved by the Executive Officer of the Regional Board."

Table 7-y in the proposed Basin Plan Amendment and Table 9.2 in the Staff Report (Section 9.4, *Proposed Mercury Reduction Implementation Actions*) contain identical language, also quoted in the response to comment Jan07-2.2, above:

Submit to the Executive Officer of the Water Board, a monitoring and implementation plan and schedule to 1) characterize fish tissue, water, and suspended sediment mercury concentrations in Soulajule Reservoir and Arroyo Sausal Creek, and 2) develop and implement methylmercury production controls necessary to attain both in-reservoir and downstream TMDL targets.

Text in the Staff Report (Section 9.3, *Implementation Actions*) requires MMWD to submit a monitoring plan and implementation schedule to the Executive Officer for approval. For additional clarity, we have modified the text to read, "Executive Officer of the Water Board."

Comment Jan07-2-4: MMWD re-stated its concerns (comments Aug06-2-1a & 2-5 in Part II a) regarding the appropriate regulatory mechanism for abandoned mercury mine sites: "MMWD believes that the specification of a required monitoring or pollution control plan for Soulajule reservoir is inappropriate for a TMDL, because MMWD is not a discharger of pollutants subject to either an NPDES permit or a Waste Discharge Requirement. Subsequent to the previous version of the proposed TMDL, we demonstrated clearly that there are no mines on MMWD property which would be subject to industrial stormwater permits, and we are pleased to see that the references to such permits were eliminated from the current version of the TMDL."

Staff agrees that MMWD is not subject to an NPDES industrial stormwater permit for mines or mine waste located along the shoreline of the Soulajule Reservoir. It is, however, inaccurate to say that MMWD is not a discharger subject to waste discharge requirements. MMWD owns and operates the reservoir and the lands immediately surrounding and underlying it. The reservoir was built on top of lands with unremediated mercury contamination. The sediment bed underneath the reservoir is likely producing and discharging methylmercury into Soulajule Reservoir, a water of the State, and downstream waters. The Water Board has broad authorities under the Porter-Cologne Water Quality Control Act to address threatened, proposed, and actual discharges of waste into waters of the State. For example, the Water Board may require suspected and actual dischargers to submit technical or monitoring program reports, provided the burden of the reports bears a reasonable relationship to the need for and the benefits of the report, under Water Code section 13267. Additionally, under Water Code section 13225, the Water Board is not only authorized but mandated to “require as necessary any state or local agency to investigate and report on any technical factors involved in water quality control or to obtain and submit analyses of water; provided that the burden, including costs, of such reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained therefrom.” The Water Board also has the authority to require MMWD as a discharger of methylmercury into Soulajule Reservoir to cleanup and abate the effects of the discharge under Water Code section 13304. The required actions in the TMDL Implementation Plan are fully authorized and consistent with these Water Code provisions. The Water Board clearly has the authority and discretion to more fully require MMWD to address the continuing methylmercury discharges at Soulajule Reservoir, but at this point looks to MMWD to proactively undertake a stewardship role and address the methylmercury problem in Soulajule Reservoir and comply with the minimum requirements of the TMDL (See our response to comment II.2-3a, above).

Comment Jan07-2-5: MMWD re-stated its concerns (comments Aug06-2-1b, 2-3b and 2-4 in Part II a) regarding widespread mercury contamination in the Bay Area, and lack of proven control methods for either methylmercury production or bioaccumulation. “Data indicate that mercury is endemic in fish in reservoirs and other waterbodies throughout the San Francisco Bay region....Many reservoirs contain fish that exceed public health goals or water quality criteria. Furthermore, the control measures proposed in the TMDL are implemented in a number of these reservoirs, and mercury levels continue to exceed target levels. Consequently, it may never be possible to achieve target levels for mercury in fish in reservoirs or other waterbodies in the San Francisco Bay region, and likely not in a cost-effective manner.”

Indeed, many reservoirs and other water bodies throughout our region have such high fish mercury concentrations that fish consumption advisories and TMDLs are warranted.

While mercury is endemic in fish and reservoirs throughout the San Francisco Bay region, fish-tissue mercury levels are substantially higher in Soulajule Reservoir than in adjacent reservoirs not impacted by mining. For our related response to comment

Aug06-2-1b we calculated linear regressions of mercury concentration by fish length (see Table RTC-1, Part II a) as well as mercury concentrations in fish normalized for 350 mm length, (as it is important to compare fish of the same size). As shown in Figure RTC-2 below, SoulaJule Reservoir fish have the highest mercury concentrations in Marin County reservoirs.

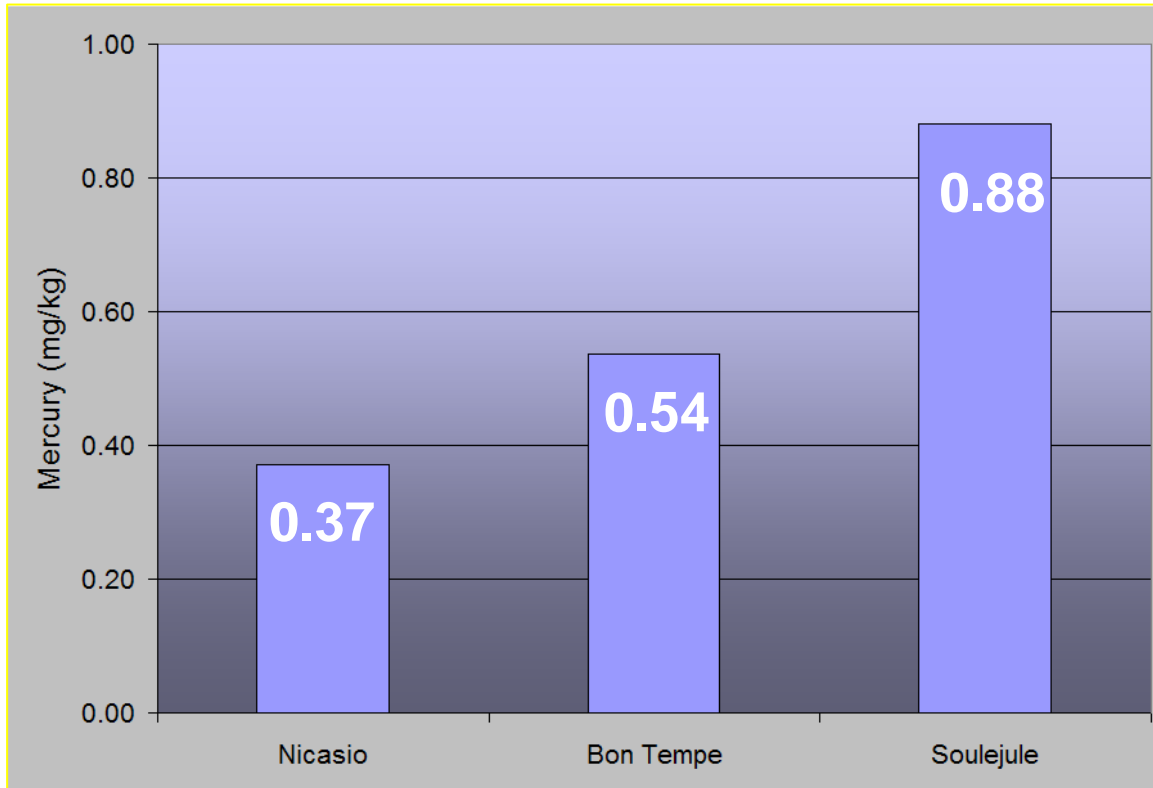


Figure RTC-2. Fish tissue mercury concentrations in 36-37 cm largemouth bass in Marin Reservoirs. Source: Surface Water Ambient Monitoring Program, described in Section 3.3 of the Staff Report (citation SFBRWQCB 2005a)

As we have stated in our responses to comment Aug06-2-3b (Part II a) and to comment Jan07-2-2 above, the first implementation action we propose for SoulaJule Reservoir (see Table 7-y of the proposed Basin Plan amendment) is to evaluate the extent and severity of the problem with mercury bioaccumulation in SoulaJule Reservoir. The next step is to evaluate whether there are any feasible solutions.

Staff of the Santa Clara Valley Water District (SCVWD) are currently testing reservoir oxygenation as a means of attaining both in-reservoir and downstream TMDL targets. The SCVWD preliminary results indicate a 90% reduction in methylmercury concentrations. Results of SCVWD's studies should be available in an appropriate timeframe to guide MMWD's selection of solutions, if a problem is confirmed in SoulaJule Reservoir. Although oxygenation has been employed elsewhere, nowhere has it been even evaluated, let alone optimized, for control of methylmercury production.

COMMENT LETTER NO. JAN07-3: MARIN MUNICIPAL WATER DISTRICT (MMWD), BOB CASTLE

MMWD is concerned that the proposed allocation to Soulajule Reservoir of 0.04 nanograms methylmercury per liter of water (ng/L) is below reliable laboratory performance. Therefore, the District proposes an alternative allocation of 0.1 ng/L, which it believes can be measured reliably.

Comment Jan07-3-1: "EPA Method 1630 for Methyl Mercury determination states that the Method Detection Limit (MDL) is 0.02 ng/L when no background elements or interferences are present. The minimum level (ML) stated by EPA is 0.06 ng/L."

We have modified the language in the proposed basin plan amendment and staff report to clarify that the proposed allocation to Soulajule Reservoir is for *dissolved* methylmercury per liter of water as opposed to *total* methylmercury. This essentially raises the allocation because total methylmercury levels are typically higher than dissolved methylmercury levels.

We have modified the proposed Basin Plan Amendment as follows:

Allocations and Total Maximum Daily Load

The TMDL for Walker Creek is 0.5 mg mercury per kg suspended sediment and the TMDL for Soulajule Reservoir is 0.04 ng dissolved methylmercury per liter water.

Our response is continued on the next page.

Table 7-x TMDL Mercury Wasteload and Load Allocations

Source	Wasteload Allocation	Load Allocation
Gambonini Mine site NPDES Permit no. CAS000001	5 mg mercury per kg suspended sediment	
Soulajule watershed and Reservoir		0.04 ng <u>dissolved</u> methylmercury per liter water 0.5 mg mercury per kg suspended sediment
Downstream depositional features ¹		0.5 mg mercury per kg suspended sediment
Background ²		0.2 mg mercury per kg suspended sediment
¹ Applies to sediment released from depositional features (creek beds, banks, and floodplains) downstream of the Gambonini Mine and Soulajule Reservoir. ² The background allocation applies to all areas in the Walker Creek watershed outside of the influence of the Gambonini Mine site or Soulajule Reservoir.		

U.S. EPA, in its discussion of bioaccumulation factors (Appendix A, USEPA 2001b) provided a translator, which is used to convert the dissolved concentration of a metal to a total metal concentration. While the allocation is in terms of dissolved methylmercury, monitoring to meet the allocation could be based on a translator that converts a total methylmercury concentration to a dissolved methylmercury concentration.

In our experience, the methylmercury detection limit is routinely lower than 0.02 ng/L in samples of surface waters. It is unlikely that any background elements or interferences would be present at significantly higher concentrations in Marin reservoirs as compared to Santa Clara County’s Guadalupe watershed reservoirs. In fact, the level of background elements and interferences envisioned by the authors of water analytical methods are those found either in marine waters, in highly turbid samples such as sediments, or in contaminated media such as sludges from industrial and wastewater treatment processes.

Less than a year ago, we required municipal and industrial dischargers to San Francisco Bay to provide a report of monitoring data on methylmercury discharged in their treated effluent (SFBRWQCB 2006). None of these municipal and industrial dischargers have questioned the 0.02 ng/L MDL required in our letter. Although most provide secondary and some provide advanced treatment, we expect MMWD’s reservoir samples will have fewer interferences than these treated wastewaters, and therefore the 0.02 ng/L MDL will not present a problem. As a courtesy to the municipal and industrial dischargers, we provided a partial list of laboratories performing U.S. EPA method 1630/1631 (attached as Table 1), which we repeat here:

Table 1. List of Analytical Laboratories Measuring Methylmercury by U.S. EPA Method 1630/1631. Presence on the list does not constitute endorsement by the Water Board.

Lab	Contact	Phone
Battelle Marine Science Laboratory 1529 West Sequim Bay Road Sequim, WA 98382	Brenda Lasorsa	360-681-3650
Frontier GeoSciences 414 Pontius Ave N Seattle, WA 98109 http://www.frontiergeosciences.com	Michelle Gauthier	206-622-6960
Brook-Rand Trace Metal Analysis and Products 3958 6 th Ave N.W. Seattle, WA 98107 http://www.brooksrnd.com	Colin Davis	206-632-6206
Studio Geochimica 4744 University Way NE Seattle, WA 98105 Studiogeochimica.org	Nicholas Bloom	206-525-6156
Caltest Analytical Laboratory 1885 North Kelly Rd Napa, CA 94558	Peter Halpin	707-258-4000
San Jose/Santa Clara WPCP laboratory 700 Los Esteros Road San Jose, CA 95134	Dr. Bob Wandro	408-945-3737

Please note the lower MDL described in the full citation from the U.S. EPA 1630 methodology (USEPA 2001a):

1.5 The detection limit and minimum level of quantitation in this method are usually dependent on the level of background elements rather than instrumental limitations. The method detection limit (MDL; 40 CFR 136, Appendix B) for CH₃Hg has been determined to be 0.02 ng/L when no background elements or interferences are present. The minimum level (ML) has been established as 0.06 ng/L. An MDL as low as 0.009 ng/L can be achieved for low CH₃Hg samples by using extra caution in sample handling and reagent selection, particularly the use of “for ultra-low level only” distillation equipment.

Comment Jan073-2: MMWD provided additional technical details regarding the generation of MDLs, and expressed concern that “a 5% probability of a false negative or false positive being reported (which is a 10% total error)....”

We agree with the technical details the District has provided regarding the generation of MDLs. We find that 5 percent probability (and 10 percent total error) represent a very high level of confidence for measuring methylmercury concentrations (see also our response to comment Jan07-3-1).

Comment Jan073-3: “Using historical EPA criteria, the practical quantification limit (PQL), would be 0.10 ng/L. ... Typically method blank values should be 1/2 of the reportable values. This is in agreement with a PQL of 0.10 ng/L. We therefore find it prudent to report reliable results at the level of 0.10 ng/L or greater.”

The U.S. EPA 1630 methodology (USEPA 2001a) makes no mention of a PQL for methylmercury. For this reason and based on our experience with reliable methylmercury analyses at concentrations below 0.04 ng/L, we disagree with changing the allocation to 0.1 ng/L.

PART I b STAFF-INITIATED CHANGES

Staff has made the following minor corrections to the proposed Basin Plan amendment.

In the proposed Basin Plan amendment, we modified text in the “Total Maximum Daily Load for Mercury in Walker Creek and Soulajule Reservoir” to read:

Walker Creek and Soulajule Reservoir, ~~which is~~ located in the Walker Creek watershed, are impaired by mercury.

In the proposed Basin Plan Amendment, we modified the problem statement to include Soulajule Reservoir. This modification is based on U.S. EPA’s November 30, 2006, (USEPA 2006) approval of the impaired waters on the State’s 303(d) list (including Soulajule Reservoir).

Walker Creek ~~is~~ and Soulajule Reservoir are impaired because mercury adversely affects beneficial uses, including wildlife habitat and all uses supporting aquatic life.

In the proposed Basin Plan amendment, we corrected a typographical error by capitalizing ‘r’ in Soulajule Reservoir as follows:

Sources

The following sources have the potential to discharge mercury to surface waters in the Walker Creek watershed:

- ...
- **Soulajule Watershed and Reservoir** – Two abandoned mercury mines are located in this watershed. Soulajule Reservoir discharges into Walker Creek just downstream of the Gambonini Mine drainage.
- ...

In the proposed Basin Plan amendment, we corrected a typographical error in the “Evaluation and Monitoring” section. We made the following correction in the second paragraph (which begins with: Table 7-z presents locations in the Walker Creek watershed ...) to the last sentence:

SWAMP mMonitoring will be conducted based on availability of funds.

We also made the above correction to the Staff Report (Section 10).

Staff has corrected typographical errors in the Staff Report.

Section 1, Introduction, footnote on page 1:

The California Toxic Rule, promulgated by the United States Environmental Protection Agency also contains water quality standards applicable to the San Francisco Bay Region.

Section 8.2 :

8.3 Soulajule Reservoir Allocation

As discussed in Section 7.6, the assimilative capacity in riverine portions of the watershed is 0.5 mg mercury per kilogram suspended sediments. As described in Section ~~8.3~~ 8.2 above, this concentration limit applies to creekside properties. ...

PART II a
STAFF RESPONSES TO WRITTEN AND ORAL COMMENTS ON THE
AUGUST 4, 2006 STAFF REPORT
AND PROPOSED BASIN PLAN AMENDMENT

Comment Letter no. Aug06-1: U.S. Environmental Protection Agency, Alexis Strauss

U.S. EPA's comments focus on consistency of the proposed amendment with the Basin Plan. Ms. Strauss offered summary comments in her letter, and enumerated specific suggestions in an attachment in addition, she provided the following supportive statements.

"We appreciate the hard work to develop these documents. . . .We commend your staff for their hard work on this difficult mercury TMDL....We fully support the proposed aquatic life and wildlife fish tissue objectives for water bodies in the Walker Creek watershed, and commend your staff for their careful and thorough development...We are committed to working with the State to identify approaches that address our shard goals of accomplishing reductions of mercury levels in the Walker Creek watershed while ensuring that legal requirements are met."

Numbering of the following comments corresponds to the organization and numbering in Ms. Strauss's attachment.

I. Water Quality Standards Issues

Comment Aug06-1[WQS-1]: Referencing the Staff Report Section 1 (introduction) discussion of existing water quality standards, Ms. Strauss notes that the California Toxics Rule (CTR) criteria are "federally promulgated criteria, and directly apply to water bodies in the Walker Creek watershed." She recommends a clarifying revision: "In addition, the California Toxics Rule (CTR) mercury ~~objectives~~ criteria, ~~incorporated into the Basin Plan by reference~~, apply."

We added the following footnote to our discussion of applicable water quality standards in the second paragraph of Section 1 (*Introduction*) of the Staff Report.

¹ The California Toxic Rule, promulgated by the United States Environmental Agency also contains water quality standards applicable to the San Francisco Bay region.

Comment Aug06-1.[WQS-2a]: Regarding new fish tissue wildlife objectives, "We suggest you discuss these objectives with the US Fish and Wildlife Service, if you have not done so already."

We have done so. See reference “Russell 2005,” which documents Water Board staff’s communication with staff of the U.S. Fish and Wildlife Service, and includes a statement of their support for the wildlife water quality objectives.

Comment Aug06-1[WQS-2b]: Regarding the vacating of the numeric water column mercury objective, “While we support replacing the objective, a protective human health numeric objective must be adopted either prior to or simultaneous with vacating the Basin Plan objective. Alternatively, if the wildlife objectives can be shown to be also protective of human health, then the new objectives would satisfy the requirement to adopt protective human health numeric objectives.”

In response to this comment, we inserted a new Section in the Staff Report, Section 5.2 *Wildlife Water Quality Objectives and Human Health*, where we document that the proposed wildlife water quality objectives are protective of human health. In addition, we revised the proposed Basin Plan amendment to include the following footnote to Table 3-4a:

Table 3-4A: Freshwater Water Quality Objectives for Mercury in Walker Creek, Soulajule Reservoir, and all tributary waters

Protection of Aquatic Organisms and Wildlife ^a	0.05 mg mercury per kg fish	Average wet weight concentration measured in whole fish 5–15 cm in length
	0.1 mg mercury per kg fish	Average wet weight concentration measured in whole fish 15 – 35 cm in length

^a The freshwater water quality objectives for the protection of aquatic organisms and wildlife also protect humans who consume fish from the Walker Creek watershed.

Comment Aug06-1[WQS-2c]: Regarding scientifically defensible water quality criteria, “The Clean Water Act (CWA) requires states to adopt scientifically defensible numeric criteria consistent with EPA’s current CWA 304(a) criteria guidance....See 40 CFR 131.11.”

In response to this request, we added the following text to the Staff Report in Section 11.3 to describe how the TMDL satisfies 40 CFR 131.11:

With respect to the proposed water quality objectives, the federal regulations at 40 C.F.R. § 131.11 require States to adopt water quality criteria that protect the designated beneficial use, are based on sound

scientific rationale, and contain sufficient parameters or constituents to protect the designated use. Where multiple use designations exist, the criteria must support the most sensitive uses. For numeric values such as the water quality objectives proposed here, the criterion should be based on Clean Water Act § 304(a) Guidance (or as modified to reflect site-specific conditions) or other scientifically defensible methods.

Section 5 “Proposed Water Quality Objectives” describes the analyses used to develop the proposed water quality objectives. As described in Section 5.1 (Proposed Aquatic Organisms and Wildlife Objectives), USFWS has determined that the proposed water quality objectives will protect the most sensitive species in the watershed, piscivorous birds. As described in Section 5.2 “Wildlife Water Quality Objectives and Human Health” the proposed objectives are more than sufficient to protect human health (which falls under the designated “Recreation 1” use).

We based our aquatic organism and wildlife fish tissue water quality objectives derivation methodology on USFWS’s assessment of U.S. EPA’s human health criterion (USFWS 2005, USEPA 2001b). We then used the U. S. EPA’s Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion" (USEPA 2006) to evaluate whether the proposed water quality objectives are protective of human health. Following U.S. EPA 304(a) guidance, where appropriate, this analysis was based on site-specific factors. The evaluation shows that the proposed water quality objectives will protect beneficial uses in the watershed and the proposed water quality objectives are more protective than U.S. EPA’s latest 304(a) criteria guidance for mercury (0.3 mg mercury/kg fish tissue) to protect human health.

Comment Aug06-1[WQS-3]: “...The Sources of Drinking Water Policy, which was incorporated into the Basin Plan in 1989, states that all waters of the state have been assigned a Municipal and Domestic Supply designation, with certain exceptions. The Basin Plan does not appear to include the MUN use for water bodies in the Walker Creek watershed, other than for Soulajule Reservoir....Please update Chapter 2 of the Basin Plan, as appropriate.”

The Sources of Drinking Water Policy does not require Regional Water Boards to designate all surface waters with the MUN beneficial use designation. Rather, it states: "Where a body of water is not currently designated as MUN but, in the opinion of a Regional Board, is presently or potentially suitable for MUN, the Regional Board shall include MUN in the beneficial use designation." In any event, if Walker Creek and its tributaries are suitable or potentially suitable for drinking water, designating these waters as MUN is a separate matter and beyond the scope of this Basin Plan amendment. The proposed water quality objectives are not intended to protect the MUN beneficial use, but aquatic organisms, wildlife, and human health. Staff do not disagree that state water quality standards submitted to EPA must include use designations consistent with the Clean Water Act sections 101(a)(2) and 303(c)(2);

however, these two statutory sections do not require designations of beneficial uses unrelated to the proposed water quality criteria.

Comment Aug06-1[WQS-4]: “If you intend to add the COMM use to Soulajule Reservoir in this set of Basin Plan amendments, the proposed amendment must be clear that Chapter 2, Beneficial Uses, is also proposed for changes, to add the COMM use to Soulajule Reservoir.

We do not propose to add the COMM beneficial use to Soulajule Reservoir. We have deleted all references to COMM in the Staff Report because this beneficial use is not applicable to any waterbodies in the Walker Creek watershed. The report has been revised to refer to the Water Contact Recreation (REC-1) beneficial use for the protection of human health from the consumption of sport fish.

Comment Aug06-1[TMDL-1]: Regarding TMDLs for Unlisted Water Bodies: “The following water bodies are downstream of historic mercury mines and addressed by this TMDL: Soulajule Reservoir, Arroyo Sausal, Walker, Salmon and Chileno Creeks. ...The [proposed] Basin Plan [amendment]... states that it establishes a concentration based TMDL for mercury in the Walker Creek watershed (page 4, second paragraph). However, only Walker Creek is listed on the current 303(d) list for mercury. If the Regional Board will be adopting TMDLs for water bodies that are impaired but are not included on the current 303(d) list, the Board must clearly identify each water body as water quality limited for mercury and in need of a TMDL for mercury. The Board should provide a specific record supporting this conclusion for each water body, and why it is important to adopt a TMDL for each water body at this time.”

The State Water Board has recently adopted the 2006 303(d) list of impaired water bodies. This most current list includes both Walker Creek and Soulajule Reservoir. Accordingly, we have revised Section 1, Introduction, as follows:

Walker Creek, located in Western Marin County, California, is a 21-kilometer stream that flows through a historic mercury mining district and into Tomales Bay (Figure 1.1). According to requirements of the Clean Water Act, this creek is listed on the 303(d) list as impaired by mercury to the extent that it fails to meet water quality standards. Soulajule Reservoir, which drains to Walker Creek, is also listed on the 303(d) list as impaired by mercury.

Comment Aug06-1[TMDL-2:] “We are concerned that a showing has not been made that these TMDLs are set at levels necessary to implement the narrative objective for bioaccumulation which protects aquatic life, wildlife and human health through fish consumption....Meeting the CTR criteria may not be sufficient to show that the

TMDLs are set at levels necessary to implement the bioaccumulation standard....We suggest using a fish tissue target either based on the consumption patterns of fish from the water bodies, or if unknown, based on EPA's default consumption values."

As previously stated in our response to comment Aug06-1[WQS-2b], we have added Section 5.2 to the Staff Report demonstrating that the proposed fish tissue water quality objectives for wildlife are protective of human health. In addition, we conducted additional analyses and revised the staff report by adding Section 7.4 Linking Sources and Targets in SoulaJule Reservoir. In Section 7.4, as recommended, we use bioaccumulation factors to derive a protective aqueous methyl mercury concentration that is linked to our numeric fish tissue objectives and targets. This concentration implements the bioaccumulation standard and is now included as an allocation for SoulaJule Reservoir.

With regard to setting the TMDLs at levels necessary to attain all applicable water quality standards in Walker Creek, as described in Section 8 (*TMDL Allocations*) of the Staff Report, mercury allocations and the Walker Creek TMDL are expressed as a particulate total mercury concentration. Our Analysis shows that the particulate mercury concentration needed to attain the fish tissue water quality objectives is 0.8 mg/kg, and 0.5 mg/kg is needed to attain the CTR criteria (see also Sections 7.3 and 7.4). We therefore use the more conservative or lower value of these two numbers to derive allocations.

Section 7.4 of the Staff Report (*Linking Sources and Targets*) and the Basin Plan amendment are revised as follows:

7.4 Linking Sources and Targets in SoulaJule Reservoir

The production and biomagnification of methylmercury in SoulaJule Reservoir are described narratively rather than quantitatively because aqueous methylmercury data needed to develop a site-specific mathematical relationship between aqueous and biotic methylmercury concentrations are currently lacking. Therefore, we use bioaccumulation factors based on data from other waterbodies to derive an aqueous methylmercury concentration goal that is linked to our numeric targets for methylmercury in fish tissue in this TMDL.

A bioaccumulation factor (BAF) is "a numeric value showing the amount of contaminant uptake into biota, relative to concentrations in the water column" (USFWS, 2005).

Equation 7.3

$$\text{Bioaccumulation Factor (BAF)} = \text{CT/CW} * 10^6$$

where:

CT = Methylmercury concentration in fish tissue, mg/kg

CW= Methylmercury concentration in the water, ng/l

In its methylmercury criterion for the protection of human health, the U.S. EPA calculated a draft national BAF of 1,300,000 for aqueous methylmercury in lakes and mercury in trophic level 3 fish (Table A-1, USEPA 2001b). The wildlife water quality objective for TL3 fish 5-15 cm in length is 0.05 mg/kg. Dividing the desired fish tissue concentration by the average BAF (0.05 mg/kg divided by 1,300,000) and multiplying by 10⁶ (to convert from milligrams to nanograms) yields 0.04 nanograms methylmercury per liter of water. This calculation accounts for seasonality of methylmercury production since the BAF incorporates both high and low seasonal values.

TMDL Targets

- To protect humans who consume ~~Soulejule~~Soulajule Reservoir and Walker Creek fish (assuming future conditions allow for the consumption of Walker Creek fish), water column mercury concentrations shall not exceed the California Toxics Rule (CTR) criterion of 0.050 µg/l (averaged over a 30-day period). ~~If the CTR is updated or replaced with a fish tissue concentration value, the human health target shall be that new objective~~

Allocations and Total Maximum Daily Load

The TMDL for Walker Creek is 0.5 mg mercury per kg suspended sediment and the TMDL for ~~Soulejule~~Soulajule Reservoir is 0.04 ng methylmercury per liter water. ~~0.050 µg mercury per liter water sample.~~

Concentration-based load allocations for Walker Creek and ~~Soulejule~~Soulajule Reservoir mercury sources are shown in Table 7-x.

Table 7-x TMDL Mercury Load and Wasteload Allocations⁴

Source	Allocation
Gambonini Mine site	5 mg mercury per kg suspended sediment
Soulajule watershed and Reservoir	0.050 µg mercury per liter water sample
	0.5 mg mercury per kg suspended sediment
Downstream depositional features ²	0.5 mg mercury per kg suspended sediment
Background ³	0.2 mg mercury per kg suspended sediment

¹Wasteload allocations apply to any sources subject to regulation by a NPDES permit.
²Applies to sediment released from depositional features (creek beds, banks, and floodplains) downstream of the Gambonini Mine and Soulejule Reservoir.
³The background allocation applies to all areas in the Walker Creek watershed outside of the influence of the Gambonini Mine site or Soulejule Reservoir

Table 7-x TMDL Mercury Wasteload and Load Allocations

<u>Source</u>	<u>Wasteload Allocation</u>	<u>Load Allocation</u>
<u>Gambonini Mine site NPDES Permit no. CAS000001</u>	<u>5 mg mercury per kg suspended sediment</u>	
<u>Soulajule watershed and Reservoir</u>		<u>0.04 ng methylmercy per liter water 0.5 mg mercury per kg suspended sediment</u>
<u>Downstream depositional features¹</u>		<u>0.5 mg mercury per kg suspended sediment</u>
<u>Background²</u>		<u>0.2 mg mercury per kg suspended sediment</u>
¹ Applies to sediment released from depositional features (creek beds, banks, and floodplains) downstream of the Gambonini Mine and Soulejule Reservoir. ² The background allocation applies to all areas in the Walker Creek watershed outside of the influence of the Gambonini Mine site or Soulejule Reservoir.		

Comment Aug06-1[TMDL-3]: “In Staff Report, Section 4, Source Analysis, it is not clear what the relative magnitude of sources of mercury are to the respective water bodies. It would be helpful to include a table listing the sources...to each of the applicable water bodies, and the current (or the pre-Gambonini Mine clean-up) magnitude of the sources. We understand that estimating the magnitude of some sources may be quite difficult....The “background” source category may be broken into its respective components for clarity: air deposition and naturally occurring

mercury in the soils; or at least identified throughout the document as containing both air deposition and background soil sources of mercury.”

We have addressed this comment, and the magnitude of sources, by describing soil and particulate mercury concentrations in Table 4.1 (*Walker Creek Watershed Suspended Particulate Concentrations, Pre and Post Remediation*), and Sections 4.5 (*Deposition Areas*) and 4.6 (*Background Mercury Concentrations*). As discussed in Section 2.3. (*Methylmercury, Watershed Processes and Mercury Transport*), the availability and therefore magnitude of the sources is variable depending on watershed and hydrologic conditions. In addition, in several places in the revised Staff Report we clarified that the background source category is made up of both air deposition and naturally occurring mercury in soil.

Comment Aug06-1[TMDL-4]: “We request that you clarify in the amendment that the concentration-based TMDLs are expressed in terms of daily or average daily concentrations.”

We agree with and underscore your statements in the comment, “We understand, and agree with staff that this specific TMDL and allocations may be better represented as concentration-based, as opposed to mass-based. The fact-specific circumstances do not lend themselves easily to a mass based approach.”

A daily or average daily TMDL is inappropriate for the proposed allocations 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 rivers and reservoirs.

The allocations protect two beneficial uses: wildlife and human health. The water quality objectives, which protect these uses, are the narrative bioaccumulation and the numeric mercury CTR criterion. These objectives reflect environmental exposure over time and it is not possible to establish a daily or average daily concentration load that that ensures attainment of these objectives.

As discussed in Section 8, “The allocations are intended to represent long-term averages and account for long-term variability, including seasonal variability”. In Section 2.3 (*Methylmercury, Watershed Processes and Mercury Transport*), we discuss the episodic nature of sediment delivery to Walker Creek and the temporal and seasonal variability in sediment transport and methylmercury production. The linkages between mercury in the watershed and methylmercury uptake in the food chain is further complicated by the stochastic nature of sediment delivery to the channel and fluctuations in nutrient loading and phytoplankton production. Staff derived the Walker Creek allocations based on long-term exposure of fish in the water column to these daily unpredictable variations in methylmercury loading and uptake.

In addition, in Soulejule Reservoir, the lack of available data on methylmercury concentrations in the water column and trophic level 2 fish coupled with no information on seasonal fluctuations in methylmercury production provide insufficient data from which to calculate a daily or seasonal allocation.

Comment Aug06-1[TMDL-5:] “The TMDL should be clarified to indicate that the wasteload allocations are zero as there are no NPDES-permitted discharges in the project area.”

There is one NPDES-permitted discharge, namely the Gambonini Mine site. This wasteload allocation remains unchanged in the proposed Basin Plan amendment. We modified Table 7-x by separating the ‘Allocation’ column into two columns: ‘Wasteload Allocation’ and “Load Allocation.” The Gambonini Mine site is the only entry in the “Wasteload Allocation” column as shown below :

Table 7-x TMDL Mercury Wasteload and Load Allocations

Source-	Allocation
Gambonini Mine site	5 mg mercury per kg suspended sediment
Soulejule watershed and Reservoir	0.050 µg mercury per liter water sample
	0.5 mg mercury per kg suspended sediment
Downstream depositional features²	0.5 mg mercury per kg suspended sediment
Background³	0.2 mg mercury per kg suspended sediment
¹ Wasteload allocations apply to any sources subject to regulation by a NPDES permit. ² Applies to sediment released from depositional features (creek beds, banks, and floodplains) downstream of the Gambonini Mine and Soulejule Reservoir. ³ The background allocation applies to all areas in the Walker Creek watershed outside of the influence of the Gambonini Mine site or Soulejule Reservoir	

Source	Wasteload Allocation	Load Allocation
<u>Gambonini Mine site</u> <u>NPDES Permit no. CAS000001</u>	<u>5 mg mercury per kg suspended sediment</u>	
<u>Soulejule watershed and Reservoir</u>		<u>0.04 ng methylmercury per liter water</u> <u>0.5 mg mercury per kg suspended sediment</u>

<u>Downstream depositional features¹</u>		<u>0.5 mg mercury per kg suspended sediment</u>
<u>Background²</u>		<u>0.2 mg mercury per kg suspended sediment</u>
<p>¹ <u>Applies to sediment released from depositional features (creek beds, banks, and floodplains) downstream of the Gambonini Mine and Soulajule Reservoir.</u></p> <p>² <u>The background allocation applies to all areas in the Walker Creek watershed outside of the influence of the Gambonini Mine site or Soulajule Reservoir.</u></p>		

Comment Letter no. Aug06-2: Marin Municipal Water District (MMWD), Paul Helliker

MMWD expresses support for the Water Board's work to reduce mercury runoff from the Gambonini Mine, as well as ongoing efforts to prevent additional mercury contamination of Walker Creek. We appreciate MMWD's support and look forward to working with the District in the future.

The MMWD's other comments relate to proposals for management of mercury in Soulajule Reservoir.

Comment Aug06-2-1a: Referencing the Staff Report Section 4.3 (*Soulajule Reservoir Source Analysis*) discussion of two historical mercury mines at the reservoir shoreline, Mr. Helliker notes that, "Historical information exists to indicate that soil and rock were dug and removed from the Arroyo Sausal Creek watershed for the purposes of mercury extraction. No mercury mine sites or tailings piles exist on Marin Municipal Water District property above the water level in Soulajule Reservoir, and consequently, MMWD does not have (nor is it required to have) an industrial stormwater discharge permit for any mining operations."

Based on our November 2, 2006, joint site visit and subsequent aerial photo analysis, we agree there are no tailings piles adjacent to Soulajule Reservoir and that MMWD is not required to apply for coverage under the Industrial Stormwater General Permit Program. We have deleted this requirement from the implementation section of the Staff Report and proposed Basin Plan Amendment. We have amended the Staff Report, Section 4.3(*Soulajule Reservoir Source Analysis*) to read:

Marin Municipal Water District constructed Soulajule Reservoir in 1979 as a drinking water supply, impounding water from the Arroyo Sausal watershed. The reservoir's capacity is 10,572 acre feet. When the Arroyo Sausal valley was flooded to create Soulajule Reservoir, the impoundment's watershed included two inactive mercury mines (the Cycle and Franciscan Mines). The mines drain into or are periodically submerged in Soulajule Reservoir. Water Board staff observed no mine waste piles or tailings during a 2006 field visit or in aerial photos of the area. Remnants of the mine operations remain along the shoreline of Soulajule Reservoir.

We revised the proposed Basin Plan Amendment as follows:

TABLE 7-Y TRACKABLE IMPLEMENTATION MEASURES FOR WALKER CREEK MERCURY TMDL

Source	Action	Implementing Parties	Completion Date
Gambonini Mine Site	Apply for coverage under the State of California's Industrial Stormwater General Permit	Gambonini Mine Site owner(s)	2008 <u>2007</u>
	Submit to the Water Board for approval a Stormwater Pollution Prevention Plan (SWPPP), implementation schedule, and monitoring plan		
Soulejule Watershed Mine Sites	Comply with Mines and Mineral Producers Discharge Control Program described in Chapter 4	Marin Municipal Water District	2008
<u>Soulejule Soulajule Reservoir</u>	Submit to the Executive Officer of the Water Board, a monitoring and implementation plan and schedule to 1) characterize fish tissue, water, and suspended sediment mercury concentrations in Soulajule Reservoir and Arroyo Sausal Creek, and 2) develop and implement methylmercury production controls necessary to attain both in-reservoir and downstream TMDL targets	Marin Municipal Water District	2008 <u>2009</u>
Downstream Depositional Features	Applicants seeking coverage under waste discharge requirements (WDRs) or waivers of WDRs to control pathogens, nutrients, or sediments discharges in the Walker Creek watershed shall incorporate management practices that minimize mercury discharges and methylmercury production	All creekside property owners downstream of Gambonini Mine and Soulejule Soulajule Reservoir	2009
	All projects regulated under Clean Water Act Section 401 shall include provisions to minimize mercury discharges and methylmercury production		
	Comply with conditions of Marin County's Creek Permit Program		
	Update Marin County's <i>Creek Permit Guidance for Unincorporated Areas of Marin</i> to include specific guidance for projects in areas that may contain mercury-enriched sediments	County of Marin	2008

Comment no.Aug06-2-1b: "It appears that mercury in the tissue of various species that have been sampled is generated by leaching of mercury from various geologic formations that drain into or underlie Soulajule Reservoir. This conclusion is

consistent with observations of fish tissue concentrations of mercury in other Bay Area reservoirs in Marin, Alameda, Contra Costa and Santa Clara County, all of which exceed the 0.3 ppm wet weight screening value.”

Water Board calculations show that substantially more mercury is found in the tissue of Soulajule Reservoir fish than in fish in nearby non-mining impacted watersheds. We calculated linear regressions of mercury concentration by fish length (see Table RTC-1 below), as well as mercury concentrations in fish normalized for 350 mm length (as it is important to compare fish of the same size). As can be seen in Table RTC-1, the highest mercury concentrations are found in Soulajule Reservoir fish.

The Office of Environmental Health Hazard Assessment, the state agency that develops fish consumption advisories, defined screening values in a recent document as “levels of contaminants in fish that are of potential concern for human health” (OEHHA 2006). Importantly for the TMDL, OEHHA stated that, “When screening values are exceeded, it is an indication that additional site-specific monitoring and/or human health risk assessment should be performed.” As described in response to comment Aug06-2.3b, the first implementation action for Soulajule Reservoir is additional monitoring to determine whether there is a problem with fish bioaccumulation of mercury.

Comment no. Aug06-2-2: Mr. Helliker questions why the load allocation *to* Soulajule Reservoir discharges (0.05 mg/kg) is lower than the load allocation *within* Soulajule Reservoir (0.5 mg/kg).

We regret that the August 4, 2006, Staff Report included a typographical error (the proposed Basin Plan amendment did not contain this error). The last line of Staff Report Section 8.3, corrected, now reads:

The proposed allocation for water discharged from Soulajule Reservoir into Arroyo Sausal Creek is 0.5 mg/kg mercury in suspended sediments.

Comment Aug06-2-3a: “MMWD is...willing to consider augmenting the monitoring data for mercury levels in fish tissue and the water column in Soulajule Reservoir and waters immediately downstream of the reservoir.”

We appreciate MMWD’s cooperation.

Comment Aug06-2-3b: “We are concerned about the reference to implementation of methylmercury production controls to attain in-reservoir and downstream TMDL targets. We know of no measures that would reduce the leaching of mercury from natural mineral deposits and its uptake into the resident biota, other than eliminating

the mercury-laden soil, eliminating the presence of water, or eliminating fish and other biota.”

Water Board staff believe that reducing mercury in reservoirs caused by leaching from local mineral deposits is, in fact, possible. In addition, while we did not observe residual mining waste on the shoreline of Soulajule Reservoir, we did observe remnants of mine operations, including a small oven. The oven could have been used to “roast” the local mineral deposits to look for economically viable sources of mercury in the naturally-occurring deposits. It is unclear whether the observed mercury levels in fish are due to natural leaching of mineral deposits or mine waste within the Reservoir.

The implementation actions we propose for Soulajule Reservoir are described in Table 7-y of the proposed Basin Plan amendment:

- 1) characterize fish tissue, water, and suspended sediment mercury concentrations in Soulajule Reservoir and Arroyo Sausal Creek, and 2) develop and implement methylmercury production controls necessary to attain both in-reservoir and downstream TMDL targets

The first action will confirm whether there is a problem with mercury bioaccumulation in Soulajule Reservoir. If a problem is identified and quantified, the next step is to identify solutions.

Staff of the Santa Clara Valley Water District (SCVWD) are currently testing reservoir oxygenation as a means of attaining both in-reservoir and downstream TMDL targets. Results of SCVWD’s studies should be available in an appropriate timeframe to guide MMWD’s selection of solutions, if a problem is confirmed in Soulajule Reservoir. Other potential implementation actions include dredging to remove mercury hot-spots in the reservoir (if any), and changing reservoir operations to minimize anoxia and hence methylmercury production and discharges (if feasible). Please note that in a separate action, the Water Board is undertaking measures to reduce nutrient inputs to the reservoir, which should help to reduce anoxia and associated methyl mercury production.

Comment no. Aug06-2-3c: Regarding the analysis of reasonably foreseeable implementation actions and associated costs, Mr. Helliker expresses concern regarding the Staff Report reference to removing Soulajule Reservoir.

Indeed, in Section 11 (*Regulatory Analyses*) the Staff Report states, “A foreseeable alternative to oxygenating the reservoir is removal of Soulajule Reservoir.” However, in this same paragraph, the Staff Report concludes, “The alternative is foreseeable but it is not reasonable...”, so Mr. Helliker’s concern is unfounded.

Comment Aug06-2-4: MMWD explains that two other reservoirs it operates, Nicasio and Bon Tempe, “are aerated to minimize the volume of water that is anaerobic to prevent taste and odor problems for drinking water that is produced from those reservoirs. Soulajule Reservoir is not aerated, because it is not cost-effective to do so, for the purposes of producing drinking water for MMWD customers. Even if it were, we do not anticipate that fish tissue concentrations of mercury would be lower than those of Bon Tempe or Nicasio Reservoirs....”

As explained in our response to comment Aug06-2-1b, substantially more mercury is found in the tissue of Soulajule Reservoir fish. The degree to which this may be attributed to aeration vs. reservoir bottom sediment concentrations is unknown and a question we encourage the District to evaluate.

As explained in our response to comment Aug06-2.3b, studies currently underway in Santa Clara Valley Water District reservoirs suggest that aeration is indeed an effective, relatively low-cost technology that can significantly reduce methylmercury production. Water Board staff is currently developing WDRs and waivers of WDRs for nutrients that could help minimize anoxia and hence methylmercury production in Bay Area reservoirs.

As discussed in Section 5.2 of the revised Staff Report, the mercury concentration deemed to be protective of human health in trophic level 4 (TL4) fish is 0.5 mg/kg. If we assume that 350 mm largemouth bass (a TL4 species) are representative of the average mercury concentration in TL4 fish consumed by humans from these reservoirs, then according to the data in Table RTC-1, that follows, only the fish in Soulajule are not safe for human consumption.

It is important to note that it is unlikely that fish in any of these reservoirs are safe for wildlife consumption. Nonetheless, if aeration can reduce mercury in Soulajule fish to the levels in Bon Tempe, that would be a significant improvement in the health of this fishery.

We respond to related concerns about implementation action with our responses to comments Aug06-2-3b above and Aug06-2-5 below.

Comment no. Aug06-2-5: “Inclusion of a reference to methylmercury production controls for MMWD to implement pursuant to a TMDL is not appropriate, as MMWD is not a discharger of waste to Soulajule Reservoir or to Walker Creek and is not subject to an NPDES permit or waste discharge requirements.”

There were no deep waters in this watershed prior to construction of the dam that impounds Soulajule Reservoir. Thermal stratification, which occurs seasonally in Soulajule Reservoir, results in anoxic conditions in the hypolimnion, and thereby potentially contributes to excess methylmercury production and discharges to Walker Creek. Thermal stratification and/or hypolimnion anoxia are controllable water quality factors. As described in our response to comment Aug06-2-3b above, the first step in the implementation plan is to confirm there is a problem with mercury bioaccumulation in Soulajule Reservoir. If a problem is confirmed, the next step is to identify methylmercury control technologies, information which we believe will be available in an appropriate timeframe to guide the selection of solutions, should they be needed.

Our proposal does not include a requirement that the Water Board regulate discharges from the Reservoir via a permit as we recognize that the State Water Board Division of Water Rights has issued License 12807 and Permit 15195 for diversion of use of Arroyo Sausal waters. Our desire is that MMWD will take on a stewardship role and undertake the actions set forth in the implementation plan without having to be formally regulated by the Water Board. However, License 12807 does state:

“In order to prevent degradation of the quality of water, licensee shall comply with any waste discharge requirements imposed by the California Regional Water Quality Control Board, San Francisco Bay Region, or by the State Water Resources Control Board.”

Oral Comments no. Aug06-3: Marin Municipal Water District (MMWD), Paul Helliker

MMWD General Manager, Paul Helliker, reiterated and expanded on his agency’s written comments. We respond to these oral comments in our responses to comment letters Aug06-2

Table RTC-1 Mercury Concentrations in Largemouth Bass in Three Marin Reservoirs

Site	Date	Common Name	Composite Sample Size	Age (years)	Weight (g)	Length (mm)	Mercury (mg/kg wet weight)	Linear Regression	x (mm)	y (mg/kg)
Bon Tempe	9/20/2001	Largemouth Bass	1	7	2597.4	480	0.899	$y = 0.0032x - 0.6161$	350	0.5
	9/20/2001	Largemouth Bass	1	3-4	915.8	365	0.536			
Nicasio	9/19/2001	Largemouth Bass	4	3	464.5	303	0.173	$y = 0.0076x - 2.2285$		0.5
	9/19/2001	Largemouth Bass	4	3-4	802.3	367	0.372			
	9/19/2001	Largemouth Bass	4	5-7	1902.1	454	1.29			
Soulajule	5/2/2000	Largemouth Bass	6	2-4	640.9	326	0.812	$y = 0.0049x - 0.8363$		0.9
	5/2/2000	Largemouth Bass	5	2-4	940.5	373	1.03			
	5/2/2000	Largemouth Bass	6	1-2	163.4	216	0.405			
	9/20/2001	Largemouth Bass	4	2-3	475.8	297	0.671			
	9/20/2001	Largemouth Bass	4	3-4	834	343	0.752			
	9/20/2001	Largemouth Bass	1	4	1004.9	370	0.88			
	9/20/2001	Largemouth Bass	1	4	1068.8	380	0.54			
	9/20/2001	Largemouth Bass	1	6	1925.7	465	1.45			
	9/20/2001	Largemouth Bass	1	6	1925.7	495	1.87			

Citation: Data are from the Surface Water Ambient Monitoring Program, described in Section 3.3 of the Staff Report (citation SFBRWQCB 2005a).

PART II b STAFF-INITIATED CHANGE

Staff has made the following minor correction to the proposed Basin Plan amendment and Staff Report:

We revised corrected the spelling of “Soulajule Reservoir” throughout he Basin Plan amendment and Staff Report to conform to both the 303(d) list and Marin Municipal Water District’s name of this waterbody.

REFERENCES

McGuire 1997	McGuire, E. Environmental Services Coordinator, Marin Municipal Water District. Personal communication to staff, October 16, 1997.
McGuire 2006	McGuire, E. personal communication to staff, May 18, 2006.
OEHHA 2006	Office of Environmental Health Hazard Assessment. 2006. <i>Draft Development of Guidance Tissue Levels and Screening Values for Common Contaminants in Sportfish: Chlordane, DDTs, Dieldrin, Methylmercury, PCBs, Selenium and Toxaphene</i> . Sacramento, Calif. p. 1. February http://www.oehha.ca.gov/fish/gtlsv/gtlsv1.html
Russell 2005	Russell, D., U.S. Fish and Wildlife Service Environmental Contaminants Division. Personal communication to staff, June 15, 2005.
SCVWD 2005	Santa Clara Valley Water District (SCVWD) 2005. <i>Guadalupe River Watershed Mercury TMDL Project Technical Memorandum 5.3.2, Data Collection Report, Volume 1</i> . Prepared by Tetra Tech, Inc., pp. 2-5, 3-8, and 3-9. Available online at: http://www.valleywater.org/Water/Watersheds_-_streams_and_floods/Watershed_info_&_projects/Guadalupe/Guadalupe_River_TMDL_project/index.shtm . Accessed January 7, 2007.
SFBRWQCB 2005a	San Francisco Bay Regional Water Quality Control Board. 2005a. <i>Chemical Concentrations In Fish Tissues From Selected Reservoirs And Coastal Areas. Final Report</i> . University of California, Davis, California Department of Fish and Game, Surface Water Ambient Monitoring Program (SWAMP) San Francisco Bay Region. pp. 5, Appendix-III
Strauss 2006	Strauss, A., Director, Water Division, U.S. EPA Region 9. 2006. Personal communication (letter) to Tom Howard, State Water Resources Control Board, Nov. 30.,
USEPA 2001a	U.S. EPA 2001. <i>Method 1630 Methyl Mercury in Water by Distillation, Aqueous Methylation, Purge and Trap, and CVAFS. Draft</i> . EPA-821-R-01-020. Washington, D.C.: Office of Water, p. 1. Available online at: http://www.brooksrand.com/FileLib/1630.pdf . Accessed January 7, 2007.
USEPA 2001b	U.S. Environmental Protection Agency. 2001. <i>Water Quality Criterion for the Protection of Human Health: Methylmercury</i> , EPA-823-R-01-001. Washington, D.C.: Office of Water, pp. ix–xvi, A-5, 7-1–7-2, Table 5-24, and Appendix A.
USFWS 2005	U.S. Fish and Wildlife Service. 2005. <i>Derivation of Numeric Wildlife Targets for Methylmercury in the Development of a Total Maximum Daily Load for the Guadalupe River Watershed</i> . Sacramento, Calif.