

July 17, 2006

SUBJECT: RESPONSE TO COMMENTS ON THE BASIN PLAN AMENDMENT FOR THE CONTROL OF MERCURY IN CACHE CREEK, BEAR CREEK, SULPHUR CREEK AND HARLEY GULCH

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) staff responded to technical comments submitted to the State Water Resources Control Board (State Water Board) regarding the above referenced Basin Plan Amendment. The Central Valley Water Board has addressed many of the issues previously raised in comments to the Central Valley Water Board. The Department of Water Resources raised new issues that had not been raised to the Central Valley Water Board. These comments generated three minor, non-substantive changes to the Basin Plan amendment to enhance clarity and accuracy.

July 10, 2006 Comment Letter from Alexis Strauss, United States Environmental Protection Agency

Comment #1: USEPA finds the TMDL technically sound and will be approvable upon submittal to EPA. USEPA urges adoption of this TMDL.

Response: The State Water Resources Control Board appreciates USEPA's support of this TMDL.

July 10, 2006 Comment Letter from Keith Swanson, California Department of Water Resources

Comment #1:

Uncertain application to the Cache Creek Settling Basin. State Water Board and Central Valley Water Board staff informed DWR that this TMDL does not apply to the Cache Creek Settling Basin. However, the amendment describes it as applying to "Clear Lake to the Yolo Bypass" which includes the settling basin. DWR requests the Cache Creek mercury TMDL apply only to those areas above the Sacramento River Flood Control Project's Cache Creek Levees and Settling Basin Unit. This would exclude from this TMDL the lower 11 miles of Cache Creek where DWR maintains the flood control channel and the settling basin. Instead, this reach could be addressed in the Delta mercury TMDL.

Response:

Staff apologizes for the confusion. The Cache Creek Watershed TMDL and Basin Plan Amendment do apply to the Settling Basin.

There are two TMDLs that will cover the discharge of mercury and methylmercury in the two contiguous watersheds. The Cache Creek TMDL allocates methylmercury loads throughout the watershed, including the outflow of the Settling Basin (See Table IV-7). The Settling Basin methylmercury load allocation was calculated to reduce mercury levels in fish in the Settling Basin. Staff expects that the methylmercury allocation will be met over time, by reductions in concentrations of inorganic mercury entering the Settling Basin, by improvements to the Settling Basin, or both. To meet requirements of the Cache Creek TMDL, reductions in total mercury loads leaving the Settling Basin were not needed. In order to meet requirements of the Delta TMDL, however, total mercury load reductions from tributaries, including Cache Creek, are needed. The draft Delta Basin Plan Amendment proposes that a total mercury reduction be achieved at the Settling Basin. The Settling Basin is identified because remediations at the inactive mines upstream (which are required under the Cache

July 17, 2006

Creek TMDL) are not expected to reduce the annual inorganic mercury loads sufficiently to meet the needs of the Delta TMDL.

To clarify the Basin Plan amendment, staff proposes to fix a typographic error on page 10, "Cache Creek Settling Basin", last sentence. The revised language is "The Sacramento-San Joaquin Delta mercury implementation plan will include ~~methyl~~ total mercury load reduction requirements for the settling basin." The Cache Creek Basin Plan amendment adopted by the Central Valley Water Board contains methylmercury load reduction requirements for the settling basin. See Table IV-7. As previously noted, the Sacramento-San Joaquin Delta mercury implementation plan proposes to include total mercury load reduction requirements for the settling basin.

The Cache Creek Basin Plan amendment does include methylmercury and erosion control requirements for the 11-mile stretch of Cache Creek maintained by DWR upstream of the settling basin.

DWR suggests that the Cache Creek Basin Plan Amendment exclude the Cache Creek Settling Basin and the 11 miles of DWR-maintained flood control channel immediately upstream of the Settling Basin. The 303(d) listing is for all of lower Cache Creek. If the Settling Basin and 11 miles of channel upstream were excluded from this amendment, Central Valley Water Board staff would have to prepare another TMDL for these portions of the watershed. As detailed in the response to Comment #2, the requirements for erosion control and turbidity monitoring in Cache Creek Basin Plan Amendment are not new. Other implementation requirements will be dealt with in the Delta TMDL. This approach will allow, as DWR suggests, the flood control and habitat needs in the settling basin, Yolo Bypass, and the Delta to be considered together.

Comment #2:

Erosion control in the 10-year floodplain. The TMDL's usage of the 10-year floodplain creates a new jurisdictional definition that will be difficult to define and is inconsistent with those used by other regulators, such as the Army Corps of Engineers 404 regulations.

Response:

Erosion control of mercury-enriched sediment or soil is required to reduce downstream mercury loading and subsequent methylmercury production. To protect and enhance the beneficial uses of Cache Creek, the Regional Board adopted a control program that requires erosion control of mercury-enriched sediments within the 10-year floodplain. DWR noted that CWA Section 401 requirements apply to the 2-4 year floodplain. A review of the USACOE Regulatory Guidance Letter (No. 05-05) defines jurisdictional waters to extend to the ordinary high water mark. The definition does not specify a flood or flow return frequency, however it does note that the 200-year flood event would not be considered evidence of an ordinary high water mark.

The 2-4 year floodplain referred to in DWR's letter does not preclude the Central Valley Water Board from requiring additional erosion protection of mercury-enriched soils in this watershed. Erosion requirements beyond the ordinary high-water mark are necessary to meet the TMDL and should not be limited to only the 2-4 year floodplain.

DWR noted the Basin Plan amendment language for the 10-year floodplain is not consistent with the 404 regulations. To clarify, staff proposes to remove the language that mistakenly indicates that the CWA section 401 Water Quality Certification defines the 10-year floodplain. The Executive Officer of the Central Valley Water Board has requested a clarification of the amendment language that removes

July 17, 2006

the sentence “The 10-year floodplain is defined as the portion of the creek channel where a Clean Water Act section 401 Water Quality Certification would be needed prior to beginning the project”. The Basin Plan does not need to define the 10-year floodplain. The 10-year floodplain is commonly defined as the portion of the creek channel that would be covered by water during flows that have a 10% chance of occurring in any given year.

The erosion control requirements will be implemented through existing regulatory programs, including waste discharge requirements, waivers of waste discharge requirements, or through the 401 Water Quality Certification program. No new regulatory programs are required to implement this amendment

Comment #3:

Disposal of sediment from flood control channels and the settling basin. The TMDL proposes rules for removing and disposing of sediment from the settling basin and the creek’s flood control channels that require sediment be placed outside the floodplain. Sediment removed from the settling basin by prior flood maintenance actions has not eroded back into the creek, but is nevertheless often placed in the floodplain where it has been used as construction material for levees and elevating building pads. These activities may fall within the floodplain. A simpler standard for sediment removed from channels or the settling basin would be that sediment be placed so it will not erode to the creek would suffice.

Response:

The staff intent, supported by the staff report, was to require contaminated sediments that were removed be protected from erosion into surface waters. Sediment that is moved and deposited outside the Settling Basin or outside the levees is unlikely to erode back into the creek, therefore meeting the intent of the erosion control requirements. The Executive Officer has proposed a late revision to clarify sediment removal and protection from erosion. The revision is as follows: “Sediment removed from the channel or the Settling Basin must be placed ~~outside of the floodplain~~ so that it will not erode into the creek.”

Comment #4:

Removing sediment from the settling basin to offset sediment discharged at other sites may be less feasible than the TMDL suggests. DWR may welcome opportunities to join with others in removing sediment from the basin in some situations, but at other times it may prove impractical.

Response:

Removal of mercury-laden sediments Cache Creek Settling Basin has been discussed as a potential project for a mercury-offsets program. Downstream NPDES dischargers have evaluated removing mercury-contaminated sediment from the Settling Basin as an alternative to upgrading wastewater treatment plants to remove small increments of mercury from effluent. The basin covers 3600 acres. DWR owns approximately 10% of the basin (inlet and low flow channel). The remainder is privately owned and is in agricultural production.

While DWR may be correct that permits and other regulations may lead to a longer process before sediment can be removed, it is not impracticable, impossible nor prohibitively expensive. It may be more difficult to remove sediments from the DWR-owned land because wildlife has established a habitat. However, the consultant report evaluating sediment removal has suggested that the most efficient sediment removal would be in the central to northeast portions of the basin, all on agricultural land. On occasion, sediment has been removed from the privately held portion and disposed outside the basin. In addition, in 1994 the US Army Corps of Engineers provided DWR with a draft management plan to operate and maintain the basin, including a sediment management plan. Staff has not reviewed

July 17, 2006

the final plan, but early documents described periodic removal of accumulated sediment. DWR will have to remove sediment to maintain the flood control capacity of the basin, with or without a Basin Plan amendment for mercury.

Comment #5:

Turbidity monitoring may be appropriate for large projects, but it should not be required of flood control project maintenance or other routine activities. DWR contends that turbidity monitoring is expensive and adds little information about project effects on mercury discharges.

Response:

Mercury is normally attached to sediment. Controlling erosion of mercury-contaminated sediment will control the discharge of inorganic mercury. Rather than require direct mercury monitoring, the Central Valley Water Board will require erosion control monitoring through turbidity measurements. Turbidity monitoring is not a new requirement for projects that disturb soils or sediments. Since 1975, the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan) has contained objectives for turbidity. Clean Water Act Section 401 Water Quality Certifications typically state that any discharge from the project receiving the certification will comply with applicable water quality standards and implementation plans. The proposed Basin Plan amendment only requires that projects comply with existing Basin Plan provisions and submit monitoring results to the Regional Board. Managing erosion from activities in the creek channel should be standard practice and is required in 404 permits.

During the Basin Plan amendment process, the Central Valley Water Board heard concerns from project proponents that compliance with the turbidity objectives in the Cache Creek watershed is not always best evaluated by turbidity monitoring. Therefore, the Basin Plan amendment contains language that allows a project to develop an alternative to monitoring turbidity to assess compliance with the turbidity objective. "Upon written request by project proponents, the Executive Officer may waive the turbidity monitoring requirements for a project, or group of projects, if the project proponents submit an alternative method for assessing compliance with the turbidity objective." DWR may request alternative methods for demonstrating compliance with turbidity requirements.

Turbidity monitoring is not an additional project cost and should already be included in the project costs during project design. Turbidity monitoring is not expensive; it is a common parameter that is easily measured in the field. Projects throughout the Central Valley use turbidity monitoring to measure assess compliance with erosion control requirements and the turbidity objective.

July 10, 2006 Comment Letter from Wendell Kido, Sacramento Regional County Sanitation District (SRCSD)

Comment #1:

The methylmercury allocation strategy outlined in the proposed TMDL is based on a misleading premise that control of aqueous methylmercury concentrations at specific locations in the Cache Creek watershed will have widespread, regional benefits in reducing fish tissue mercury levels.

Response:

In this letter and in previous written and verbal comments before the Central Valley Water Board, SRCSD states that because methylmercury has a localized cycle of formation, uptake and degradation,

July 17, 2006

control of methylmercury at specific locations will not benefit a broader region. Staff believes this statement does not describe conditions in Cache Creek. It is true that methylmercury cycles, and that a portion of methylmercury formed at one site may not be present at a distance downstream because of degradation or uptake. Degradation and uptake are not immediate processes, however. The USEPA standard method for methylmercury analysis allows a water sample to be held for 48 hours in an amber bottle before analysis. Recent research in microcosms in the Delta showed a 20% decrease in 24 hours of the amount of methylmercury because of photodegradation (Byington *et al.*, 2004, CAFED Science Conference Abstract). Assuming similar rates of photodegradation for Cache Creek, most of the methylmercury in either the Clear Lake or Indian Valley Reservoir outflows would be present when the water reaches the Capay dam less than one day later. Excepting the irrigation season, this water continues downstream to the settling basin. Methylmercury ingested by phytoplankton or zooplankton is also in transit downstream. If, as SRCSD suggests, the effects of methylmercury production and degradation are localized, we would expect to see spikes and lows in methylmercury concentration, interchanging across a system. Instead, concentrations in the main stem of Cache Creek increase gradually with distance downstream. Data described in the TMDL report show that methylmercury concentrations in water and fish are greatest in the lower Cache Creek (sites at Rumsey and Yolo). Sampling transects across the Delta also show gradual changes in methylmercury concentration (Foe *et al.*, 2004). Because methylmercury (dissolved or in phytoplankton) disperses with water flow from its original source and is to a large extent conserved over 1-3 days travel time, staff believes that controlling methylmercury sources will reduce concentrations downstream.

In its letter to State Water Board, SRCSD questions expenditures to control local methylmercury sources because of the overriding magnitude of methylmercury from in-stream sources. SRCSD states that, therefore, control of man-made methylmercury sources has little value. Under the requirements for this TMDL, all sources of methylmercury must receive an allocation, both point and nonpoint sources regardless of the sources' relative contribution of the pollutant to the watershed. In the Cache Creek watershed there are no NPDES-regulated sources of methylmercury. Controls of total mercury are also expected to result in decreases in methylmercury sources, including methylmercury from instream sources.

Comment #2:

The proposed prohibition on new sources or net increases of mercury or methylmercury in the watershed is an unreasonable and unsupported provision of the proposed implementation plan. Staff has not yet demonstrated any benefit of this stringent requirement commensurate with the regulation of minor mercury or methylmercury sources in the watershed.

Response:

The Central Valley Water Board retained the requirement for no increase in methylmercury concentration in Cache or Bear Creeks from any new discharge (impoundment or constructed wetland). This is not a prohibition of discharge. Because Cache Creek is an impaired water body, the requirement for no increase in methylmercury from new projects is needed to prevent improvements that are occurring in the water body from being undone. The Central Valley Water Board has not expressed an intention to limit restoration or improvement projects. The TMDL and proposed Basin Plan amendments are expected to improve water quality and protect humans and wildlife that consume fish from the Cache Creek watershed. Wetlands projects may be flushed and discharge water to the creek, as long as the discharge does not cause methylmercury concentrations in the creek to increase. Central Valley Water Board staff's recommended approach is to identify and require remediation of the most concentrated sources of total mercury (mines, enriched soils, and concentrated mine-related deposits in

July 17, 2006

creek beds) in order to decrease concentrations of total mercury in sediment. All sources of methylmercury in the watershed, regardless of size, are required to meet assigned load allocations and responsible parties can determine, with Central Valley Water Board acceptance, the manner in which the load allocation is met.

Comment #3.

The TMDL linkage analysis is incomplete in that it ignores the linkages between sources and methylmercury concentrations in water. By ignoring the subject linkages, there is no sense of benefits from the implementation plan or basis for comparing alternatives.

Response:

Staff assumes that SRCSD may be referring to the absence in the Cache Creek Basin Plan Amendment Staff report of a mathematical linkage between inorganic mercury (most of the source mercury is inorganic) and aqueous methylmercury. The rate of methylmercury production is a function of the concentration of inorganic mercury. Production rates vary significantly, however, between habitat types such as open water and wetlands¹. Because of this variation, staff did not develop a mathematical relationship between inorganic and methyl mercury concentrations. Despite the lack of a mathematical linkage between total mercury and methylmercury in water, the implementation options are closely connected to the methylmercury load allocations and water quality objectives of methylmercury in fish tissue. Chapter 4 of the Cache Creek, Bear Creek, and Harley Gulch TMDL for Mercury report describes factors that influence methylmercury production, including concentrations of inorganic mercury. The implementation plan includes reducing discharges of inorganic mercury from mines and contaminated stream banks. These actions are expected to reduce levels of inorganic mercury in streambed sediment and result in less methylmercury production. The greater the loads of inorganic mercury that are prevented from discharge, the shorter the time will be to reach the water quality objectives. The implementation options may be compared on the basis of effort to implement, which is represented by cost.

Comment #4:

The proposed aqueous methylmercury goals for Cache Creek, Bear Creek and Harley Gulch should be eliminated or adopted as water quality objectives in compliance with California Water Code 13241 and 13242. These goals could end up being used in permits to establish final effluent and/or receiving water limits.

Response:

The Central Valley Water Board adopted numeric water quality objectives for Cache Creek, Bear Creek and Harley Gulch in the form of methylmercury concentration in fish tissue. Objectives in fish tissue are closely linked to the beneficial use impairment, which is consumption of contaminated fish by humans and wildlife. The fish tissue water quality objectives were adopted in accordance with Water Code Sections 13241 and 13242. Section 13241 identifies six factors that must be addressed when establishing a water quality objective: past, present, and future beneficial uses of water; environmental characteristics of the hydrographic unit; water quality conditions that could reasonably be achieved; economic considerations; need for new housing; and need to develop and use recycled water. Section

¹ Heim, W., K. Coale, et al. (2004). Methyl and Total Mercury Spatial and Temporal Trends in Surficial Sediment of the San Francisco Bay-Delta. Subtask 4 Final Report., California Dept. Fish and Game, Moss Landing Marine Laboratory. Prepared for the CALFED Bay-Delta Program, Directed Action #99-B06. Available at: <http://loer.tamug.tamu.edu/calfed/FinalReports.htm>.

July 17, 2006

13242 requires that an implementation plan for achieving the objectives contain: actions to achieve the objectives; a time schedule; and surveillance to be conducted to determine compliance. Staff analyzed the six factors with respect to adoption of the methylmercury objectives in fish tissue in the Staff Report Section 4.2. The staff report is part of the Central Valley Water Board's record for adoption of the objectives.

Currently, there is no suggestion that the Cache Creek watershed aqueous goals will be used as effluent or receiving water limits. There are no NPDES-permitted facilities in this watershed. The aqueous methylmercury goals in the proposed Basin Plan Amendment are included to guide achievement of the methylmercury load allocations. The aqueous methylmercury goals were determined during the process of linking the methylmercury water quality objectives to meaningful load allocations. Because the goals are useful in determining when the allocation has been achieved, staff retained them in the proposed implementation plan section. The program is scheduled to be reviewed every five years and if there is a need for a numeric water quality objective in the form of methylmercury in water, then staff will evaluate water column water quality objectives at that time.

Although the Central Valley Water Board did not adopt the aqueous methylmercury goals as objectives, development of the aqueous methylmercury goals has been accomplished within the public process. In a previous letter, the SRCSD and other stakeholders commented extensively on the aqueous methylmercury goals. For the August 2005 report, staff revised the linkage relationship and aqueous methylmercury goals in response to comments (increased from 0.06 ng/L to 0.14 ng/L for Cache Creek).

Comment #5:

A coordinated and comprehensive Central Valley watershed-wide approach to mercury TMDL development should be implemented, rather than developing multiple mercury TMDLs. The approaches to mercury management under the San Francisco Bay, Clear Lake, Cache Creek and draft Delta TMDLs are not consistent, nor is it clear how these TMDLs are intended to work together. The overall effect is to isolate urban areas from major sources of mercury. An overall approach is necessary. SRCSD asks the State Water Board to direct the Central Valley and the San Francisco Regional Water Boards to provide to the public with a coordinated, consistent, and comprehensive watershed-wide approach for mercury TMDL development in the Central Valley and San Francisco Bay.

Response:

SRCSD suggests that the staff should develop a TMDL for the entire Sacramento River watershed. SRCSD also implies that staff should focus its efforts on addressing sources of total mercury in the tributaries as a way to shut off methylmercury production in the tributaries and Delta. The State and Regional Water Boards do not have the financial resources to plan a comprehensive mercury TMDL for all of the Central Valley's watersheds and the San Francisco Bay at one time. Staff does not have the data to develop one TMDL for this entire area. To adequately evaluate the sources within the Delta and tributaries, staff is taking a more detailed look at each watershed.

There are several reasons for this approach. First, although the Feather and American Rivers and Cache and Putah Creeks contribute significant mercury loads and have elevated concentrations of mercury in suspended sediment, mercury within these watersheds is coming from many sources. Data from streams on both sides of the Central Valley show that since the mining period, mercury has spread widely downstream of the gold and mercury mines. Reducing total mercury loads to the Delta sufficiently to achieve water quality objectives may require addressing many relatively small sources or source areas in numerous watersheds. The reductions may take many years to occur, particularly for contaminated

July 17, 2006

stream sediments, where remediation may be difficult and more expensive than mine cleanups. Thus, a second reason for this approach is to shorten the time to reach the objectives by reducing sources of methylmercury as well as total mercury. As described in the Cache and Delta technical TMDL reports, total mercury is one potentially controllable factor in methylmercury production. Since the ultimate goal of these TMDLs is to reduce methylmercury exposure of humans and wildlife that eat local fish, it makes sense to address sources of total and methyl mercury.

It is true that methylmercury loads, when categorized geographically and by source type are higher from Delta tributaries and from wetlands, than from urban areas such as Sacramento and Stockton (See SRCSD's Comment #6). The tributary and wetland loads, however, are sums of loads from many individual methylmercury sources, some of which will likely be equal to single urban sources.

Finally, the watershed approach is appropriate because the goal is to remove the impairment within each listed water body. Methylmercury produced within the Delta contributes to impairment of fish in the Delta, and must be addressed as well as the sources of inorganic mercury upstream.

There are watersheds noted above that contribute significant sources of total mercury. While control of total mercury is important, there is a significant correlation between methylmercury sources (aqueous) and methylmercury in biota. Reductions in methylmercury discharges are expected to result in measurable reductions in fish methylmercury. Thus, the TMDLs are focusing on controlling methylmercury sources and the implementation plan will include reductions from both total and methylmercury sources.

The Central Valley and the San Francisco Regional Water Boards do coordinate on their respective mercury TMDL efforts. For example, the draft Delta methylmercury TMDL describes how the load allocation for San Francisco Bay, established by the San Francisco Regional Water Board, will be met. The Regional Water Boards have also coordinated on water quality objectives for mercury in fish consumed by humans and wildlife. The water quality objectives for the Cache Creek, San Francisco Bay and draft Delta Basin Plan Amendments support human consumption of about one meal per week of local fish. This coordination is particularly important for San Francisco Bay and the Delta, as popular migratory species, such as striped bass and salmon, are caught in both water bodies.²

The difference between the Cache Creek and Delta being "methylmercury TMDLs" and the San Francisco Bay being a "total mercury TMDL" is not as significant as the commenter states. Both Regions recognize the importance of considering methylmercury and total mercury when possible. The Cache Creek watershed and Delta TMDLs benefited from multi-million dollar studies, partially funded through the California Bay-Delta Program, to examine methylmercury production, fate, and transport. The Guadalupe, Cache Creek, and Delta TMDLs contain quantitative linkages between methylmercury in fish and water. Similar data were not available for Clear Lake and San Francisco Bay. The San Francisco Bay mercury TMDL requires that urban storm water management agencies and municipal and industrial wastewater facilities monitor methylmercury. Additionally, studies are ongoing in both Regions to evaluate the role of various wetland features in producing methylmercury, which will advise wetlands restoration and management efforts in the Bay and Delta. Scientific understanding of mercury has developed rapidly in the last 5-8 years and is continuing. All mercury TMDLs developed or

² The actual water quality objectives for San Francisco Bay and the Delta will likely vary slightly because of differences in the ratio of concentrations in trophic level 3 and 4 fish (needed to solve the mathematical equation that provides the fish tissue levels) and whether the most commonly caught species are trophic level 3 or 4.

July 17, 2006

proposed by the San Francisco Bay and Central Valley Water Boards commit to an adaptive management approach and periodic review by the Boards.

Although methylmercury monitoring and control strategies are important, both Regional Boards have taken the approach of focusing on inorganic mercury when inorganic mercury loads to a particular water body are the most pressing problem. This was the case for the Central Valley Water Board's Clear Lake TMDL (approved by the State Water Board and the USEPA in 2003) and the implementation plans for Harley Gulch and Sulphur Creek in this Basin Plan Amendment. As described in the load allocations for the Guadalupe River Watershed TMDL project report, a large component of the mercury strategy for that watershed will also be to reduce inorganic mercury loads from mine waste.

Further concerns regarding coordination of mercury TMDLs should be provided to the Regional Water Boards involved.

Comment #6:

In the draft Delta TMDL, the Central Valley Water Board staff identified that 60% of the methylmercury load into the Delta originates from tributaries to the Delta. The draft Delta TMDL states those sources will be dealt with under future TMDLs. Those tributaries contain the mercury and gold mines that are the largest source of total mercury in the watershed. SRCS D supports those elements of the TMDL that put a priority on addressing the largest sources of total mercury in the watershed.

Response:

Tributary watersheds contributing significant methylmercury and mercury loads to the Delta, the American River, Putah Creek, the lower Sacramento River, and the Feather River, are on the Clean Water Act 303(d) list as impaired by mercury. Other tributaries, including Marsh Creek and the San Joaquin River are also 303(d)-listed. The proposed Basin Plan Amendment language for the Delta TMDL³ states that the Central Valley Water Board will develop TMDLs for the tributary watersheds and that those TMDLs will meet the needs of the Delta TMDL. Thus, the Central Valley Water Board is required to take action for these water bodies and will adopt implementation plans to reduce mercury loads. In addition, see response to Comment #5.

July 10, 2006 Comment Letter from Wayne Whitlock, Pillsbury, Winthrop, Shaw, Pittman, on behalf of Homestake Mining Company of California.

Comment #1. The State Board should clarify that the Cache Creek TMDL and Basin Plan Amendment do not apply directly to Davis Creek. No load allocation should be made to Davis Creek until studies are completed and a thorough understanding of its contribution of mercury to the Cache Creek watershed is developed.

Response:

Mr. Whitlock is correct that Davis Creek Reservoir is on the Clean Water Act Section 303(d) list as impaired due to mercury and will be the subject of a future TMDL. Because of a current lack of data and the commitment to a future TMDL, staff did not put implementation actions for Davis Creek and the

³ The draft peer review version of the proposed Basin Plan Amendment language for the Delta methylmercury TMDL is available at: <http://www.waterboards.ca.gov/centralvalley/programs/tmdl/delta.htm>

July 17, 2006

reservoir in the Cache Creek Basin Plan Amendment. Implementation actions will be proposed after the reservoir's TMDL analysis and will be subject to public review and a Board hearing. Homestake Mine is not required to implement load reductions the Cache Creek TMDL and Basin Plan Amendment.

It is appropriate, though, that methylmercury in Davis Creek be allocated in the Cache Creek amendment. The Cache Creek amendment assigns a methylmercury allocation to North Fork Cache Creek, which is also beyond the scope of the Cache Creek 303(d) listing. Davis Creek is a source of methylmercury to Cache Creek. The Davis Creek allocation of 50% of existing methylmercury load was calculated as a reduction needed in order to attain water quality objectives in Cache Creek. In order to reduce methylmercury concentrations in Davis Creek fish to levels that the US Fish and Wildlife Service has said is needed to protect fish-eating wildlife, methylmercury in Davis Creek would have to be decreased by an even greater percentage.⁴

Comment #2. When future TMDL and load allocations for Davis Creek are developed, they should reflect the role that Davis Creek reservoir already plays in limiting mercury discharges from Davis Creek to Cache Creek. Two factors suggest the load allocation should differ from what is in the Cache Creek amendment. The TMDL for Davis Creek should: 1) take into account the remedial actions already taken to reduce mercury loading and 2) acknowledge that the Davis Creek Reservoir has been acting as a mercury settling basin.

Response:

Staff is aware of the remediation that the Homestake Mining Company has already completed in the Davis Creek watershed and the effectiveness of the reservoir at retaining mercury (mainly inorganic) that would otherwise enter Cache Creek. As described above, however, the Cache Creek amendment sets load allocations for methylmercury that are needed for wildlife to be able to safely consume the fish from Cache Creek. The future Davis Creek Reservoir TMDL will likely do the same for fish in the reservoir. Additional inorganic mercury load reductions or other implementation actions may be required to address methylmercury levels, which are high in fish and water of the reservoir. If the Davis Creek Reservoir Basin Plan amendment proposes total mercury load limits for inactive mines or mine features on property owned or managed by Homestake, staff agrees that the benefits of the reservoir in trapping inorganic mercury should be evaluated.

Comment #3. The water quality objectives and implementation requirements for the Cache Creek TMDL do not give adequate consideration to economic factors. The Cache Creek Basin Plan Amendment staff report assumes that the same level of remediation of the mines would be needed, no matter which water quality objective alternative is selected.

Response:

In order to meet any of the water quality objective alternatives considered by the Central Valley Water Board, concentrations of methylmercury in fish tissue downstream of the mine areas would have to decrease from existing conditions. Methylmercury in fish and water is a function of inorganic mercury; thus loads of inorganic mercury in the stream must be decreased. Because all alternatives, including

⁴ Methylmercury levels in small fish from Davis Creek downstream of the reservoir must be reduced by 70-95% of existing levels in order to attain the small fish concentration of 0.03 mg/kg, wet weight recommended by the USFWS. Table 6.2 of the Cache Creek, Bear Creek, and Harley Gulch TMDL for report contains this notation. The report is available at: <http://www.waterboards.ca.gov/centralvalley/programs/tmdl/Cache-SulphurCreek/index.html>

July 17, 2006

those that do not fully protect wildlife, require that mercury levels be lowered, it was appropriate to assume the costs of mine cleanups applied to all numeric water quality objective alternatives.

The remediation requirements for mines in the Harley Gulch and Bear and Sulphur Creek watersheds were determined in order to eliminate the continuing discharge and prevent large loads that would result from a catastrophic erosional event. The Central Valley Water Board members agreed that in order to protect the water quality of these water bodies, the goal of mine implementation should be to restore the streams as closely as possible to background conditions. Discharges from mines are regulated under California Water Code Section 13304 and State Water Board Resolution 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304. The resolution states:

“Water Code Section 13304 requires that any person who has discharged or discharges waste into waters of the state... and creates or threatens to create a condition of pollution... may be required to clean up the discharge and abate the effects thereof. This section authorizes Regional Water Boards to require complete cleanup of all waste discharged and restoration of affected water to background conditions.” Paragraph 4 of Resolution 92-49

In Section III.F, State Water Board Resolution 92-49 provides conditions that must be met if alternative cleanup levels less stringent than background are approved.

Mr. Whitlock states that determining the costs and feasibility of completely remediating an abandoned mine is highly complicated. Central Valley Water Board staff believes that the cost estimates for cleanup of the mines named in the Cache Creek Basin Plan Amendment are reliable. In a detailed engineering evaluation and cost analysis, Tetra Tech EM, Inc. evaluated eight different mitigation alternatives (excluding “no action”) for the mine sites and provided estimates of capital and annual maintenance costs for application of each alternative to each mine site.⁵ For the cost evaluation for the Cache Creek Basin Plan Amendment, Central Valley Water Board staff used estimates from the Tetra Tech report. The Central Valley Water Board will not dictate to responsible parties how the mercury reductions are to be achieved. The Tetra Tech report example shows that while expensive, mitigation measures are not exorbitantly costly, are technically feasible, and are expected to achieve the total mercury load limits. Central Valley Water Board staff recognizes that a comparable evaluation does not exist for the Davis Creek watershed mines. Consistent with Resolution 92-49, staff will work with Homestake in estimating costs for Davis Creek watershed mines.

Comment #4. When the Davis Creek Reservoir TMDL is developed, Homestake requests that the Regional and State Boards take into account the cost of requiring additional reductions in the Davis Creek watershed and the relative benefits of such reductions in relation to the small current contribution from Davis Creek.

Response:

At this time, Central Valley Water Board staff has not developed a TMDL nor evaluated implementation options for Davis Creek Reservoir. Central Valley Water Board staff recognizes the efforts that Homestake has taken to date to abate mercury discharges from the Reed Mine. That remediation work

⁵ The Engineering Evaluation and Cost Analysis for the Sulphur Creek Mining District was funded by the California Bay Delta Program and is available at:
<http://loer.tamu.edu/calfed/Report/Final/Final%20SCMD%20EECA%20Sept%202003.pdf>

July 17, 2006

probably has resulted in the reduction of total mercury discharges from the mine (however, at this time we have not examined existing data nor evaluated the load reductions), and it is unknown at this time if additional reductions would be required from the mine. Staff hopes to work with Homestake and their contractors to ensure the best available data are used in the Davis Creek Reservoir TMDL analysis.

The construction of the Davis Creek Reservoir has trapped mercury-contaminated sediment and likely has resulted in the reduction of mercury loads discharged to Cache Creek. This will in part lead to the eventual attainment of beneficial uses in Cache Creek.

Davis Creek is not a significant source of methylmercury to Cache Creek due to its low flow rate. However, due to the high concentration of mercury in Davis Creek Reservoir fish, and the presence of piscivorous wildlife, a methylmercury control program may be required to reduce fish tissue mercury within the reservoir. Central Valley Water Board staff will work with Homestake when developing alternatives for the Davis Creek Reservoir TMDL.

Comment #5.

Homestake will actively participate in the Central Valley Water Board's consideration of a TMDL and Basin Plan Amendment for Davis Creek and for the remainder of the Delta methylmercury TMDL process.

Response:

Central Valley Water Board staff appreciates the offer of involvement and looks forward to working with the Homestake Mining Company in the Delta and Davis Creek Reservoir TMDL and Basin Plan Amendment processes.