County of Santa Clara
Environmental Resources Agency
Parks and Recreation Department

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FAX COVER SHEET

Total number of pages, including cover: 12 Date: April 21, 2008

Name: Ms. Carrie Austin **Fax:** **510-622-2460**

Office: San Francisco Bay Regional Water Quality Control Board Telephone: _____

FROM: **County of Santa Clara Parks and Recreation Department**

NAME: Kristi Barron
Executive Administrative Assistant
Lisa Killough's Office

Phone 408-355-2244
Fax: 408-358-2373
Email: ***Kristi.barron@prk.sccgov.org***

Message: Please find attached, a letter for Ms. Carrie Austin Re: Guadalupe River Watershed Mercury TMDL Staff Report.

A hard copy will be sent today certified mail.

If you should have any questions, please contact me at 408/ 355-2244.

Thank you,
Kristi Barron

Please call me if you have any questions

Thank you,

Board of Supervisors: Donald F. Gage, Blanca Alvarado, Peter McHugh, Ken Yeager, Liz Kniss
County Executive: Peter Kutras, Jr.

County of Santa Clara

Parks and Recreation Department

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April 21, 2008 **Sent by Fax and U.S. Mail**

Ms. Carrie Austin
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
Fax: (510) 622-2460

Subject: Comments on *Guadalupe River Watershed Mercury TMDL Staff Report, February 2008* and *Proposed Basin Plan Amendment, February 2008*

Dear Ms. Austin:

The County of Santa Clara, Parks and Recreation Department, offers the enclosed comments on the *Guadalupe River Watershed Mercury TMDL Staff Report,* and alternative language for the *February 2008* and *Proposed Basin Plan Amendment, February 2008.*

Over the past two decades, the County has undertaken remediation efforts directed to the elimination or control of mercury mining waste at multiple locations within the Almaden Quicksilver County Park at great public expense, and with the firm belief that the expenditure is warranted by the benefit to public health and affected aquatic ecosystems. With the same objectives in mind, the County proffers these comments, including a technical evaluation by our consultant, URS, as noted in Attachment A and proposed changes for the Basin Plan Amendment set forth in Attachment B.

The County has been actively monitoring the research conducted by the San Francisco Bay and Central Valley Regional Water Quality Control Boards (Regional Boards) with respect to setting mercury total maximum daily load (TMDL) standards for many tributary water bodies of the San Francisco Bay Estuary. Of central concern in this process has been the lack of a technical understanding of mercury, methylation, and bioaccumulation. To develop cost effective mercury management programs for such a diverse and complex natural system as the Bay and its tributaries, we strongly urge the establishment of a consistent regional program based on supported scientific evidence and achievable schedules.

<u>Concern: Data Lacking to Support Correlation between Sediment Mercury and Bioaccumulation</u>

While the staff report and proposed Guadalupe River Watershed Basin Plan Amendment (BPA) contain a substantial collection and analyses of soil, sediment, surface water and fish tissue

sampling data throughout the Bay Area, there continues to be a dearth of technical understanding regarding effective mercury and methylmercury management actions. This is an overarching concern of the County. In particular, the proposed BPA still lacks a technical justification for its central management approach, which is premised on the notion that a reduction in the concentrations of mercury in soil and sediment will result in a reduction in the levels of methylmercury in fish tissue (see Staff Report pp 7-14). Without such a data connection, there is no basis to conclude that reduction of mercury in sediment under the proposed TMDL and BPA would reduce mercury in fish tissue concentrations.

Concern: Proposed Deadlines for Action are not Achievable

Of secondary, but still significant, concern is the proposed plan's deadlines for action. The County has experience in this area as it has already completed or committed to performing considerable clean-up work in the park at substantial expense through two major efforts: the first through agreement with the State Department of Toxic Substance Control (DTSC), and the second through a Natural Resource Damages (NRD) agreement with the U.S. Fish and Wildlife Service and other agencies. The DTSC authorized work has been completed and resulted in the removal of five major deposits of mercury contaminated areas, known as calcines. Planning for the NRD work is underway and will result in the removal of the last significant areas of calcines in the park. From studying and implementing these remediation efforts over the past two decades, the County is familiar with the time required for the planning and execution of the proposed activities, including the impact of competitive selection requirements on work schedules. The time frames proposed under the Guadalupe TMDL for preparation of plans and implementation actions are simply unrealistic given the magnitude of effort required and our experience for similar work.

Recommendation: Consistent Approach to Regional Problem

The County's objective in raising these concerns is not to push implementation into the future but to offer focused recommendations that address the principal objectives in a timely fashion.

The County is concerned about the lack of scientific evidence to support a numeric limit for naturally occurring sediment mercury, but we acknowledge that the State Water Resources Board may opt for this standard as part of a multi-prong approach to reducing mercury loading into the bay. In evaluating all of the potential solutions for addressing the loading issue, we advocate that the State adopt a regionally consistent approach for the TMDLs being established for the Bay. Specifically, the County recommends that the State take a similar approach for the Guadalupe BPA as the approach proposed for the Delta Estuary BPA.

The County has analyzed the proposed Delta BPA because the Delta Estuary and Guadalupe River watersheds have similar contamination issues. While the loading sources, and techniques and standards to address the problem areas may differ between the two BPAs, the Delta BPA proposes a couple of approaches which should be included in the Guadalupe BPA for consistency sake.

Recommendation: Phased Approach

In particular, the proposed Delta Estuary BPA acknowledges that a phased approach is needed to identify and remediate the main culprits for contamination and bioaccumulation. This approach is further supported by the U.S. Environmental Protection Agency (USEPA). According to the USEPA's 1991 document, "Guidance for Water Quality-Based Decisions: The TMDL Process" (EPA 440/4-91-001), "*...if there are not adequate data and predictive tools to characterize and analyze the pollution problem with a known level of uncertainty, a phased approach may be necessary.*" Similar to the Delta, the Guadalupe River Watershed is quite complex and although much analysis has already been conducted, the County recommends additional analyses be done to identify the problem areas and determine the most effective methods for remediation.

The proposed phased approach would allow the County to: a) conduct field investigations of mercury in soil and sediment within the park, b) integrate this research with other studies of the factors that may contribute to the methylation and bioaccumulation of mercury in fish, and c) propose focused efforts to reduce mercury loading in the Guadalupe watershed. Ongoing monitoring of efficacy of actions taken to reduce loading will provide for an appropriate adaptive management program for controlling mercury containing soils and naturally occurring mercury sediments within the park.

Recommendation: Flexibility for Adjusting Sediment Mercury Limits in Mineralized Areas

Almaden Quicksilver County Park is located in an area that has a high concentration of naturally occurring sediment mercury, as well as the rare serpentine habitat. As noted in the attached URS report, it is not reasonable to set the same sediment mercury standards for mineralized (deposits containing naturally occurring sediment mercury) and non-mineralized areas. Indeed, those differences between mineralized versus non-mineralized areas represent the difficulty inherent in the "one size fits all" 0.1 ppm sediment approach proposed in the Guadalupe BSA. One size does not fit all. The proposed 0.1 ppm erodible soil standard could require elimination or armoring of large areas of natural soils within the park, at great cost in monetary terms, as well substantial ecological damage[1]. The Delta BPA acknowledges the differences between mineralized and non-mineralized areas and proposes to allow a higher concentration of sediment mercury in mineralized areas than non-mineralized areas. The County recommends a similar approach, which would allow further study to determine the appropriate limit for sediment mercury in the park.

To address both recommendations noted above within an achievable, but accelerated time frame, the County offers specific revisions to the Guadalupe BPA, as noted in Attachment B. These proposed revisions include actions which would evaluate the priority of source areas consistent with an adaptive management approach, adjusting requirements as continued monitoring documents the efficacy of any given action. Incorporation of a phased approach into the BPA would allow the Board to establish site specific actions appropriate for the County's mineralized areas.

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[1] The rare serpentine soils and related ecology, found at many locations within the County including Almaden Quicksilver County Park, provide critical habitat for such endangered species as the Bay Checkerspot Butterfly. Theses areas are likely to be disturbed, if not eliminated, by steps required under the proposed Guadalupe TMDL.

To reiterate, the County supports the need to address mercury contamination affecting the Guadalupe River watershed. In the same spirit, we offer these comments with the sincere desire of attaining an effective and consistent regional approach that will ultimately benefit the watershed and San Francisco Bay.

Sincerely,

Lisa Killough, Director
Santa Clara County Parks and Recreation Department

c: Gerald F. George, Pillsbury Winthrop Shaw Pittman
Katherine Harasz, Deputy County Counsel
Sylvia Gallegos, Deputy County Executive

URS

Attachment A
Comments on Staff Report and Basin Plan Amendment
April 18, 2008

As requested by the Santa Clara County Parks and Recreation Department, URS has reviewed the California Regional Water Quality Control Board San Francisco Bay Region's *"Guadalupe River Watershed Mercury TMDL Staff Report, February 2008"* and *"Proposed Basin Plan Amendment, February 2008"*. We have the following comments.

Fish Tissue Objectives

1. The proposed fish tissue objectives appear to be reasonable, as they are based on a lowest observable adverse affect level (LOAEL) from a three generation laboratory toxicity study that measured reproductive effects of mercury in the diet of mallards. Clearly, the accuracy and utility of the objectives would be improved if toxicology information were available from species of particular concern in the Guadalupe Watershed. However, lacking such data, it appears the objectives are based on the best available science at the time of the analysis.

2. The only uncertainty factor applied to the LOAEL was a LOAEL-to- NOAEL uncertainty factor of 3, to estimate the no observable adverse effect level (NOAEL). In the calculations, it was conservatively assumed that piscivorous birds would obtain all prey from the areas of concern. While this is a reasonable assumption for some species of birds especially during the breeding season, area use factors are often incorporated into this type of analysis to account for estimated proportions of prey obtained off-site from "cleaner" areas, diluting the average daily dose. However, in this case "background" levels of mercury in fish in adjacent water bodies are approximately equal to or even exceeding the objective; therefore incorporation of area use factors would not make a significant difference in the calculation of the objective.

3. It should be noted these objectives were developed based on risk to wildlife and do not take into account whether those objectives are feasible to achieve in mineralized areas such as Guadalupe Watershed. Such an analysis may be beyond the scope of the TMDL process but it certainly ought to be a consideration under a Use Attainability Analysis, which would be conducted when more information is available on control measure cost and effectiveness. The CVRWQCB found that Sulphur Creek was unable to support uses that rely on fish consumption due, in part, to the presence of mercury mines and local geothermal springs containing mercury (See "Amendment To Water Quality Control Plan for the Sacramento and San Joaquin River Basins To Determine Certain Beneficial Uses are Not Applicable in and Establishing Water Quality Objectives for Sulphur Creek" Final Staff Report March 2007, CVRWQCB). We acknowledge that habitat, biological and geological conditions in the Guadalupe Watershed are different than those in Sulphur Creek, and the analysis is not directly transferable, but that situation does illustrate the need to incorporate significant environmental differences into mercury management plans addressing geographically and ecologically diverse areas.

4. There are inconsistencies in the proposed fish tissue objectives as described in the two documents. In the Proposed Basin Plan Amendment (BPA-4, Table 3-4A), and in Section 6 of the Staff Report, the fish tissue numeric objectives listed include no mention of trophic level or species. This is inconsistent with other sections of the Staff Report (pages 5-3, 5-8, 7-20), which propose fish tissue objectives for trophic level 3 fish only. The USFWS report cited as the source of the objectives also identifies the numeric objectives of 0.05 mg/kg wet weight (5 - 15 cm fish length) and 0.10 mg/kg wet weight (15 -35 cm fish length) for trophic level 3 fish only. The USFWS report proposed an objective of 0.20 mg/kg wet weight (15 -35 cm fish length) for trophic level 4 fish. Application of the objective of 0.10 mg/kg wet weight to trophic level 4 fish would be unnecessarily conservative.

Linkage between Sediment Loads and Load Allocations and Fish Tissue Objectives

5. The linkage between fish tissue concentration and sediment concentrations as described in the Staff Report is weak, and there does not appear to be a scientific basis for the identification of a TMDL of 0.1 mg/kg mercury in suspended sediments in waters upstream of reservoirs and lakes. There was no attempt to quantitatively link fish tissue concentrations to sediment concentrations, as was done for bioaccumulation factors (BAFs) for fish tissue and water concentrations in Section 7.4. It is not clear why a similar approach was not used to develop biota-sediment accumulation factors (BSAFs) to quantitatively link sediment concentrations to fish tissue concentrations. Even better would be development of a regression equation to predict fish tissue concentrations based on sediment concentrations using historical data. While there may not be enough data to identify a strong correlation, the report does not discuss any attempt to identify a quantitative link.

Sediment Loads and Load Allocations Not Appropriate for Mineralized Areas

6. It is not reasonable to set a load and load allocations for a mineralized area equal to the concentration found in an area that does not have similar geology (deposits containing cinnabar). In the "Amendments to The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins For The Control of Mercury in Cache Creek, Bear Creek, Sulphur Creek, and Harley Gulch Staff Report October 2005" (2005 Report) the Central Valley Regional Water Quality Control Board provided different objectives for mineralized and non-mineralized areas (Page 31). The 2005 Report states:

   "These concentrations are 0.2 mg/kg, dry weight in non-mineralized areas (Churchill and Clinkenbeard, 2004) and 3 mg/kg in mineralized zones (Pearcy and Petersen, 1990), applied to the average of mercury concentrations in samples of fine-grained soil (<63 micron) entering Sulphur Creek. The goal for mineralized zones is intended as a guide for cleanup efforts and may be adjusted as more information is gathered during feasibility studies at individual mine sites."

   Such site-specific goals for sediment in mineralized areas are mentioned in the Staff report on Page 8-4 under "Potential Allocations Based on Conditions Prior to Mining". There was no justification for not selecting this approach provided in the report. In the BPA such an approach is described under special studies (Section 9.10) but not incorporated into the Tables of numeric TMDL and Load and wasteload allocation in Sections 3 and 7. We suggest modification to the BPA Tables (See Attachment B) to allow such an approach to be used to modify the objectives, TMDLs and allocations.

   Implementing such stringent sediment standards could essentially mean armoring any potentially erosive areas (which is any exposed slope) within the Park with hard surface or complete removal of all park soils and replacement and stabilization with imported fill. Since neither of these solutions are economically achievable or practical (or desired since they would potentially damage the rare serpentine ecology in the Park) the standard would never be met. In fact, such armoring projects could result in decreased infiltration of rainfall, increased runoff, shorter runoff transport times, increased runoff flow velocity and increased erosion of stream banks and bed which could mobilize previously buried and isolated calcine deposits.

Different Sediment Objectives for suspended sediments upstream and downstream of reservoirs

7. It not clear why the allocation for mercury concentrations on suspended sediments upstream of reservoirs and lakes (0.1 mg/kg from Table 7A) should be different from the allocation for mercury concentrations on suspended sediments downstream of reservoirs (0.2 mg/kg). The justification provided in the Report is that the downstream target is based on the Bay Hg TMDL target. However, setting such a target for watersheds draining to the Bay does not take into account the local geology and benefit of sediment mixing with sediments discharged from other non-mineralized areas.

Phased TMDL Approach

8. Due to the lack of a documented linkage between sediment-based load allocations and target fish tissue concentrations, a phased approach would be appropriate for this TMDL. According to the USEPA's 1991 document, "Guidance for Water Quality-Based Decisions: The TMDL Process" (EPA 440/4-91-001), "*...if there are not adequate data and predictive tools to characterize and analyze the pollution problem with a known level of uncertainty, a phased approach may be necessary.*"

   A phased approach is typically needed when nonpoint sources are a large part of the pollutant load, information is limited, and/or narrative criteria are being interpreted. Under these circumstances, there is often great uncertainty in the load allocation. The first phase of TMDL implementation includes taking action on the more obvious sources of load reduction, with increasingly difficult and less cost effective actions considered later. The TMDL can be revised upon new data that indicate a revision in the loading capacity.

   The proposed BPA revisions for the Guadalupe River Mercury TMDL do include requirements for completion of additional studies during Phase 1 that would provide additional data that could be used to establish a quantitative relationship between loads and fish tissue concentrations. However, the proposed BPA revisions do not include a process for reviewing the data obtained during Phase 1 to reconsider the appropriateness of the objectives, TMDLs, or load allocations if better information is available to do so. We recommend that language allowing for consideration of new data be written into the BPA revisions (See Attachment B).

Respectfully submitted,

Terry Cooke

From Page BPA-4

Table 3-4A: Freshwater Water Quality Objectives for Mercury in Walker Creek, Soulajule Reservoir, and Their Tributaries; and in Waters of the Guadalupe River Watershed, Except Los Gatos Creek and its Tributaries Upstream of Vasona Dam, Lake Elsman, Lexington Reservoir, and Vasona Lake[a]

Protection of Aquatic Organisms and ~~Wildlife[a]~~Wildlife[b]	0.05 mg methylmercury per kg fish	Average wet weight concentration measured in whole fish 5–15 cm in length from Trophic Level 3[c]
	0.1 mg methylmercury per kg fish	Average wet weight concentration measured in whole fish 15–35 cm in length from Trophic Level 3[c]

Note:
[a] The objectives shall be reviewed at least every five years and revised as appropriate to reflect new site-specific data and scientific literature on mercury bioaccumulation and effects in accordance with the Phased TMDL approach (Guidance for Water Quality Based Decisions: The TMDL Process EPA 440/4-91-001)

[b] The freshwater water quality objectives for the protection of aquatic organisms and wildlife also protect humans who consume fish from the Walker Creek and Guadalupe River watersheds.
[c] Trophic Level 3 fish as described in TMDL staff report include small bullheads, carp, small catfishes, black crappie, white crappie, goldfish, killifish, bigscale logperch, misquitofish, California roach, golden shiner, inland silverside, Sacramento sucker, sunfishes (including pumpkinseed, bluegill, redear, and green), and steelhead/rainbow trout

From Page BPA-7

Total Maximum Daily Loads

The TMDLs, shown in Table 7-A, are expressed as methylmercury and mercury concentrations in water and sediment.

Table 7-A: Total Maximum Daily Loads[a]

Waters	TMDLs
Waters upstream of reservoirs and lakes: • Guadalupe Creek upstream of Guadalupe Reservoir • Alamitos Creek • Percolation ponds along these creeks • Tributaries to these waters	0.1 mg mercury per kg suspended sediment (dry wt., annual median) or site-specific load[b]

[a] The TMDLs shall be reviewed at least every five years and revised as appropriate to reflect new site-specific data and scientific literature on mercury bioaccumulation and effects, and experience with the effectiveness and cost of management actions in accordance with the Phased TMDL approach (Guidance for Water Quality Based Decisions: The TMDL Process EPA 440/4-91-001).

[b] May be revised to include consideration of site-specific conditions that reflect background concentrations accounting for local geologic features in accordance with studies described under implementation actions for Mercury Mines (BPA-10)

From Page BPA –8

Load and Wasteload Allocations
Concentration-based pollutant allocations by source category, equal to the TMDLs in Table 7-A, are shown in Table 7-B.

Table 7-B: Load and Wasteload Allocations

Source	Load Allocation	Wasteload Allocation
Sources to waters upstream of reservoirs and lakes:		
Mercury mining waste discharged from the New Almaden Mining District, and Santa Teresa and Bernal mercury mines	0.1 mg mercury per kg erodable soil fines (dry wt., median) or site-specific loads [a]	
Mercury-laden sediment discharged from depositional areas in Alamitos Creek, Guadalupe Creek upstream of Guadalupe Reservoir, tributaries to these creeks, and percolation ponds along these creeks	0.1 mg mercury per kg erodable soil fines(dry wt., median)[a]	
Nonurban stormwater runoff discharges	0.1 mg mercury per kg suspended sediment (dry wt., annual median)[d]	

Notes:
[a] The Load and Wasteload Allocations shall be reviewed every five years after adoption and revised as necessary to incorporate new information in accordance with the Phased TMDL approach. Soil fines (i.e., particulates, suspended sediment) are less than 63 microns in diameter. Erodable soil is the portion of bulk material that is potentially available for transport by storm runoff or already deposited in the stream. The erodable soil fines allocations are equal to the mercury suspended sediment TMDLs in Table 7-A and may be revised to include consideration of site-specific conditions that reflect background concentrations accounting for local geologic features in accordance with studies described under implementation actions for Mercury Mines (BPA-10).

[b] The methylmercury allocation to reservoirs and lakes is equal to the methylmercury TMDL in Table 7-A.

[c] The urban stormwater runoff allocation is proportionally equivalent to the mass allocation (7.2 kg mercury per year) in the San Francisco Bay mercury TMDL. The urban stormwater runoff allocation is the fraction of the Santa Clara Valley Urban Runoff Pollution Prevention Program allocation attributed to the Guadalupe River watershed. The urban stormwater runoff allocation implicitly includes all current and future permitted discharges within the geographic boundaries of municipalities and unincorporated areas including, but not limited to, California Department of Transportation (Caltrans) roadways and non-roadway facilities and rights-of-way, atmospheric deposition, public facilities, properties proximate to stream banks, industrial facilities, and construction sites.

[d] The nonurban stormwater runoff allocation is proportionally equivalent to the mass allocation (0.5 kg mercury per year) in the San Francisco Bay mercury TMDL. The nonurban stormwater runoff allocation is the fraction of the regionwide allocation attributed to the Guadalupe River watershed. The background mercury concentration in nonurban and non-mined areas is equal to the nonurban stormwater runoff allocation (0.1 mg mercury per kg suspended sediment), and includes mercury from both naturally occurring mercury in soil and atmospheric deposition.

[e] The atmospheric deposition allocation to water surfaces in the Guadalupe River watershed is equal to the rate in the San Francisco Bay mercury TMDL.

From Page BPA-10

These orders will collectively require the responsible parties to:

1. Develop a workplan describing the planned approach to evaluate erosion potential of mining waste including consideration of background mercury concentrations that account for local geologic conditions in areas under the Responsible Party's jurisdiction. Submit the workplan for review and approval by the Executive Officer within 180 days after approval of Final TMDL and BPA by US EPA

2. Conduct investigations in the workplan and ~~a site investigation evaluating the erosion potential of mercury mining waste and the potential for seeps to discharge mercury from mining waste to receiving waters.~~ submit the site investigation report for review and approval by the Executive Officer in accordance with the workplan ~~within the first two years of Phase 1, but no later than December 31, 2009.~~

~~2.~~3. Develop plans and schedules to control mercury mining waste discharges to receiving waters. Submit plans and schedules for review and approval by the Executive Officer within 6 months of approval of the investigation report. Implement the approved plans in accordance with the approved schedule

~~3.~~4. Cleanup and abate discharges of mercury mining waste within ~~the 10-year duration of Phase 1~~approved schedule. Submit a cleanup report for review and approval by the Executive Officer ~~no later than December 31, 2017.~~within the approved schedule

~~4.~~5. Monitor to evaluate the following:

a) effectiveness of erosion control measures
b) mercury loads discharged annually to waters of the State at the points of discharge
c) fish bioaccumulation of mercury in waters downstream of the discharge
d) mercury loads discharged annually to San Francisco Bay, and
e) answer the questions posed by special study 3b