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BY U.S. MAIL AND E-MAIL: caustin@waterboards.ca.gov

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San Francisco Bay Regional Water Quality
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Comments on Proposed Basin Plan Amendment and Staff Report of Guadalupe River Watershed: Mercury Total Maximum Daily Load (TMDL) Project (February 2008)

Dear Ms. Austin:

On behalf of the Guadalupe Rubbish Disposal Company, Inc. ("GRDC"), we appreciate the opportunity to review and comment on the February 2008 Proposed Basin Plan Amendment (the "BPA") and Staff Report (the "Report") of the Regional Water Quality Control Board's *Guadalupe River Watershed: Mercury Total Maximum Daily Load (TMDL) Project* (the "project"). GRDC owns and operates the Guadalupe Landfill on a portion of the former Guadalupe Mine operations[1] and is therefore very interested in the development of an appropriate, scientifically-based TMDL for the Guadalupe Watershed. We also appreciate the significant amount of work that you and others at the Water Board have committed to both the project and to working with various stakeholders in the Watershed, including GRDC.

After reviewing the BPA and the Report, we respectfully note there are significant problems and several critical defects to the overall TMDL, and a number of areas where there is not an adequate technical or scientific basis for the conclusions reached or recommendations offered. For example, one significant threshold problem with the TMDL is that it does not in fact establish a "total maximum daily

1 Guadalupe Mine operations also occurred on land currently owned by the Midpeninsula Open Space District.

loading" or "allocations" as required by the federal Clean Water Act. Nowhere does the Report establish a total "daily loading" of allowable mercury to the watershed, and nowhere does it establish daily load allocations. Rather, it establishes certain concentration-based "allocations" in some areas, and annual mass-based loading rates in other areas.

While GRDC is critical of and questions much of the BPA and the Report, we are supportive of TMDL objectives and generally supportive – assuming that we correctly understand it – of the implementation strategy for historical mining areas downstream of the impoundments, including the Guadalupe Landfill. Based on the BPA and the Report, we understand the proposed implementation strategy is similar to existing stormwater strategies, including implementation of best management practices for controlling stormwater run-off.

We hope the Water Board will consider our comments and address them before finalizing the TMDL project.

GENERAL COMMENTS

1. The TMDL Does Not Satisfy The Clean Water Act's Requirement That TMDLs Must Be Based on a Daily Limit.

The Report states, "A TMDL need not be stated as a daily load (Code of Federal Regulations, Title 40, §130.2[i]). Other measures are allowed if more appropriate." Report at 8-1. The Board then proposes an approach that adopts seasonal, annual, and concentration-based load allocations, but no daily loads. While GRDC generally favors the Board's preference for adopting TMDLs based on other appropriate and more flexible considerations, the Board's approach directly contradicts a 2006 U.S. Court of Appeals decision in *Friends of the Earth, Inc. v. EPA*, 446 F.3d 140 (D.C. Cir. Apr. 25, 2006). In the decision, the D.C. Circuit held that TMDLs under the Clean Water Act unambiguously require TMDLs must be based on daily, and not seasonal or annual, loads. "Daily means daily, nothing else." 446 F.3d at 142. As a result, EPA may not be able to approve the proposed TMDL because it is not stated as a "daily load."

EPA itself now recognizes the need to address the court's decision in future TMDLs. In a November 15, 2006 memorandum by Ben Grumbles, Assistant Administrator, Office of Water, USEPA issued guidance related to the court decision that supports daily time increments in TMDLs. In the

memorandum, "EPA recommends that all future TMDLs and associated load allocations and wasteload allocations be expressed in terms of daily time increments."[2] This requirement even applies to TMDLs that are under development, such as the Guadalupe TMDL:

> For TMDLs under development that have not yet been adopted by States or established by EPA, EPA recommends that such TMDLs and allocations be revised, if feasible, to be consistent with this memorandum prior to their adoption or establishment. If States adopt and submit TMDLs expressed solely in non-daily terms, EPA expects to ask the submitting State to provide written documentation regarding how the submitted TMDLs and allocations would be expressed in daily terms.

See id.

The Board should revise the proposed TMDL to be consistent with the *Friends of the Earth* decision and EPA guidance.

2. A TMDL Cannot Be Based on Mercury Concentration in "Erodable Soil."

Fundamentally, a TMDL is a "daily load" or a quantity of material that can be discharged into navigable waters on a daily basis, typically expressed as units per day. The BPA and the Report establish a TMDL based not on a daily discharge rate, but rather on a static concentration of mercury in soil, regardless of what total quantity of mercury actually discharges to navigable waters. As such, the 0.1 parts per million ("ppm") and 0.2 ppm "erodable soil fines" standards are not allowable bases for establishing waste load allocations under the Clean Water Act. EPA Region 9's guidance on TMDLs states that "a maximum allowable pollutant load must be estimated to address the site-specific nature of the impairment. The loading capacity reflects the maximum amount of a pollutant that may be delivered to the waterbody and still achieve water quality standards." EPA Region 9, *Guidance for Developing TMDLs in California* at 4 (Jan. 7, 2000) ("EPA Region 9 Guidance"). In stark contrast to this directive from EPA, the Report admits:

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[2] *See* http://www.epa.gov/owow/tmdl/dailyloadsguidance.html.

> [T]he Guadalupe Linkage Analysis (see Section 7.1) for inorganic mercury is qualitative, so it does not provide a scientific basis for a mass load in the Guadalupe River watershed. Report at 8-4 (emphasis added).

This admission is tantamount to conceding that the TMDL does not provide the very information that it is required to provide, namely "an understanding of pollutant loading sources and the amounts and timing of pollutant discharges [that] is vital to the development of effective TMDLs." EPA Region 9 Guidance at 4. Moreover, an "erodable soil fines" standard simply will not and cannot serve to determine "the maximum amount of a pollutant that may be delivered to the waterbody and still achieve water quality standards." The "maximum amount" must be determined based on how much mercury is discharged to the system, and cannot be based on the concentration of mercury in the soil, *i.e.*, one cubic yard of heavily contaminated erodable soil may result in a lower total discharge of mercury than a millions of cubic yards of lightly contaminated soil.

3. An "Erodable Soil" Standard of 0.1 ppm or 0.2 ppm is Excessively Stringent Because It Fails to Account for Dilution.

In addition to disagreeing with the proposed TMDL's use of concentration-based limits, we also believe that the proposed TMDL's approach fails to consider the dilutive effect of uncontaminated sediments from entering into the watershed. If the concentration-based approach is accepted, then the erodable fines standard needs to be derived using the same method for water-based TMDLs, *i.e.*, the erodable fines standard should be raised to include the dilutive effect of clean sediments. As proposed, the erodable fines requirements of 0.1 ppm and 0.2 ppm are excessively stringent and not consistent with the Clean Water Act.

4. A Standard Based on "Erodable Soils" Is Vague and Unworkable.

Even if a TMDL based on mercury concentrations in erodable soils were lawful, the standard is unworkable as a practical matter. How does one determine which soils are "erodable?" Aren't all soils erodable to some degree? The Report defines "erodable soil" as "soil that is transported by storm runoff to receiving waters." Report at 8-17. Thus, for a landowner to know whether certain soils are "erodable soils" those soils must have already been transported by stormwater runoff to receiving waters, making *post hoc* control of those discharges impossible. Conversely, if all soils are – in theory – erodable, then the 0.1 ppm and 0.2 ppm standards become *de facto* cleanup standards. The majority of natural soils

throughout the Guadalupe Watershed would likely exceed this excessively stringent standard, thereby requiring removal or some other form of remediation to ensure that the soils would never become "erodable."

5. An "Erodable Soil" Standard of 0.1 ppm or 0.2 ppm Is a *De Facto* Soil Cleanup Standard That Is Excessively Stringent.

As drafted, the proposed TMDL imposes *de facto* soil cleanup standards that are two to three orders of magnitude more stringent than cleanup standards developed and typically applied by EPA and the State of California for cleanup of mercury contamination of soils. For example, EPA Region 9 has developed "preliminary remediation goals" or "PRGs" for mercury concentrations in residential and industrial soils. These PRGs are not cleanup standards *per se*; rather, they are "tools for evaluating and cleaning up contaminated sites" and "risk-based concentrations that are intended to assist risk assessors and others in initial screening-level evaluations of environmental measurements." For mercury, EPA has set the PRGs at 23 mg/kg for residential soils and 310 mg/kg for industrial soils. Similarly, the California Human Health Screening Levels sets screening levels of 180 mg/kg for commercial/industrial properties and 18 mg/kg for residential properties.[3]

While the BPA and the Report lack any valid basis for setting the erodable soil standard at 0.1 mg/kg, it explains that the 0.2 mg/kg erodable standard is based on the San Francisco Bay Mercury TMDL. Yet, there is no explanation in the Report as to why a marine mercury sediment standard is appropriate for a freshwater "erodable soil" standard, especially given that the locations are substantially different in terms of potential to methylate mercury. Further, a review of the San Francisco Bay TMDL reveals that there is little data and no rational basis for defining any quantitative value, let alone serve as the standard in the Guadalupe Watershed TMDL.

In other words, a substantial amount of scientific investigation and evaluation has been undertaken to derive appropriate screening and cleanup levels for soils contaminated with mercury. In contrast, the BPA and the Report admit that it has not undertaken any kind of scientific evaluation of the purported "cleanup standards" other than adopting a background concentration of 0.1 ppm from "background" sediment concentrations in the Lexington Reservoir.

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3 *See* http://www.epa.gov/region09/waste/sfund/prg/files/04prgtable.pdf at 9.

6. Lexington Reservoir Is Not an Appropriate Background Reference Because It Is Not Mineralized.

The Report's decision to use Lexington Reservoir sediments to represent background sediment concentrations is neither justified nor logical. An appropriate reference site should be a site that is mineralized but not impacted by mining operations. In the proposed TMDL, the Report states that, other than a small silica deposit, "there were no other potential mercury deposits identified in the Lexington Reservoir watershed." Report at 3-14 (emphasis added). The Report cannot justify using the Lexington Reservoir – or the areas draining into it – as representative of background conditions in the New Almaden Mining District due to the absence of naturally existing cinnabar concentrations in the soil that would otherwise support mining activities.

7. The TMDL Does Not Provide Evidence That Downstream Mining Wastes from GRDC Are Impacting the Guadalupe Creek.

The BPA and the Report do not provide evidence that there are downstream mining wastes or mercury discharges from the former Guadalupe Mine area impacting the Guadalupe Creek. BPA at 5; Report at 7-1 and 7-7. Although the BPA and the Report assume that there are discharges from the former Guadalupe Mine area, it does not support this assumption with sampling data or other evidence.

8. The Report Confirms That There Is No Need to Assign Allocations to Mining Sources Downstream of the Reservoirs.

The TMDL admits that the reduction of mercury and methylmercury in the reservoirs and upstream mining areas is the key to meeting the water quality objectives. The Report states:

> Although there may be sites for methylation in the stream and river channels ..., their total contribution to methylmercury production is much smaller than the exports from the reservoirs and Lake Almaden during the dry season. This suggests that that reducing methylmercury production to attain TMDL targets in impoundments in the mining district and Almaden Lake will likely also attain targets in downstream waters. Report at 7-14 (emphasis added).

Thus, the Report itself acknowledges that allocations are not necessary for downstream sources in order to meet the TMDL targets. There is no justification for requiring downstream mining sources to implement load reduction strategies to meet the TMDL target.

9. The Guadalupe Mines Are Improperly Included in the New Almaden Mining District.

The BPA and the Report state that mining waste is the largest source of mercury in the Guadalupe watershed and it is located in three general areas. BPA at 5; Report at 7-7. For one of these three areas, it creates a category, the "New Almaden Mining District," and includes the Guadalupe Mine in the category. Report at 3-18. This is arbitrary and improper as the Guadalupe Mine area is distinctly separated in size and location from the extensive mining operations of the New Almaden Mining District.

The BPA and the Report fail to explain the technical basis for creating the "New Almaden Mining District" or provide justification for including the Guadalupe Mine. In fact, mineralized zones mined at the Guadalupe Mines are completely separated from the mines located at Mine Hill and from other mines located along Capitancillos Ridge. Not even the calcsilicate or serpentinite rock formations have any continuity with bedrock formations in the New Almaden Mine

The BPA arbitrarily lumps the Guadalupe Mines with other mines to suggest that the extremely high mercury found in other areas is present near the Guadalupe Mines. No data is provided to support this conclusion. In addition, the Report describes mining practices (*e.g.*, dumping mining waste rock away from the mine and into creeks) in the New Almaden Mining District that resulted in extensive mercury disposal into Alamitos Creek.

There is no evidence that similar practices occurred at the Guadalupe Mines. To the contrary, mine waste rock as mapped by the USGS was kept close to the mine openings. Also, a 500-foot long U-shaped concrete channel that was constructed to prevent waters from infiltrating into sub-surface mines has the ancillary benefit of preventing mine waste from entering Guadalupe Creek.

Further, the Report provides support for excluding the Guadalupe Mine from this arbitrary category "New Almaden Mining District." It indicates that sites located downstream from the reservoir, such as the Guadalupe Mine, appear not to be the cause of elevated methylmercury levels. Report at 7-9. Also, much of the Lower Guadalupe Creek has been restored by the Santa Clara Valley Water District by the removal of sediments.

10. It Will Not Be Necessary to Impose Additional Requirements on Downstream Sources If the Upstream Reductions Achieve the Objectives of the TMDL.

The BPA appropriately focuses on the upstream control of mercury, requiring special studies over a 10 year period to examine issues upstream. BPA at 14 and 15. For example, one downstream study is only triggered "if the fish targets are not attained downstream by methylmercury controls in the reservoirs and lakes." BPA at 15. This properly puts the burden on improving the upstream controls in the upstream areas where extensive mining operations occurred. Even if the upstream controls are implemented within the next ten years and prove effective, the methylmercury concentrations caused by upstream sources may take an additional number of years to show reductions in the downstream fish.

Successful methylmercury control actions will not instantly result in reductions in fish tissue concentrations downstream. As a result, the 10-year plan to attain targets upstream in the lakes and reservoirs would need to be completed and assessed before appropriate downstream reduction measures could be effectively implemented. Thus, it would not be appropriate or necessary to impose additional requirements on downstream sources if in fact the upstream reductions will eventually result in achieving the goals of the TMDL.

11. The Allocation for Mining Waste Discharges from Areas Below the Reservoirs Should Be Increased Substantially.

Even if the Report continues to assign allocations to downstream mining sources, those "erodable soil" concentrations should be increased substantially. For facilities located in mining areas downstream of the reservoirs (such as the Guadalupe Landfill), the Report arbitrarily selects an erodable soils standard of 0.2 ppm mercury. Indeed, the Report admits that it has little basis for this number, other than the fact that the proposed San Francisco Bay TMDL uses a 0.2 ppm standard. The Report admits that, for the mining areas that do not drain to impoundments, "The Linkage Analysis (Section 7) <u>does not provide a quantitative linkage</u> for this segment of the watershed." Report at 8-5 (emphasis added). At most, the Report concludes that those areas downstream of impoundments contribute far less to the production of methylmercury than what the reservoirs contribute:

> Although there may be sites for methylation in the stream and river channels, it appears that their total contribution to methylmercury production and bioaccumulation is <u>much smaller</u> than the reservoir exports during the dry season. Report at 7-9 (emphasis added).

> [T]he methylmercury discharged from the deep impoundments is <u>much greater</u> than the in-stream production (Section 7.3). Report at 8-5 (emphasis added).

Thus, the 0.2 ppm erodable soils standard is arbitrary and unnecessarily stringent for these limited downstream areas.

12. The Derivation of the 0.1 ppm/0.2 ppm Standards is Arbitrary and Logically Flawed.

The Report's target mercury concentrations in "erodable soil" are based on flawed logic. It reasons that: (1) fish in the Lexington Reservoir have acceptable mercury levels; (2) average mercury levels in the Lexington Reservoir sediments are less than 0.1 ppm; therefore (3) locations where sediment mercury concentrations exceed 0.1 ppm or even 0.2 ppm will result in fish with unacceptably high mercury concentrations. Report at 7-2 and 8-4. This logical progression is invalid. One cannot reason that if fish with acceptable mercury burdens live in a reservoir with average mercury concentrations of 0.1 mg/kg, then locations where mercury concentrations exceed 0.1 mg/kg will result in fish with unacceptably high mercury burdens. The Report does not provide any basis or evidence to conclude that fish in areas with sediment mercury concentrations higher than 0.1 ppm or 0.2 ppm will necessarily have mercury concentrations above the fish tissue targets.

13. The TMDL is Improperly Limited to Sediment Load Reduction to Attain Water Quality Objectives for Methylmercury in Fish Tissue.

In proposing water quality objectives for methylmercury in fish tissue, the BPA's attainment strategies focus almost exclusively on sediment load reduction assumed to contain mercury that, in turn, is assumed to cause fish tissue impacts. In doing so, the BPA and the Report fail to justify these assumptions because they do not distinguish methylmercury impacts derived from the erosion of natural bedrock terrain containing disseminated mercury, from legacy natural sediment in creeks and reservoirs, from legacy mine waste in creeks and reservoirs, from actively eroding mine waste piles near former mercury mines, or from air deposition. In other words, the BPA and the Report make two wrong assumptions: (1) all mercury in the system is from former mines; and (2) control of mine wastes will reduce fish tissue methylmercury levels.

As indicated in the Report, the Guadalupe Watershed is the site of rich mercury-bearing ore bodies. *See* Report at 3-14. These ore bodies occur in natural bedrock formations that contain numerous non-ore grade mercury bearing zones and relatively low concentration of disseminated mercury mineralization. The formations are exposed as rock outcroppings to natural processes of weathering and erosion in over approximately 19 square miles of the watershed. At the same time, mapped former mine waste piles are estimated to cover less than a few hundred acres of the watershed. In short, mercury from natural bedrock exposures has been migrating into the watershed for millions of years. The TMDL provides no detailed studies to show that the mine waste piles are eroding any faster or at all. Without distinguishing natural mercury bearing sediments from sediments derived from mine waste piles, the BPA can not properly assume that fish tissue methylmercury levels are not natural for this watershed.

14. The TMDL Will Punish Dischargers Who Reduce Sediment Loading.

A significant problem with the proposed TMDL is that it establishes an erodable soil concentration limit without considering the amount of sediment being discharged. High concentrations of mercury in erodable soils will have *de minimis* impacts on mercury loading into the Guadalupe Watershed if the quantity of erodable soils discharged is negligible. Conversely, large quantity discharges of sediment to the Watershed could substantially increase overall mercury loads to the Watershed even if the mercury concentration in those erodable soils is low.

For example, Table 4.2 of the Report summarizes particulate mercury data. A comparison of North Los Capitancillos Creek Sample E1-9B with Randol Creek Sample E2-16 highlights the perverse results if the TMDL is based on an erodable soil concentration. Sample E1-9B has the lowest concentration of mercury, yet one of the highest total suspended solids ("TSS") concentrations. Conversely, Sample E2-16 has a higher mercury concentration, yet a substantially lower TSS concentration. When judged on the basis of total quantity of mercury in soil, the first sample fares substantially better than the second. However, when compared based on the actual mercury concentrations per liter of discharged water, the second sample contains one-tenth the mercury loading of the first sample. Thus, even though the second discharge is one-tenth the quantity of the first, the second discharge will likely require greater remediation efforts than the first under the current Report. In other words, it is fundamentally unfair to regulate discharges of mercury based on only the concentration of mercury in erodable soil without any consideration of the actual TSS discharges.

15. Fish in Lexington Reservoir – the Purported Background Reservoir – Do Not Appear To Meet the 0.3 ppm Target.

It is unclear why the Board has concluded that the fish from the purported background reservoir meet the 0.3 ppm mercury average in "fish consumed by humans." As noted, TL4 fish are the larger species – *e.g.*, largemouth bass – that are typically consumed by humans; therefore, the 0.3 ppm mercury standard would presumably apply to these TL4 fish. If that is the target, then the 0.3 ppm mercury fish concentration would be virtually impossible to achieve in the Guadalupe basin given that this standard cannot even be achieved in the purported background reservoir.

16. The TMDL Should Use the USFDA's 1.0 ppm Mercury Action Level for Fish, Not the 0.3 ppm Target.

The Report notes that the Basin Plan's numeric water quality objective for mercury is derived from the US Food and Drug Administration's action level for mercury of 1.0 ppm,[4] yet nonetheless uses the more stringent value of 0.3 ppm as the target based on EPA's criteria, which has not been adopted for California. Because the water quality objective is based on USFDA's number, this TMDL should use the 1.0 ppm number as its TMDL target.

17. The Board Cannot Unilaterally Establish a TMDL for Methylmercury.

Under the Clean Water Act § 303(d), the Guadalupe River and the Guadalupe Creek are listed as impaired for elemental mercury, not methylmercury. The BPA and the Report ignore this fact and improperly establish a TMDL for methylmercury. It is inappropriate for the Board to establish a TMDL for a pollutant which was not identified in the Clean Water Act § 303(d) list as causing or expected to cause violations of the applicable water quality standards. Further, to the extent the Board desires to establish a TMDL for methylmercury, it must first be listed under the Clean Water Act.

18. The Report Fails To Adequately Quantify Loading From Wet Weather Storm Events in the Upper Watershed.

One glaring – and admitted – defect in the Report is the lack of upper watershed load estimates, particularly during wet weather when increased flows result in higher sediment transport and therefore higher mercury transport. Without this kind of information, it is not possible to develop a defensible

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4 *See, e.g.*, http://www.cfsan.fda.gov/~lrd/fdaact.html#merc.

TMDL. Indeed, even the consultant assisting in the preparation of the Report "strongly recommended" further study:

> Although approximate, this calculation highlights the significance of the storm event loads in the upper watershed, and indicates a major source of uncertainty in the estimated loads presented here: the contribution of large winter storms. Based on this assessment, it appears that the calculated loads presented here are more likely to be underestimates than to be overestimates. . . . Tetra Tech strongly recommended further quantification of the upper watershed loads through additional wet weather data collection in future stages of this project. Tetra Tech also noted that the numerical values of the loads presented in this section are best considered only as estimates useful in comparing the relative magnitudes of different sources in the watershed. Report at 4-19 (emphasis added).

The problems associated with the limited wet season sampling provide an unreliable basis for establishing a proper TMDL. The wet season data was collected during only one wet season making it difficult to understand long-term temporal variability in pollutant loading and stream flows. Furthermore, the data collected is dispersed over the whole watershed and provides at best a snap shot of mercury concentrations at one point in time. Even for the samples collected, it is unclear why flow rates and suspended sediment values were not also collected. Understanding flow rates and sediment loading is critical to understanding the mercury loadings into the watershed.

19. GRDC's Operations Are Fully Regulated.

The Report mentions that GRDC operations are subject to a General Industrial NPDES Stormwater Permit but fails to mention the proper scope of the permit. Report at 4-27. Discharges from the entire operations are covered by the General Permit and are addressed by the Storm Water Pollution Prevention Plan.

20. The TMDL Repeatedly Fails to Support Statement with Data.

In many instances, the BPA and the Report merely alleges findings without evidence. For example, the table on load and wasteload allocations (Table 7-B) indicates that the Guadalupe Creek is a source of mercury because of "mercury-laden sediment discharged from depositional areas in Guadalupe Creek". BPA at 8. There is no data in the BPA or the Report to support this statement. Although the BPA mentions that "[a]ctions are required to control mercury mining waste" (BPA at 10), there is no

data in the BPA or the Report to support this proposal. In fact, the Report mentions that Santa Clara County has already conducted extensive control of mining waste in the New Almaden Mining District and there is no evidence to suggest that controls are needed near the former Guadalupe Mine.

Despite the lack of supporting data, the BPA requires both control and cleanup of mercury mining waste discharges. BPA at 11. This is contradictory. If control of mercury mining waste discharges is needed (*see* Item 2), then it is uncertain why cleanup and abatement of discharges required as well (*see* Item 3). At the same time, if cleanup and abatement is going to occur, it is unclear what control would be needed and why.

21. The Implementation Actions for Mines Has Significant Uncertainties.

The BPA mentions that responsible parties will be required to cleanup mercury mining waste (BPA at 11, no. 3) but fails to define the term "cleanup"; natural background levels; and the contribution linkage of mine wastes not located in creeks and reservoirs.. The BPA discusses the possibility of a study to examine methylmercury production and bioaccumulation in downstream creeks and rivers by "responsible parties." BPA at 15. It is neither reasonable nor practical to expect that all "responsible parties" can coordinate and perform the possible study. How is "responsible party" defined, who makes the determination and how will free-riders be prevented?

22. The BPA and the Report Have Numerous Data Gaps and Uncertainties.

A. Fundamental to the development of a technically and scientifically supportable TMDL is developing a sound understanding of the sources of pollutant discharges, the amounts of those discharges, and the timing of those discharges. EPA Region 9 writes,

> An understanding of pollutant loading sources and the amounts and timing of pollutant discharges is vital to the development of effective TMDLs. The TMDL document must provide estimates of the amounts of pollutants entering the receiving water of concern or, in some cases, the amount of pollutant that is bioavailable based on historic loadings stored in the aquatic environment. These pollutant sources or causes of the problem need to be documented based on studies, literature reviews or other sources of information. <u>Because the source analysis provides the key basis for determining the levels of pollutant reductions needed to meet water quality standards, and the allowable assimilative</u>

> capacity, TMDL, wasteload allocations, and load allocations, quantified source analyses are required. EPA Region 9 Guidance at 4 (emphasis added).

While the Report includes discussion and some analysis of pollutant loading sources, we do not believe that the amount of information or analysis is sufficient for purposes of developing a TMDL. The proposed TMDL contains numerous data gaps, contradictions, and significant uncertainties. Examples include:

(1) Following remediation in the Almaden Quicksilver County Park, the Santa Clara County did not take post-remediation samples. Report at 3-22. This is an important and significant data gap, especially in light of the proposed 0.1 ppm standard. Will the TMDL essentially re-open the relevant consent decrees and/or cleanup orders?

(2) The BPA and the Report fail to identify background soil concentrations of mercury to be used as a comparison with the 0.1 ppm erodable soils standard.

(3) The Report concedes that, because of the absence of flow gauge information at any of the subwatersheds modeled, the SWAT model could not be calibrated, and this is a source of uncertainty (see Section 4.3). Report at 4-4.

(4) The Report admits that the lack of high flow sample data may lead to an underestimation of the load, thus creating another source of uncertainty. Report at 4-5.

(5) The Report recognizes that, like the Monte Carlo simulation for one year, the Monte Carlo simulation for 1960 – 2001 wet seasons (Figure 4.6) is also biased low due to lack of data for high flow events, when the greatest loads occur. Report at 4-22.

(6) The TMDL admits that the linkage analysis is inadequate: "However, the Guadalupe Linkage Analysis (see Section 7.1) for inorganic mercury is qualitative, so it does not provide a scientific basis for a mass load in the Guadalupe River watershed." Report at 8-4.

B. A critical element of any TMDL is to determine the mass loading into the waterbody. "The loading capacity reflects the maximum amount of a pollutant that may be delivered to the

waterbody and still achieve water quality standards." EPA Region 9 Guidance at 4. Yet, the TMDL admits:

> Mass loads were estimated in the Final Conceptual Model Report (Tetra Tech 2005c) with low precision (a high precision monitoring program was cost-prohibitive and unnecessary for the conceptual model). We do not propose to examine mass loads further due to the low precision of the estimate. In contrast, a statistically robust set of impoundment bottom sediment samples were collected (see Figure 7.2) and provide a qualitative linkage from sources to targets (Section 7.1). Report at 7-25.

C. The Report contains other statements reflecting the significant uncertainties infusing the entire TMDL calculations:

> The 2003-04 wet season loads exiting the Guadalupe River to San Francisco Bay (10,000 g) are far higher than the total loads entering the river from all its tributary creeks and from its watershed (800 g). This is a strong indication of uncertainties in the upstream contributing loads, in loads from the highly urbanized area, and in the mobilization of internal sediment loads. Report at 4-11. This lack of calibration adds to the uncertainty, and there is insufficient information to determine whether it might contribute to under- or overestimating the load. Report at 4-18.

> In Figure 4.4, most dissolved mercury loads include a "background" input; however, the Guadalupe Creek load downstream of the reservoir does not include any background load. Report at 4-16. Rather, it attributes 3.9 grams to "mines" without any evidence or sampling to prove this load amount and its sources(s). This discrepancy seems especially significant because the other purported background loads are of the same magnitude or greater than the assumed mine load downstream of the reservoir. If a similar background load were attributed to Guadalupe Creek, then presumably the alleged concentration from the mines would be reduced.

D. More fundamentally, we believe that there is a significant lack of information in the TMDL for assessing temporal and spatial contributions of mercury to the watershed. For example, fish tissue information provides very little information as to what sources are contributing to mercury loads and when those discharges occur. This is especially problematic for sources downstream of the reservoirs where fish tissue concentrations would fail to distinguish between methylmercury generation in the upstream impoundments and generation in the downstream segments.

E. As another example, the TMDL sweeps huge areas of the watershed into the "Mining District" without describing or mapping in more detail the locations of mining areas, mining waste, mining impacts, soil types, background mercury concentrations in soil, and mercury bearing rocks.

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Due to the issues discussed in this letter, GRDC is extremely concerned with the adequacy of the proposed BPA and the Report. We believe that it will require a substantial revision before it is legally adequate and technically or scientifically supportable.

Very truly yours,

Todd O. Maiden

TOM:mm

cc: E. Pettit (via electronic mail)

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