Appendix E

Written comments
on June 30, 2006 documents

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State of California

Memorandum

To: Mr. Bruce H. Wolfe, Executive Officer
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Date: August 16, 2006

From: Robert W. Floerke, Regional Manager
Department of Fish and Game - Central Coast Region, Post Office Box 47, Yountville, California 94599

Subject: Proposed Napa River Sediment Reduction Plan

The Department of Fish and Game, Central Coast Region (Department) wishes to thank you for the opportunity to offer comments on the San Francisco Bay Regional Water Quality Control Board's (Water Board) draft language for the proposed Napa River Sediment Reduction Plan.

The Department fully supports the Water Board's intention to protect natural resources-related beneficial uses of Napa River water, and is pleased to have contributed to the Water Board's efforts to develop a Total Maximum Daily Load (TMDL) for sediment in this watershed.

The following are the Department's comments on the proposed Water Quality Control Plan (Basin Plan) amendment document and the Water Board's Staff Report:

Basin Plan Amendment

1. Pages 1-3—The Water Board has correctly characterized the three primary categories of deleterious impacts to adult and juvenile steelhead and salmon attempting to utilize Napa River resources.

2. Table 1, Page 3—The Department supports proposed TMDL sediment target numbers for spawning gravel permeability and streambed scour.

3. Last Paragraph, Page 4; Table 2, Page 5—In order that the public clearly understands how any proposed critical numbers and proposed policies were derived, text and tabular information should be clearly presented within the Plan. Currently, portions of the discussion, under "Sources," and Table 2 are difficult to fully understand. One problem is that the final estimated sediment load to the watershed upstream of the Napa River at Soda Creek cannot easily be determined from the text or Table 2 alone. A Table 2 footnote informs readers that sediment load estimates do not include sediment deposited in upstream reservoirs. Yet the table does include some upstream sediment data. The reader must determine, at some effort, that approximately 49,000 tons per year of heavier, naturally-occurring sediment captured at upstream tributary reservoirs are not reported in Table 2. However, this naturally-occurring sediment load

is used to estimate the 183 percent total-to-natural load rate estimate. Adding to possible confusion is the use in the text of two different measurement units--metric tons per year and metric tons per square kilometer.

Included with this memorandum for your consideration are the Department's proposed language (Attachment 1) and a revised Table 2 (Attachment 2) that may be models for providing greater clarity for this important supporting information.

4. Table 3, Page 6—The Department supports the magnitude of the load-reduction values proposed in Table 3. (Minor corrections to individual numbers may be necessary.)

The Department believes that in order to reduce current anthropogenic fine-sediment deliveries by 50 percent, it will be necessary to carefully regulate sources from new development proposed on previously undeveloped or abandoned sites. More substantial reductions could be achieved by addressing potential causes of erosion and sediment release from projects in the design phase rather than after project completion. Currently, North Coast and Central Coast Water Board staff participate in timber harvesting plan reviews. Timber harvesting projects in the Napa River watershed may present relatively greater risk of sediment delivery, because almost all of them propose to convert wild or abandoned lands to agricultural use. These projects substantially reduce vegetative cover, disturb and re-contour soils, and install roads and drainage infrastructure—all with the potential for increased sediment release, where there was little or none before. Water Board participation in the field review of land development projects in the Napa River Watershed that are subject to the California Environmental Quality Act (CEQA) and CEQA-alternative review processes would help ensure that these projects are appropriately designed and will be a proper component of the implementation measures specified in the proposed Basin Plan Amendment.

5. First Paragraph, Page 8—The Department supports and encourages the implementation of appropriately aggressive water quality control methods for the River—e.g., adoption of specific water quality objectives for flow in order to more effectively protect critical uses of water to maintain "habitat, fish passage, temperature, and flow enhancement objectives."

6. Table 4.1, Page 9—Overly-generous completion dates in plans sometimes result in unintended program implementation delays. The Department suggests that a completion date of 2010, or 2011 at the latest, is still reasonably attainable and may encourage more timely ongoing action by the implementing parties.

7. Table 5.3, Page 15—The Department supports the proposed implementation actions to help restore fish passage in the watershed.

Staff Report

1. General Comment: The Staff Report is an impressive, technically sound document that clearly reflects extensive work by Water Board staff.

Table 1, Page 6:

2. Column 1 lists "Beneficial Uses." Strictly speaking, Cold Freshwater Habitat and the others refer to titles of beneficial use *categories* and not beneficial uses of water per se. Clean water is "used" to maintain/sustain habitats and the populations of organisms contained therein. Habitats and the organisms themselves are not beneficial uses. Correction of this seemingly minor point will help readers, and especially critics, more easily distinguish between what it is that water quality laws and wildlife laws separately address and protect, and why both are necessary, in concert, to protect aquatic habitats.

2.2 Detailed Problem Statement, Page 8, Paragraph 4 and Page 9, Bullet 4:

Three General Observations

3. Although most steelhead do not spawn in the main-stem, steelhead smolts and adults are affected by channel incision in the main-stem due to lack of habitat complexity. Lack of complexity reduces food resources for smolts and shelter and resting areas for both smolts and adults.

4. River banks along incised channels cannot adequately store water, and this lack of natural storage greatly reduces water availability by riparian vegetation and for recharge into the channel and groundwater systems during the dry season.

5. The process of anthropogenic erosion not only creates large amounts of sediment loading into creeks but also modifies the landscape, fluvial processes, and terrestrial and in-stream habitats--e.g., through loss of water storage capacity of banks, high width-to-depth ratio in channels, loss of riparian vegetation resulting in higher water temperatures, reduced detritus for aquatic species, and loss of the potential for the riparian buffer to filter out chemicals and toxic substances.

6.2 Key Considerations Regarding Implementation, Page 70, Paragraph 2:

6. Is there a danger that achievement of TMDL goals may be hampered by lack of more direct regulation of sediment discharges from numerous small, but cumulatively significant sources (e.g., small agricultural parcels)? Will the Water Board determine those that have the potential to deliver significant amounts of human-caused sediment discharges to the channel network? What agency will follow-up over time to ensure that a low sediment discharge parcel doesn't become a high sediment discharge parcel due, for example, to new ownership or land-use practices?

6.2 Key Considerations Regarding Implementation, Page 71, Bullet 2:

7. What future water quality funding will be available for (a) the implementation of sediment source inventories and controls, (b) the broader set of habitat enhancement actions needed to conserve steelhead and salmon populations, (c) a monitoring program to evaluate progress in restoring steelhead and salmon populations, and

(d) a monitoring program to evaluate progress in restoring water quality and conserving salmonid populations? Wherever possible, federal, state, and local agencies should work collaboratively to recommend grant funding for these actions.

8. The Staff Report states that incentives for proactive participation by the nonpoint source discharge community may include permit waivers and more favorable implementation schedules. Please define "favorable implementation schedules." Does this phrase mean allowing more time to meet targets? If so, please refer to Comment Number 6, above.

6.3 Legal Authorities and Requirements, Page 71, Paragraph 5:

9. The Napa Green program is a relatively well-designed and regionally innovative education, outreach, and self-compliance program. However, does it provide as adequate a set of controls as is found, for example, in the Water Board's individual or general water quality permits—e.g., monitoring of best management practices (BMPs), restoration projects, erosion control plans, and water conservation plans? Does the Napa Green Program have approved quality control or implementation-effectiveness/ validation monitoring programs in place? Experience suggests that farm plans, photographs, monitoring data, and other information are proprietary under the Napa Green Program. Will this hamper accountability of sediment control by participants of the Program?

10. The proposed Amendment specifies the implementation of farm plans certified under the Napa Green Certification Program. As these plans are not public documents and the Napa Green certification board is not a regulatory government body, it would be appropriate to require that the portions of farm plans relevant to sediment and erosion control are incorporated into the record for any general Waste Discharge Requirements (WDRs) or waivers of WDRs issued by the Board for the subject lands. The Board should consider mirroring the requirements of the farm plan in its conditions of approval and retain the option of requiring conditions in addition to those specified in certified farm plans.

11. The Department requests that, where possible, the Water Board carefully and stringently condition and, when appropriate, deny permits of new vineyard development projects where project proponents have historically disregarded prior permit conditions or been subject to prior enforcement actions.

6.5 Discussion of Possible Approaches to Achieve Allocations, Page 74, Paragraph 1:

12. Experience suggests that program compliance inspections of properties participating in the Napa Green Program were, in the past, made irregularly or at best only at initial Program certification. Inspections (by qualified geologists, engineers, or scientists) should be conducted two years after Program certification to determine eligibility for a conditional waiver of WDRs. Reliable third-party monitoring should be required if Napa Green certified farmers are to receive conditional waivers of WDRs. At five years, re-certification inspections should be conducted and re-certification granted if

BMPS and restoration enhancements have been implemented as pledged in the original farm plan.

6.5 Discussion of Possible Approaches to Achieve Allocations, Page 74, Footnote 32, and Page 78, Paragraph 3:

13. The Rutherford Dust Restoration program is a good example of a program operated by local landowners that is driving proactive, presumably long-term TMDL implementation. The capacity-building potential created by the Rutherford group is substantial. Can the Napa Green Program duplicate this level of achievement? What assurance is there that it will survive potential year-to-year changes in levels of grant funding? If the Napa Green Program *were* to end, what TMDL implementation action would be required of previously certified farms once current certifications expire?

6.6.1 Base-flow Enhancement, Page 82, Paragraph 3:

14. The Department fully supports the adoption of guidelines for maintaining in-stream flows to protect and recover anadromous salmonid populations. This should be a regular part of the process for review and approval of new appropriative water right permits for stream channels within the coastal watershed from the Mattole River south to San Francisco, including the Napa River.

15. Long-term third-party monitoring of appropriative and riparian water rights users should be initiated. Existing regulations and permit conditions need to be enforced to the extent possible. Outreach, education, and incentives/disincentives to promote reasonable and legal water diversions should be developed.

6.6.2 Enhanced Fish Passage, Page 82:

16. A comprehensive fish barrier assessment, utilizing Department protocols, should be a high priority. The Water Board should encourage the Napa County Resource Conservation District to continue to pursue grant funding for such an effort.

If you have questions about the comments presented here, please contact Mr. Timothy Stevens, Water Quality's Environmental Services, at (707) 944-5523; or Mr. Carl Wilcox, Habitat Conservation Manager, at (707) 944-5525.

Attachments

cc: Mr. Michael Napolitano
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

ATTACHMENT 1

Alternative Language

Page 4, Bottom Paragraph

The average sediment load rate on the Napa River, measured at Soda Creek, was approximately 273,000 metric tons per year from 1994 to 2004 (Table 2). This value includes some naturally-caused and almost all man-caused sediment loads to the watershed upstream of that point. It does not include approximately 48,800 metric tons per year of the heavier, naturally-originating sediments captured in upstream tributary reservoirs. This heavier material normally remains trapped in those reservoirs, but is part of the total natural background sediment load to the entire Napa River watershed. The upstream reservoirs do release approximately 18,000 metric tons annually of finer, lighter particles originating from both natural- and man-related activities.

One appropriate and informative way to look at sediment loading is in relation to the total natural load a watershed would be subject to in the absence of barriers and other man-related activities and impacts. The entire natural background rate of sediment delivery to the Napa River watershed above Soda Creek, including natural sources above tributary reservoirs, during the ten-year period was approximately 147,700 metric tons per year. Therefore, the average annual measured sediment load to the Napa River at Soda Creek (from 1994 to 2004) is estimated to have been 185 percent of the entire expected natural load (i.e., 273,000/147,700 x 100). Table 2 summarizes individual types of sediment loads to the Napa River at Soda Creek over the 10-year study period.

ATTACHMENT 2

Alternative Table 2
Annual Sediment Loads to Napa River at Soda Creek*
1994-2004

Source	Estimated Mean Annual Sediment Loads (metric tons/year)	
	Downstream of Reservoirs	Total Naturally-caused
Heavier Upstream Sediment Not Released by Dams		
from natural causes		48,700
Fine Upstream Sediment Released by Dams		
from natural causes	7,000	7,000
from man-related activities	11,000	
Lands Downstream of Dams		
from natural causes	92,000	92,000
from man-related activities		
channel incision/bank erosion	37,300	
roads-related	55,400	
Ag-related surface erosion	36,700	
Ag-related gullies/landslides	29,600	
Urban Stormwater Runnoff	4,000	
TOTAL	273,000	147,700

* The drainage area of the Napa River watershed upstream of Soda Creek is 584 km^2.

CITY OF CALISTOGA

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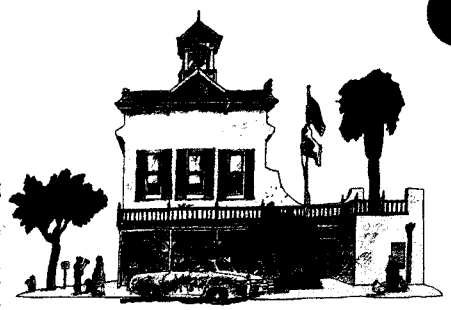

August 15, 2006

Mr. Mike Napolitano
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland CA 94612

RE: Proposed Basin Plan Amendment: Napa River Sediment Reduction and Habitat Enhancement Plan

Dear Mr. Napolitano,

This letter provides comments concerning the proposed basin plan amendment for the Napa River Sediment Reduction and Habitat Enhancement Plan that implements the Total Maximum Daily Load (TMDL) for sediment in the Napa River. These comments are on behalf of the City of Calistoga ("City"). As a water provider for 1500 customers with water rights on Kimball Creek, a tributary to the Napa River, the City objects to the Regional Board's proposed basin plan amendment that would require instream flows to implement the TMDL in the Napa River and its tributaries.

The Sediment TMDL Will Not Be Achieved By Imposing Minimum Stream Flows

The language of the proposed basin plan amendment is a concern to the extent that action taken by the Regional Board is designed to reallocate water from existing beneficial uses by diverters to other uses. There is, of course, a relationship between water quality and water quantity, as the greater the quantity of water, the greater the assimilative capacity. In this case, the Regional Board does not suggest that the sediment TMDL could be met by increasing the Napa River's assimilative capacity. In fact, the Regional Board did not find that there was any connection between low flows and sedimentation of the Napa River.[1] Through its proposed policy of increased stream flows, the Regional Board is not directly addressing water quality at all. The Regional Board is actually recommending increased flows as a means to support a single beneficial use, the fishery (e.g. steelhead and Chinook salmon).

In the Napa River Sediment Total Maximum Daily Load Staff Report (Staff Report), it states that sediment is only one of the factors that are affecting the fishery (Staff Report, p. 9). The Staff Report recommended increasing stream flows as a measure to further benefit the fishery, to supplement the benefit the fishery will receive from achieving the sediment TMDL (*Id*). As increasing flows is not directly tied to achieving the sediment TMDL, the flow

[1] The TMDL identifies human land use practices as the primary cause of sedimentation. The waste load allocations are assigned to natural processes, and human actions including channel incision and associated bank erosion, roads, surface erosion associated with vineyards and grazing, gullies and landslides associated with vineyards and/or intensive historical grazing, and urban stormwater runoff.

recommendation should not be incorporated into the TMDL implementation plan. If the Regional Board wants to consider actions that can be taken to enhance the fishery in addition to meeting the TMDL, it should do so outside of the context of the TMDL.

Other Beneficial Uses Would Be Significantly Impacted By Increasing Stream Flows

The Regional Board's plan to improve the water supply for one beneficial use at the expense of other beneficial uses will potentially be devastating. The City's drinking water supply, and possibly the environment, would be profoundly impacted if the Regional Board were to adopt the proposed basin plan amendment as written.

The General Plan, and the associated water supply plans, for the City have been developed through the year 2020, and beyond, based on the current diversion and bypass requirements. If these plans were undermined through a loss of water rights, the entire community would be negatively impacted because the City's ability to provide economic development and affordable housing would be significantly compromised. Moreover, as the City would have to develop new sources of drinking water, it would have to raise water rates dramatically, which would have the greatest impact on its poorest customers.

The Regional Board's proposal to increase flow could also have negative environmental impacts that the Board has not even considered. For example, the City would have to rely on more imported water, which could lead to or further exacerbate existing groundwater overdraft conditions or otherwise negatively impact the environment.

Increasing Flows May Not Provide Measurable Fishery Benefits

The Regional Board is relying on the assumption that since fish need water, more water is always better. This is not always true. Sometimes more water has little or no benefit because there is insufficient habitat to support a larger population. To the extent the fishery that uses the Napa River could benefit from higher stream flows in tributary streams during certain life stages depends on the quantity and quality of the habitat in those streams. As far as conditions on the Napa River itself are concerned, there has already been an increase in flows resulting from increased reservoir releases (Staff Report at p. ES 20,22), therefore the extent that any further significant benefits can be achieved through additional flows in the Napa River is unclear.

As the Regional Board does not have the authority to change existing water rights, existing water rights cannot be modified to accommodate higher flows without the State Water Board undertaking a large and contentious water rights proceeding. The benefits of which, to the extent there are any, would not be realized in the near future as such a proceeding would be extremely expensive and would likely span many years. As part of TMDL implementation, however, EPA has agreed to allow communities to take voluntary actions to achieve TMDLs before prescriptive actions are taken. In furtherance of EPA policy, the Regional Board should give those in the watershed the opportunity to take voluntary actions to improve the habitat in the tributaries to the Napa River before it considers prescriptive actions like requesting that the State Board conduct water rights proceedings. To do otherwise would burden the State Board with the extractable task of trying to determine minimum flows when it is likely that habitat quantity and quality would negate any benefit that could otherwise be achieved. Moreover,

landowners will be much more likely to cooperate and support habitat enhancement projects if they are not also fighting to protect their water rights.

The City's Recommendation

The City hereby requests that the Regional Board separate its consideration of minimum stream flows from its consideration of what measures would successfully implement the sediment TMDL on the Napa River. As increased flows will not achieve the sediment TMDL, the issue of minimum stream flows is inappropriate for inclusion as part of the TMDL implementation plan. To the extent the Regional Board believes that minimum flows should be imposed, the City requests that the Regional Board give the community the opportunity to undertake voluntary habitat enhancement projects before requesting that the State Board commence massive water rights proceedings that would completely and unnecessarily polarize the region.

Sincerely,

Paul W. Wade
Public Works Director / City Engineer

cc: James McCann, City Manager
Andrew Alexander, M.D., Mayor
Jack Gingles, Vice Mayor
Michael Dunsford, Council Member
Janice von Pohle, Council Member
Karen Slusser, Council Member

\\CC\City\Departments\Public Works\Water\Kimball Water Rights\Napa River Sediment TMDL Comment Letter.DOC

CITY of NAPA

PUBLIC WORKS DEPARTMENT
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August 14, 2006

Mike Napolitano
Environmental Scientist
San Francisco Bay Regional Water Quality Control Board
1515 Clay St., Suite 1400
Oakland, CA 94612

Subject: **Proposed Basin Plan Amendment: Napa River Sediment Reduction and Habitat Enhancement Plan**

Dear Mr. Napolitano:

This letter provides comments concerning the proposed basin plan amendment for the Napa River Sediment Reduction and Habitat Enhancement Plan that implements the Total Maximum Daily Load (TMDL) for sediment in the Napa River. As a water provider for over 80,000 residents in the City of Napa and surrounding areas with water rights on Conn Creek (Lake Hennessey) and Milliken Creek, the City of Napa Water Division objects to the Regional Board's proposed basin plan amendment that would require instream flows to implement the TMDL in the Napa River and its tributaries.

The Sediment TMDL Will Not Be Achieved By Imposing Minimum Stream Flows

The language of the proposed basin plan amendment is a concern to the extent that action taken by the Regional Board is designed to reallocate water from existing beneficial uses by diverters to other uses. There is, of course, a relationship between water quality and water quantity, as the greater the quantity of water, the greater the assimilative capacity. In this case, the Regional Board does not suggest that the sediment TMDL could be met by increasing the Napa River's assimilative capacity. In fact, the Regional Board did not find that there was any connection between low flows and sedimentation of the Napa River.[1] Through its proposed policy of increased stream flows, the Regional Board is not directly addressing water quality at all. The Regional Board is actually recommending increased flows as a means to support a single beneficial use, the fishery (e.g. steelhead and Chinook salmon).

In the Napa River Sediment Total Maximum Daily Load Staff Report (Staff Report), it states that sediment is only one of the factors that are affecting the fishery. Staff Report, p. 9. The Staff Report recommended increasing stream flows as a measure to further benefit the fishery, to supplement the benefit the fishery will receive from achieving the sediment TMDL. As increasing flows is not directly tied to achieving the sediment TMDL, the flow recommendation should not be incorporated into the TMDL implementation plan. If the Regional Board wants to consider actions that can be taken to enhance the fishery in addition to meeting the TMDL, it should do so outside of the context of the TMDL.

Other Beneficial Uses Would Be Significantly Impacted By Increasing Stream Flows

The Regional Board's plan to improve the water supply for one beneficial use at the expense of other beneficial uses will potentially be devastating. The City's drinking water supply, and possibly the environment, would be profoundly impacted if the Regional Board were to adopt the proposed basin plan amendment as written.

[1] The TMDL identifies human land use practices as the primary cause of sedimentation. The waste load allocations are assigned to natural processes, and human actions including channel incision and associated bank erosion, roads, surface erosion associated with vineyards and grazing, gullies and landslides associated with vineyards and/or intensive historical

The General Plan, and the associated water supply plans, for the City have been developed through the year 2020, and beyond, based on the current diversion and bypass requirements. If these plans were undermined through a loss of water rights, the entire community would be negatively impacted because the City's ability to provide economic development and affordable housing would be significantly compromised. Moreover, as the City would have to develop new sources of drinking water, it would have to raise water rates dramatically, which would have the greatest impact on its poorest customers.

The Regional Board's proposal to increase flow would also have negative environmental impacts that the Board has not even considered. For example, the City would have to rely on more imported water from the Sacramento-San Joaquin Delta and/or groundwater, which could lead to adverse environmental impacts. There could also be a build-up of salts in the soil if there is an insufficient supply for irrigation. There could be undesirable land use changes or undesirable changes in farming practices that could negatively impact the environment as a result.

Increasing Flows May Not Provide Measurable Fishery Benefits

The Regional Board is relying on the assumption that since fish need water, more water is always better. This is not always true. Sometimes more water has little or no benefit because there is insufficient habitat to support a larger population. To the extent the fishery that uses the Napa River could benefit from higher stream flows in tributary streams during certain life stages depends on the quantity and quality of the habitat in those streams. As far as conditions on the Napa River itself are concerned, there has already been an increase in flows resulting from increased reservoir releases, Staff Report at p. ES 20,22, therefore the extent that any further significant benefits can be achieved through additional flows in the Napa River is unclear.

As the Regional Board does not have the authority to change existing water rights, existing water rights cannot be modified to accommodate higher flows without the State Water Board undertaking a large and contentious water rights proceeding. The benefits of which, to the extent there are any, would not be realized in the near future as such a proceeding would be extremely expensive and would likely span many years. As part of TMDL implementation, however, EPA has agreed to allow communities to take voluntary actions to achieve TMDL's before prescriptive actions are taken. In furtherance of EPA policy, the Regional Board should give those in the watershed the opportunity to take voluntary actions to improve the habitat in the tributaries to the Napa River before it considers prescriptive actions like requesting that the State Board conduct water rights proceedings. To do otherwise would burden the State Board with the extractable task of trying to determine minimum flows when it is likely that habitat quantity and quality would negate any benefit that could otherwise be achieved. Moreover, landowners will be much more likely to cooperate and support habitat enhancement projects if they are not also fighting to protect their water rights.

Recommendation

The City of Napa Water Division hereby requests that the Regional Board separate its consideration of minimum stream flows from its consideration of what measures would successfully implement the sediment TMDL on the Napa River. As increased flows will not achieve the sediment TMDL, the issue of minimum stream flows is inappropriate for inclusion as part of the TMDL implementation plan. To the extent the Regional Board believes that minimum flows should be imposed, the City requests that the Regional Board give the community the opportunity to undertake voluntary habitat enhancement projects before requesting that the State Board commence a massive water rights proceeding that would completely and unnecessarily polarize the region.

Very truly yours,

Phil Brun, P.E.
Water Division General Manager

cc: City Council
Pat Thompson, City Manager
Mike O'Bryon, Public Works Director

August 12, 2006

Mr. Mike Napolitano
San Francisco Bay RWQCB
1515 Clay Street, Suite 1400
Oakland, CA 94612

RE: Support for Napa River Sediment Reduction and Habitat Enhancement Plan (Alternative 1)

Dear Mr. Napolitano:

It is a pleasure to write in support of the proposed Basin Plan Amendment – Napa River Sediment Reduction and Habitat Enhancement Plan. The multiple elements of the implementation plan that not only address sediment related threats to steelhead and salmon but also include steps to resolve barriers to habitat access, physical habitat complexity, water temperature, and instream flows are all essential to protecting salmonid productivity and survival in the Napa River and key tributaries.

Protection and restoration of aquatic resources has been a primary focus of CLEAN South Bay since our inception in 1988, and we have followed with interest similar initiatives in the Santa Clara Valley that are being advanced by the Regional Board, the Department of Fish and Game, NOAA Fisheries, and other regulatory and resources agencies (including the broader stakeholder community). We long expected this Napa River effort to serve as our model for the array of measures that we need to address locally, so it is especially pleasing to see the comprehensive array of issues and actions that are included in the implementation and monitoring plan. We would also like to especially commend the clarity and conciseness of both the Basin Plan Amendment and the associated Sediment TMDL Staff Report. They are well written, flow smoothly, and together tell a coherent resource protection story - what needs to be done and why - to reduce sediment and enhance habitat in one of our largest watersheds/

Since the Plan has an extended implementation timetable, we strongly encourage you to work with the Napa River watershed community to establish priorities for early actions that will accelerate habitat restoration.

Trish Mulvey

Trish Mulvey, Cofounder
527 Rhodes Drive, Palo Alto, CA 94303
(650) 326-0252 or mulvey@ix.netcom.com

Coalition for Effluent Action Now
in South Bay

Endorsements (partial list):
Bay Area Audubon Chapters --
- Golden Gate
- Madrone
- Marin
- Mount Diablo
- Napa-Solano
- Ohlone
- Santa Clara Valley
- Sequoia

California Native Plant Society --
- Santa Clara Chapter

Citizens Committee to Complete the Refuge
Citizens for Alameda's Last Marshlands
Citizens for Open Space in Alvarado
Committee for Green Foothills
Communities for a Better Environment
Defenders of Wildlife
Fisherman's Wharf Association
Friends of Charleston Slough
Friends of Foster City
Friends of Redwood City
Greenpeace
Mission Creek Conservancy
Natural Resources Defense Council
Northern California Council Federation of Fly Fishers
Pacific Coast Federation of Fisherman's Associations
Peninsula Conservation Center Foundation
Planning and Conservation League
San Francisco Boardsailing Association
Santa Clara County Greenbelt Coalition
Save Our South Bay Wetlands
Save San Francisco Bay Association
Save Wetlands in Mayhews
Sierra Club --
- Bay Chapter
- Loma Prieta Chapter

Silicon Valley Toxics Coalition
South Bay Wetlands Coalition
Sportsmen for Equal Access
The Bay Institute of San Francisco
Tri-City Ecology Center
United Anglers

COUNTY of NAPA

BOARD OF SUPERVISORS

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August 15, 2006

Mike Napolitano, Environmental Scientist
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

SUBJECT: NAPA RIVER SEDIMENT TOTAL MAXIMUM DAILY LOAD (TMDL) AND PROPOSED WATER QUALITY CONTROL PLAN (BASIN PLAN) AMENDMENT

Dear Mr. Napolitano:

Thank you for presenting the Regional Water Quality Control Board's (RWQCB) proposed TMDL and Basin Plan Amendment in Yountville on July 26, 2006 and to the Watershed Information Center and Conservancy Board (WICC) on July 27, 2006, and for responding to some of our initial concerns and questions. The presentations were informative, and we appreciate RWQCB's staff willingness to discuss the derived TMDL allocations and the proposed Implementation Measures outlined in the draft Amendment. We look forward to working with you and your staff throughout the TMDL and Basin Plan amendment process.

As mentioned in our earlier comments, the County supports the RWQCB's overall goals, "to conserve the steelhead population, establish a self-sustaining Chinook salmon population, enhance the health of the native fish community and enhance the aesthetic and recreational values of the Napa River and its tributaries." However, the proposed Basin Plan Amendment is vague, contains many undefined terms, implicitly asserts responsibilities, does not recognize or consider other regional watershed planning and policy development efforts underway by the Regional and State Water Boards, and neglects to account for public and private costs associated with the proposed Implementation Measures (regulatory tools/actions). Our Department of Public Works and Conservation, Development and Planning Departments believe the proposed Implementation Measures are ambiguous, subject to future interpretation - possibly holding responsible parties (public and private) to unattainable and infeasible compliance requirements and timeframes. We also remain concerned with the linkages you've made between the causes and effects. In particular, we question the numeric targets and Implementation Measures suggested in the Basin Plan Amendment. The following list details our greatest concerns:

1. The County appreciates the Water Board's acknowledgment of the effectiveness of the County's conservation regulations by cross-referencing to Chapter 18.108 of the County Code in the surface erosion performance standards for vineyards. (Table 4.1.) The County of course will retain its police power to improve or modify its conservation regulations over time, and is hopeful that, in the event that such changes are made, the Water Board will update its Waste Discharge Requirements (WDRs) accordingly. If WDRs are not adjusted to reflect such changes, the cross-reference will create ambiguity as to which version of the conservation regulations applies. The County therefore requests that the Water Board either update its WDRs whenever the County amends the conservation regulations, or alternatively, that references to Ch.18.108 include the following language "as amended from time to time by the County."

2. The County appreciates the Water Board's acknowledgment of the effectiveness of the Napa Green Certification Program. Please note that the County does not oversee or operate this program. Moreover, this program is likely to evolve over time in an adaptive management process. The Proposed Basin Plan Amendment ("Proposed Amendment") and associated WDRs should reflect such potential changes.

3. Please clarify how other State planning and policy development efforts related to water and watershed management are correlated and interact with the policies and regulatory actions stated in the Proposed Amendment, namely the RWQCB's Stream and Wetland Protection Policy and the State Water Resources Control Board's In-stream Flow Policy (AB2121) under development, and how these additional policies interact with the implementation measures outlined in the Proposed Amendment. These policies, which are currently under development, should not expand or conflict with the responsibilities of the dischargers identified in the scope of the Proposed Amendment; rather, these policies should be developed in a manner to help clarify the proposed Implementation Measures and guide the development of the required WDRs.

4. The County has reviewed the Environmental Checklist (Staff Report, pg 86) used to support the regulatory provisions outlined in the Proposed Amendment and considers many of the environmental impact assessments conclusory, insufficient and not based on substantial evidence, thereby warranting further additional environmental analysis and possibly an Environmental Impact Report in order to be legally adequate. Examples of these inadequacies include, but is not limited to, the following:

    a. In many instances, the Proposed Amendment (and Staff Report) suggests that low stream flow during the dry season is a contributing factor to the impairment issue and proposes "collaboration and coordination" between local municipalities and state and federal resource agencies (DFG, NOAA, State Water Board) to manage reservoir "bypass flows to protect salmonids" and simultaneously meeting water supply and reliability for municipal consumption. The environmental assessment provided in support of these actions states "no impact" to groundwater supply or recharge and "less than significant impacts" to drainage patterns of the Napa River. Release of reservoir water (public or private) to the river during the dry season, a time when

municipal consumption is at its peak, is contradictory to the environmental impact conclusions provided. Increasing flows in the Napa River would have negative environmental impacts to groundwater, as municipalities would rely on more imported groundwater, intensifying existing over draft conditions and river drainage and discharge pattern will be significantly affected.

b. The Proposed Amendment suggests "cooperative and coordinated actions" over "significant distances along the river" to restore "bank width-to-depth ratios and sinuosity (channel movement) values conductive to formation of alternate bars and a modest flood plain" (*see* Proposed Amendment, pg. 7). It is also suggested that "vegetative buffers" be established and maintained "adjacent to engineered and natural channels" to control sediment delivery (*see* Staff Report, pg. 73). The environmental impact assessment offered to support these actions states "less than significant impact" to agricultural resources and the conversion of the Napa Valley's prime and unique farmland to "non-agricultural use" (i.e., vegetative buffers, stream channel and flood plain). Growing premium wine grapes in the Napa Valley is economically vital to our community and agricultural heritage. Conversion of prime farmland to a non-agricultural use is a potentially significant environmental impact that has not been fully considered nor analyzed by the RWQCB.

c. The Environmental Checklist reports "no impact" in regards to conflict with applicable policies or regulations of any agency with jurisdiction in the project area (i.e., Napa River Basin). There are many planning and policy development efforts currently underway in the Napa River Basin. Some of those efforts include the RWQCB's own Stream and Wetland Protection Policy and the State Water Resources Control Board's In-stream Flow Policy (AB2121), as well as the Napa County General Plan Update process. These land use and planning efforts are pending foreseeable projects, yet are not properly discussed nor analyzed in the Environmental Checklist. It is incorrect for the RWQCB to assume "no impact" in these matters.

d. The Proposed Amendment offers no project level specificity in regards to the implementation measures suggested, thus the environmental analysis conducted and the environmental assessments offered in support of the intended actions is "in general programmatic terms" (*see* Staff Report, pg. 99). If the Proposed Amendment is truly programmatic in nature, a Programmatic Environmental Impact Report (PEIR) is warranted to support the environmental findings offered. Without a PEIR to support the Proposed Amendment and Implementation Plan, "entities required to undertake projects to satisfy requirements derived from the Basin Plan" would be subject to review under the California Environmental Quality Act (CEQA) on a project by project basis. This piece-meal approach will overly burden the County, cities, special districts and private landowners and will negate efficiencies captured by the RWQCB conducting a programmatic level environmental assessment.

5. The Proposed Amendment does not define the following terms: "Vineyard owner and/or operator," "Ranch owner and/or lessee," or "Landowner and/or Designated Manager," (see Tables 4.1-4.3).These terms do not appear to be defined in the Basin Plan. The

Proposed Amendment lacks explicit descriptions of the types of land that fall under these categories and the minimum sizes to qualify for regulation, and therefore provides insufficient guidance to dischargers. Moreover, it is unclear whether dischargers could be subject to more than one set of requirements. For example, if a ranch owner operates a vineyard on a portion of its property, is the ranch owner subject to the implementation measures set forth in Table 4.1, Table 4.2, or both? Without a clear definition of terms, dischargers will be unable to determine whether and how the TMDL applies.

6. The Proposed Amendment does not clarify whether the Water Board intends to set forth specific implementation measures for the dischargers identified in Tables 4.1-4.4 when it develops general WDRs by 2010, or whether it intends to delegate the development of specific measures to dischargers via their Reports of Waste Discharge (ROWDs) due in 2012. Under the Proposed Amendment, it appears that dischargers must wait until 2010 to find out whether WDRs will be waived, whether they are subject to general WDRs, or whether they are responsible for proposing implementation measures via their ROWDs. (*See* Table 6.) This creates substantial uncertainty for dischargers, and it may make it difficult for dischargers to meet the 2012 deadline for submitting ROWDs.

7. Tables 4.1-4.4 describe the phrases "accelerate natural recovery" and "minimize human-caused increases in sediment delivery from unstable areas" as "performance standards." These phrases are actions, however, rather than specific, achievable standards. Moreover, these phrases are not explained or defined in the Proposed Amendment. As drafted, the Proposed Amendment does not provide implementing parties with sufficient guidance to develop site-specific erosion control measures to achieve the "performance standards" intended by the Water Board. The Proposed Amendment should be revised to express these actions as objective performance standards, and to define clearly the types of implementing actions that will be required.

8. The phrases "identified management measures," "site specific erosion control measures," and "measures to reduce fine sediment discharge, and enhance stream habitat conditions" are not defined in the Proposed Basin Plan Amendment, and do not appear to be defined in the Basin Plan. (*See* Tables 4.1-4.4.) It is unclear whether these phrases all have the same meaning, or whether the Water Board is referring to different measures. The Proposed Amendment should be revised to include definitions of these phrases, and, if the Water Board intends them to have the same meaning, it should choose one phrase and use that consistently. As presently drafted, the Proposed Amendment does not provide clear guidance to dischargers or to Board staff responsible for implementing the Basin Plan.

9. The cross-reference to the "performance milestones" set forth in Table 6 in the schedule required in the ROWDs filed by vineyards (*see* Table 4.1) raises three issues: First, it is unclear which performance milestones in Table 6 apply to the Water Board, and which to vineyards or other dischargers. For example, some actions are clearly inapplicable to vineyards (e.g. the implementation of "grazing surface erosion management practices"), yet Table 4.1 appears to incorporate all performance milestones in Table 6. Second, the deadline for meeting the first set of performance milestones is 2010, but vineyards'

ROWDs are not due until 2012. Finally, Tables 4.2, 4.3 and 4.4 require implementing parties to include a schedule for implementation of "identified management measures," but do not cross-reference to Table 6. It is unclear whether the requirements are intended to be different for vineyards, or whether this was an oversight.

10. The Proposed Amendment does not define a "recognized third party." (*See* Tables 4.1-4.4.) The County assumes that the Water Board intends to refer to reputable, independent organizations that represent a category of dischargers, such as the Resource Conservation District. As currently drafted, however, the meaning of the term is unclear.

11. The Staff Report estimates the cost of the TMDL's road-related erosion control measures on page 116, Table 12. This table identifies costs to private and public landowners, but does not further break down the costs to vineyard owners/operators, ranch owners/lessees, other landowners, and the specific public agencies involved. These broad estimates make it very difficult for dischargers to understand their potential costs. Moreover, the County would appreciate greater detail on how the Water Board developed these cost estimates, and greater specificity as to the costs to categories of dischargers. The County is under significant financial constraints, and would appreciate development of implementation measures and WDRs that are as cost-efficient as possible.

12. The Staff Report estimates the cost of the TMDL's erosion control measures for "unstable areas," on page 118, Table 15. It appears that this is the estimate for the cost of compliance with measures to achieve the performance standards for "gullies and/or shallow landslides," although the Staff Report uses different terminology and is not clear on this point. Table 15 combines the costs to "Vineyard owners, ranchers, other rural private property owners, and public agencies," and does not further divide costs to the implementing parties. As discussed above, this makes it difficult for dischargers to plan for implementation of the TMDL. The County would appreciate clarification of the derivation of these figures and an effort on the part of the Water Board to develop WDRs in consideration of the County's limited resources.

13. Table 4.4 identifies actions including the submittal of a ROWD to the RWQCB that provide at a minimum a description of the property and an identification of site specific erosion control measures to achieve required performance standards. It is unclear how the County will provide site specific erosion control measures for over 125 miles of public roads identified in the watershed. This implementation action is unclear and it is difficult to understand the economic impact of this requirement. Napa County roads are far from being adequately funded in normal years. In 2006 the County Roads Department was required to borrow funds from the County's General Fund to make road repairs due to storm damage. Although funding was promised from State and Federal agencies for these repairs, the County must now appeal the claims for millions of dollars in work that have been denied funding. Any additional burden to the County's Roads Budget will be difficult. To suggest that future maintenance and storm damage costs will be significantly less due to the recommended actions outlined in proposed Implementation Measures is inaccurate. The most recent and costly storm damage locations were due to landslides caused by saturated soil conditions and not poor

maintenance activities and undersized or poorly designed culverts. The County is concerned about RWQCB assertions that future grants will be a viable source of funding for these and other road related projects recommended in the Proposed Amendment.

14. The Proposed Amendment adopts the County's definition of "Rural Lands," without referencing the definition in the County Code. (Table 4.3, n. 4.) The Proposed Amendment also refers to the County's "Rural Residential" land use designation. (Tables 4.1-4.4, n.1; Napa County General Plan 2-26, 2-39.) The County is concerned that this classification may be either overly broad or overly narrow, and does not focus on lands that are properly the subject of the TMDL (i.e. significant sources of sediment). Moreover, the County is currently in the process of amending its General Plan and its definitions may change based on a wide range of planning considerations. If these definitions are amended by the County, the Proposed Amendment's cross-reference will create ambiguity as to which version of the definition applies. Accordingly, the Water Board should adopt terminology specifically developed for the Basin Plan to ensure that the regulations apply only to lands that are significant sources of sediment.

15. The County presumes that the Proposed Amendment's reference to the "Napa County Municipal Stormwater Program" on Table 4.4 was intended to mean the "Napa County Stormwater Management Program," which is comprised of Napa County, the Town of Yountville, and the cities of Napa, St. Helena and Calistoga. (*See* http://www.waterboards.ca.gov/stormwtr/docs/napa_04_05swmp.pdf.) If the Water Board did intend to refer to this program, it should revise the Proposed Amendment to reflect the correct name.

16. Table 5.3 identifies Action 3.3, recommending the identification and remedy of all significant structural impediments to fish passage in the Napa River and ten key tributaries. No financial impacts were identified in the staff report for this recommendation. Please determine the financial impact of this implementation requirement in order for the County to assess the economic burden it will have on other public programs competing for scarce resources, and so that private individuals and other public entities can fully understand the level of fiscal responsibility and commitment expected of them. Replacement of bridges, culverts, and stream crossings are significant projects and will require extensive designs, permitting, and administration, which will financially burden the responsible parties. Again, the County is concerned about RWQCB's assertions during their presentation suggesting grants will be a viable source of funding for these types of projects.

17. Table 5.2 identifies several actions regarding reservoir bypass flows to maintain suitable conditions for fisheries survival. During RWQCB's presentations, it was noted there was an error in Table 5.2, listing Napa County as an implementing party to conduct water rights compliance surveys. However, it should also be noted that Action 2.2, to "Adopt a plan for joint resolution of water supply reliability and fisheries conservation concerns" is in direct conflict with itself and should be revised further by the RWQCB and the stakeholders involved. Owners of reservoirs in Napa County will see their water supplies for their municipal needs reduced if they are required to release additional water to

streams in order to enhance dry-season flows. To suggest a mutual solution could solve both municipal and fishery needs without the construction of additional significant water supplies is misleading. The financial impacts of constructing supplementary water supply projects could be in the tens of millions of dollars depending on the quantity of water required to be released into streams.

We hope the RWQCB considers and acknowledges our comments in earnest. We look forward to discussing our concerns in more detail and working collectively on improving the proposed Basin Plan Amendment and the future development of appropriate and acceptable WDRs. Please do not hesitate to contact Patrick Lowe (707) 259-5937 or Jeff Sharp (707) 259-5936 on our staff if you have any questions regarding these comments.

Sincerely,

Bill Dodd

Bill Dodd, Chair
Napa County Board of Supervisors

cc:

Hillary Gitelman, Conservation, Development and Planning Director
Robert Peterson, Director, and Donald Ridenhour, Assistant Director Public Works
Rick Thomasser, Flood and Water Control District Engineer
Patrick Lowe and Jeff Sharp, Conservation, Development and Planning
Steven Lederer, Environmental Management Director
Robert Weil, American Canyon City Public Works Director
Michael Brown, Napa City Public Works Director
Myke Praul, Yountville Public Works
Jonathon Goldman, St. Helena Public Works Director
Paul Wade, Calistoga Public Works Director
Watershed Information Center and Conservancy Board of Napa County
Thomas Mumley and Dyan Whyte, San Francisco Bay RWQCB, TMDL Division

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Mike Napolitano
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 140
Oakland, CA 94612

August 14, 2006

Dear Mike,

I writing regarding the Basin Plan amendment to establish a TMDL and implementation plan to achieve the TMDL for the Napa River. I offer this letter as part of the public comment on the plan. My comments are based on a review of the June 30, 2006 Staff Report (Napolitano, Potter and Whyte) and associated documents describing methods and the proposed basin plan amendment. In brief, I am impressed with the comprehensive analysis and, based on the data presented, agree with the basic conclusions.

The variable geology, complex landuse history, and limited field access for direction observation (due to private land) pose significant challenges to developing a TMDL. To meet this challenge, you have developed a strong conceptual framework of how the watershed works, collected essential data to test this framework, analyzed the data to test specific hypotheses, and arrived at conclusions that seem defensible and sensible. The "rapid sediment budget" approach, which you used, is the best way to obtain empirical data needed to define sediment loadings for a watershed TMDL. The combination of reservoir sedimentation measurement and direct observation of erosion features and rates gives strength to your conclusions about accelerated sediment supply associated with landuse. The data establishing a linkage between sediment supply and a biological significant attribute (gravel permeability) are the best I have seen to date in a field study of this kind. These data also give a rational way to set a sediment load target. The channel incision on the mainstem Napa is significant and the recommendation that it be addressed is appropriate.

I am sure that there will be controversy about the proposed amendment. In my view, the amendment is based on the most appropriate approach and methods, and the conclusions are sound.

Sincerely,

William E. Dietrich
Professor

Friends of the Napa River

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August 15, 2006

California Regional Water Quality Control Board
San Francisco Bay Region
Attn. Michael Napolitano, Environmental Scientist
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Oakland, CA 94612
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Total Maximum Daily Load for Sediments in the Napa River Watershed
Project Staff Report of June 30, 2006

We appreciate the opportunity to comment on the above report which describes proposed amendments to the Water Quality Control Plan for the San Francisco Bay Basin establishing a Total Maximum Daily Load (TMDL) for sediments in the Napa River watershed.

Friends of the Napa River (FONR) is a nonprofit community organization dedicated to the restoration, protection and celebration of the Napa River and its watershed. We are actively involved in addressing different concerns about the Napa River such as watershed and habitat protection and restoration, flood protection, river and boating trails, river celebration, and sensible urban riverfront development. In terms of the study, we are concerned about the ***"designated beneficial uses of water for the Napa River"*** described below (see "Background") that are impaired by sedimentation.

We would like to thank the California Regional Water Quality Control Board (Water Board) for the extensive study and the presentation of the findings. Our comments are directed to the implementation plan as outlined in Chapter 6 in the report. We are appending excerpts from the report to establish the context for our Board members.

Comments by Friends of the Napa River:

We generally agree with the findings and support a sensible implementation plan as presented in this report with proposed actions necessary to reduce sedimentation to achieve the water quality objectives. Through the Water Board's public outreach throughout the development of this sediment TMDL, FONR was able to provide input and recommendations that are reflected in this plan.

In particular, we are impressed with the depth and detail in the discussion of possible approaches to achieve allocations related to vineyards, grazing, roads, urban stormwater runoff, and channel incision. We support the proposed ***Habitat Enhancement Plan*** with its detailed recommendations regarding baseflow enhancement; additional study of

juvenile Steelhead growth; *coordination and collaboration between local, state, and federal government agencies*; tools to aid land managers in protecting and/or enhancing dry season baseflow; improved regulatory oversight to protect existing water rights and instream flows for fish; enhanced fish passage and enhanced habitat complexity; and stream temperature protection and/or enhancement.

We applaud the inclusion of references and experience from several current watershed enhancement projects, e.g.

- the Napa River Restoration and Flood Control Project of 1998, with its nationally acclaimed "Living River Principles";
- the establishment and continuity of several watershed stewardships, many of which have developed management plans and/or have implemented, or are planning, large-scale projects to enhance water quality and stream-riparian habitat (Huichica, Carneros, Sulphur, Rutherford, Murphy, Salvador, and others);
- the establishment in May of 1998 of the Napa River Watershed Task Force, comprised of a representative group of stakeholders appointed by the County Board of Supervisors that met to develop recommendations for sustainable land use and natural resource conservation in Napa County;
- the existing Napa County Conservation Regulations;
- Napa Salt Pond Restoration; Napa Green program, etc.

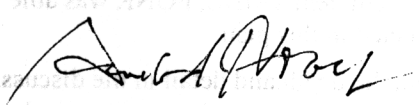
We are pleased to recognize that the TMDL plan will take into account the work on the ground to control erosion and protect or restore habitat conditions ***through voluntary efforts.*** We couldn't agree more that as a result of these and other locally led conservation efforts, it will be much easier to achieve the proposed allocations and targets for sediment (and other pollutants), as needed to restore water quality. We believe that this plan will make a significant contribution toward the conservation and recovery of steelhead, salmon, and other native fish and wildlife species in Napa River and its tributaries.

We offer our support in such efforts by providing informational booths for agencies at our events and participate in training programs for monitoring of the watershed.

We understand that the final basin plan will be developed in close coordination with stakeholders and welcome the opportunity to participate in this process. We strongly urge Water Board staff to discuss any of the proposed, local actions with all interested stakeholders and seek their input in regard to cost and feasibility through structured and well-publicized input meetings.

We applaud the overall intent of this implementation plan to restore and protect beneficial uses of the Napa River and its tributaries by reducing sediment loadings.

Sincerely,



Bernhard Krevet
President, Friends of the Napa River

Appendix: Background (excerpted from the study):

The Napa River and its tributaries are listed as impaired because of too much sediment. The listing was made in response to concerns regarding adverse impacts to habitat for steelhead trout, Chinook salmon, and other threatened species whose populations have declined substantially in recent decades. The Napa River Sediment TMDL will examine this water quality problem, identify pollutant sources, and specify actions to create solutions.

Key Points

- Section 303(d) of the Clean Water Act requires states to compile a list of "impaired" water bodies that do not meet water quality standards.
- In 1990, the Water Board listed Napa River as impaired by sedimentation based on evidence of widespread erosion, and concerns regarding adverse impacts to fish.
- This report contains Water Board staff analyses and findings pertaining to sediment impairment in the Napa River.

The California Regional Water Quality Control Board, San Francisco Bay Region (Water Board) regulates surface and groundwater quality throughout the Bay Area including Napa River and its tributaries. By law, the Water Board is required to develop, adopt, and implement a **Water Quality Control Plan (Basin Plan)** for the San Francisco Bay region.

The **Basin Plan** specifies and describes:

- Designated beneficial uses of water
- Water quality objectives, which are parameters that can be evaluated to determine whether the designated beneficial uses are protected
- Implementation plans and policies to protect water quality

Designated beneficial uses of water for the Napa River include the following:

- Water supply (agricultural, municipal, and domestic)
- Recreation (fishing, swimming, boating, etc.)
- Navigation
- Fish migration and spawning
- Cold and warm freshwater habitats
- Wildlife habitat
- Preservation of rare and endangered species

Beneficial uses adversely affected by excess sediment in the Napa River are recreation (i.e., fishing), cold freshwater habitat, fish spawning, and preservation of rare and endangered species.

[...]

The Report includes a **Problem Statement** that describes the relationships between the identified pollutants (sediment), applicable water quality objectives and beneficial uses, and current water quality conditions in Napa River and it is tributaries. The problem statement also describes factors limiting steelhead run-size in the Napa River watershed. The **Sediment Source Analysis** presents the approach, methods, and results of the sediment source analysis and presents the rationale to support proposed water quality parameters and **Numeric Targets**, and their relation to the attainment of applicable water quality standards. Further, **Linkage Analysis and Allocations,** describe hypothesized linkages between sediment loads and habitat conditions, and therefore provides the rationale for estimating the assimilative capacity for sediment in the Napa River. Allocations are amounts of sediment allocated to each source category, including a margin of safety to account for uncertainty in estimating loads and assimilative capacity, and allowance for future growth. The **Implementation Plan** discusses actions needed to attain water quality standards for sediment and to protect and/or enhance other stream habitat conditions and includes a monitoring plan. The **Regulatory Analysis** contains legally required analyses of potential environmental impacts and costs that may be associated with the adoption of the proposed Basin Plan amendment.

[...]

CHAPTER 6: IMPLEMENTATION PLAN

The ultimate goals of the Napa River Sediment TMDL and Habitat Enhancement Plan are to:

- Conserve the steelhead trout population
- Establish a self-sustaining Chinook salmon population
- Enhance the overall health of the native fish community
- Enhance the aesthetic and recreational values of the river and its tributaries

To achieve these goals, specific actions are needed to:

- Attain and maintain suitable gravel quality and diverse streambed topography in freshwater reaches of Napa River and its tributaries
- Protect and/or enhance base flows in tributaries and the main stem of the Napa River
- Reduce the number and significance of human-made structures in channels that block or impede fish passage
- Maintain and/or decrease summer water temperatures in tributaries to the Napa River

The Implementation Plan describes actions recommended to reduce sediment supply and enhance baseflow, fish passage, and stream habitat complexity, as needed to achieve the above stated goals. First, we provide an introduction to this topic. As suggested by definitions of *implement* and *plan*, a TMDL implementation plan is "a detailed

description of a program of actions" (*plan*) to "ensure actual fulfillment by the performance of specific measures" (*implement)* that are needed to restore clean water. USEPA has further recommended that TMDL implementation plans include each of the following elements: (USEPA, 1999):

- List of actions needed to achieve pollutant allocations and numeric targets specified by the TMDL, and a schedule, including interim milestones for implementation of those actions
- Reasonable assurances (provided by the state water quality agency) that implementation actions specified in the plan will occur. These include being able to demonstrate that the specified actions will be effective, and that adequate resources will be available to successfully execute the program.
- A description of the legal authority (of local, state, and/or federal government agencies) under which the necessary actions will or could be required
- Monitoring or modeling plan, including milestones for measuring progress, in achieving water quality standards
- Adaptive management plan that includes a schedule for iterative update(s) of the TMDL in response to monitoring or modeling results, and/or other information that is new and relevant to the determination of whether water quality standards have been achieved
- Estimated amount of time required to restore clean water including basis for estimate

[...]

6.4. Implementation Strategy

The Source Assessment presented in Chapter 3 identified five significant categories of human caused sediment sources in the Napa River watershed. These sources are:

1. road-related erosion,
2. vineyards,
3. grazing,
4. erosion from bed and banks of the Napa River, and
5. urban stormwater.

Erosion processes that relate to these sources are:

a) sheetwash from land uses (grazing and vineyards);
b) road-related erosion (surface erosion from roads, erosion at stream crossings, and landslides and gullies caused by roads);
c) gullies and landslides caused by land uses that concentrate runoff (grazing, roads, and hillside vineyards); and
d) d) channel incision and associated stream terrace bank erosion.

[...]
(End of Appendix)

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August 15, 2006

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Re: Comments on Proposed Basin Plan Amendment for Napa River

Dear Mr. Napolitano:

The following questions and comments are primarily concerned with those portions of the Proposed Basin Plan Amendment: Napa River Sediment Reduction and Habitat Enhancement Plan ("BPA") and the related Napa River Sediment Total Maximum Daily Load Staff Report ("SR" or "Staff Report") that address problems associated with low summer flows in the Napa River. Hereinafter, the San Francisco Bay Regional Water Quality Control Board will be referred to simply as "the Regional Board," and the Regional Board staff will be referred to simply as "Staff." Direct questions for Staff and specific comments on the documents are italicized.

I. The Significance of Low Summer Flows.

The Staff Report states that "[l]ow summer base flow and poor habitat access appear to be the most important factors in the decline of steelhead." SR, page 5. The Staff Report further states that "sediment impairment in [the] Napa River watershed is one of several factors that need to be addressed to conserve and enhance the size of the steelhead run," and goes on to list "[p]oor baseflow persistence occurring in combination with stressful water temperatures" as factors "that appear to severely limit the growth of juvenile steelhead." SR, page 6, emphasis added. The Staff Report then indicates that the implementation plan in Chapter 6 is intended "to address all of the above stressors on growth and survival of steelhead and salmon in [the] Napa River watershed." SR, page 6. The Staff Report examines the problems associated with low summer flows in greater detail in Chapter 6, at section 6.6.1, titled "Baseflow Enhancement."

The Napa River Basin Limiting Factors Analysis Final Technical Report prepared for the

Regional Board by Stillwater Sciences ("the Stillwater Sciences Report") provides a more comprehensive analysis of the issue, and states at page 49 that "[n]o factor is as fundamental to the health of a stream system as flow."

II. Implementation Measures Intended to Protect and/or Enhance Low Summer Flows.

One of the "four categories of action" intended "to address concerns regarding low flows during the dry season" is "coordination and collaboration between local, state and federal government agencies." SR, page 81. The discussion of possible "coordination and collaboration" between the various agencies begins with a discussion of priorities for development of "a reliable water supply to meet future projected demand," including "increased production of tertiary treated wastewater and infrastructure improvements to deliver the treated wastewater where it can be used." *Although "discharge of tertiary treated wastewater" shows up in Table 10 at page 100 of the Staff Report, there is no mention of it in the narrative description of implementation measures in Section 6.6.1. As the discharge of tertiary treated wastewater may be one of the only possible implementation measures which does not involve a reduction in available municipal water supplies, this omission is inappropriate, and significantly compromises the document.* The Staff Report characterizes "lack of cooperation" between the agencies as having the potential to "contribute to an unpredictable and/or reactive process that may diminish municipal water supply and result in a flow regime downstream of dams that is less favorable for fish." SR page 81. *Please explain how lack of interagency cooperation might lead to diminished municipal water supplies and degradation of the downstream habitat. Given that California Fish & Game Code Section 5937 requires all dam owners to release sufficient water "to keep in good condition any fish that may . . . exist below the dam," please include in your explanation how lack of interagency cooperation could lead to degradation of the downstream fish habitat without placing the state and municipal dam owners in violation of Section 5937. Please also explain how these circumstances could lead to degradation of the downstream habitat without placing the relevant state agencies in violation of the public trust doctrine, which "[preserves] ... the sovereign power of the state . . . to preclude anyone from acquiring a vested right to harm the public trust, and imposes a continuing duty on the state to take such uses into account in allocating water resources."* National Audubon Society v. Department of Water and Power, 33 Cal. 3d 419, 452.

Another of the categories of action is titled "[t]ools to aid land managers in protecting and/or enhancing dry season baseflow." The repeated use of phrases like "protecting and/or enhancing" leads to a number of important questions which cannot be answered – at least so far as this reader can tell – from a review of the Staff Report and related documents: 1) *Are existing summer flows in the main stem of the Napa River adequate for a healthy steelhead population, or do those flows require enhancement?* 2) *Are existing flows in the tributaries of the Napa River adequate for a healthy steelhead population?* 3) *If existing flows are inadequate, where will the water to enhance those flows come from?* The author of this letter recognizes that the discussion of interagency collaboration implies some possible answers to the third of these questions, but it does

not answer the question in a clear or comprehensive manner. *If, for example, there is an expectation that upgrading the Jameson Canyon water treatment plant and increased production and delivery of tertiary treated wastewater will enable municipal dam owners to release more water during the summer, the Staff Report should say so. As stated above, the undersigned does not believe this discussion can be complete without discussion of the possibility of discharging tertiary treated wastewater directly into the Napa River.* 4) *What are the minimum summer flows in the Napa River and its principal tributaries necessary to support a healthy steelhead population? If the answer is presently unknown, how does the Regional Board staff propose to find out?* 5) *Has Regional Board staff consulted with Fish & Game on the subject of the adequacy or inadequacy of existing summer flows in the Napa River and its tributaries?* Personally, I don't see how anyone can read the Stillwater Sciences Report on which staff clearly relies in this regard without reaching the conclusion that current summer flows are inadequate.

Table 5.2 of the Basin Plan Amendment proposes as one possible implementation measure an action by the State Water Board (Division of Water Rights) to "adopt reservoir bypass flows as needed to protect salmonids downstream of municipal water supply reservoirs. Read together with the statement in the Staff Report at page 81 that "lack of collaboration . . . may diminish municipal water supply and result in a flow regime downstream of dams that is less favorable for fish," one can only conclude that Regional Board staff is contemplating the possibility that implementation of the BPA will lead to State Water action to require additional releases from the municipal reservoirs. Indeed, if existing summer flows are inadequate, and no other means sufficient to enhance flows to a level adequate to support the salmonid species is undertaken, then the Public Trust Doctrine would seem to require State Water Board Action to increase releases from the municipal (and other) reservoirs. To put it bluntly, both the Basin Plan Amendment and the Staff Report seem to pussyfoot around this obviously sensitive matter. This is a mistake, and does a huge disservice to all concerned. *Both the Staff Report and the BPA need to be revised to make it clear that possible implementation measures include State Water Board action to (a) require increased releases from municipal and other reservoirs, as well as (b) new restrictions on diversions by riparian rights holders.*

III. Environmental Impacts.

The discussion following the initial study checklist specifically characterizes the implementation plan to enhance summer flows as too speculative to be evaluated. SR, page 101. I disagree, at least to the extent that the Staff Report takes the position that none of the actions that might be taken to increase summer flows are sufficiently foreseeable to require environmental review in connection with the BPA.

1) Additional Releases into the Napa River and its Tributaries. The Staff Report clearly contemplates the release of water into the Napa River and its tributaries to be a foreseeable consequence of the implementation plan. See SR at page 101. Discussion of the physical consequences of such releases is limited to an increase in the amount of

riparian vegetation. Ibid. There is no discussion of the potential for scouring of the dry riverbeds or other direct physical consequences that might result from releases that are poorly timed, quantified, or managed releases. See discussion in *S.D. Warren v. Maine*, 126 S.Ct. 1843 (holding that releases from dams require certification under Section 401 of the Clean Water Act). *The Staff Report should be amended to include a discussion of potentially significant adverse impacts arising out increased releases of water intended to enhance summer flows, and should, if feasible, identify mitigation measures adequate to reduce such impacts to a level of insignificance.*

2) New Constraints on Surface Water Supplies. As discussed above, although the Staff Report is unacceptably vague on this subject, it does, by logical inference and implication, contemplate the possibility of new constraints on existing surface water supplies that provide water to local municipalities. In addition, both the BPA and the Staff Report expressly acknowledge the State Water Board's pending adoption of new in-stream flow guidelines. Given the continued population growth of California and the San Francisco Bay Area, and considering the existing law which requires Napa County and all its municipalities to plan for the development of new housing adequate to meet this area's fair share of regional growth, increased demand for water is a given, and should be taken for granted by all concerned. In the absence of a comprehensive scheme for water supply management which includes both surface and underground water supplies under a single, consistent scheme of regulation, one must assume that, in the face of continuing population growth and the related increase in demand for water, new restrictions on the availability of surface water will necessarily result in increased demand for and extraction of groundwater. Increased groundwater extraction may result in a number of potentially significant adverse impacts on the physical environment, including, but not limited to, reductions in in-stream flows. See the Stillwater Sciences Report at page 50 ("[g]roundwater pumping, small dams and flow diversions all may reduce baseflow.") In addition, increased groundwater extraction may result in reduced subsurface flows, with a resulting loss of riparian and other vegetation, the loss of large trees, the loss of associated habitat for raptors, and the loss or endangerment of sensitive species of both flora and fauna. *The Staff Report should be amended to include a comprehensive discussion of the potentially significant adverse impacts arising out of increased groundwater extraction, and should, if feasible, identify mitigation measures adequate to reduce such impacts to a level of insignificance.*

In sum, the Staff Report is inadequate to support its conclusion that there are no potentially significant adverse impacts arising out of the proposed Basin Plan Amendment and its implementation measures. On the contrary, there is a fair argument that the BPA may have potentially significant adverse impacts arising out of the implementation measures adopted in order to enhance and/or protect low summer flows, and this argument can be made, at least in significant part, based on the information already prepared for and reviewed by the Regional Board in connection with its BPA.

IV. Costs.

While acknowledging the difficulty of any credible effort to estimate the costs associated with the potential reduction in the water available to local municipalities and property owners arising out of the implementation measures adopted to protect and/or enhance summer flows in the Napa River and its tributaries, from a public policy perspective the absence of any discussion at all is at best troubling, and at worst irresponsible.

V. Conclusion.

Sadly, producing comments on public projects and related documents in a timely fashion generally requires an emphasis on perceived (and real) deficiencies, and results in a corresponding lack of praise for real (and perceived) merits. The undersigned, while firmly convinced that the documents are both legally and substantively inadequate in their current form - at least with regard to the tremendously important and politically sensitive subject of low summer flows - and though equally convinced that the project has potentially significant adverse impacts which are not identified or discussed as the law requires, nevertheless wishes to acknowledge the tremendous effort and accomplishment reflected in the proposed Basin Plan Amendment and accompanying Staff Report.

Very truly yours,

Lester F. Hardy

LEXSEE 33 CAL. 3D 419,AT 449

NATIONAL AUDUBON SOCIETY et al., Petitioners, v. THE SUPERIOR COURT OF ALPINE COUNTY, Respondent; DEPARTMENT OF WATER AND POWER OF THE CITY OF LOS ANGELES et al., Real Parties in Interest

S.F. No. 24368

Supreme Court of California

33 Cal. 3d 419; 658 P.2d 709; 189 Cal. Rptr. 346; 1983 Cal. LEXIS 152; 21 ERC (BNA) 1490; 13 ELR 20272

February 17, 1983

SUBSEQUENT HISTORY:

The Petitions of Real Parties in Interest State Lands Commission, State of California and State Water Resources Control Board for a Rehearing were Denied April 14, 1983, and the Opinion was Modified to Read as Printed Above. Richardson, J., was of the Opinion that the Petitions should be Granted.

DISPOSITION:

Let a peremptory writ of mandate issue commanding the Superior Court of Alpine County to vacate its judgment in this action and to enter a new judgment consistent with the views stated in this opinion. n34

n34 The superior court should determine whether plaintiffs are entitled to attorney fees under *Code of Civil Procedure section 1021.5* and *Woodland Hills Residents Assn., Inc. v. City Council (1979) 23 Cal.3d 917, 938-940 [154 Cal.Rptr. 503, 593 P.2d 200]*.

SUMMARY: CALIFORNIA OFFICIAL REPORTS SUMMARY

An environmental organization and others asserting the diversion of waters from a lake to a city aqueduct violated the public trust doctrine petitioned the Supreme Court for a writ of mandate after the trial court entered summary judgment against plaintiffs, concluding that the public trust doctrine offered no independent basis for challenging the diversions at issue and that plaintiffs had failed to exhaust their administrative remedies. Plaintiffs' suit was originally filed in state court and then transferred to federal district court, which stayed proceedings under the federal abstention doctrine pending a state court determination of such issues.

The Supreme Court issued a peremptory writ of mandate commanding the trial court to vacate its judgment and to enter a new judgment consistent with the views stated in the court's opinion. The court held that the state has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible. The state is not confined by past decisions and has the power to reconsider allocation decisions, even though such decisions were made after due consideration of their effect on the public trust. Decisions which failed to weigh and consider public trust uses present an even stronger case for reconsideration. Thus, the court held the water allocation decision at issue was entitled to reconsideration, particularly since no responsible body had ever determined the impact of such diversion or whether some lesser taking would better balance the diverse interests involved. As to the exhaustion of administrative remedies, the court held plaintiffs were not required to present their claim to the California Water Resources Board, since the courts and the board had concurrent jurisdiction. (Opinion by Broussard, J., with Bird, C. J., Mosk, Kaus and Reynoso, JJ., concurring. Separate concurring opinion by Kaus, J. Separate concurring and dissenting opinion by Richardson, J.)

HEADNOTES: CALIFORNIA OFFICIAL REPORTS HEADNOTES

Classified to California Digest of Official Reports, 3d Series

(1) Waters § 191--Water Litigation--Parties--Standing to Sue--To Enjoin Violations of Public Trust. --An environmental organization and others had

standing to sue a local water department to enjoin its diversion of fresh water from a lake on the theory that the shores, bed, and waters of the lake were protected by a public trust. Any member of the general public has standing to raise a claim of harm to the public trust.

(2) Declaratory Relief § 7--Actual Controversy--Advisory Opinions--Resolution of State Law Issues Following Federal Abstention Order. --An action for declaratory relief filed following a federal court's abstention order which sought to resolve an unsettled issue of state water law involving the public trust doctrine was not an improper attempt to obtain an advisory opinion, where it was not a collusive suit or an attempt to obtain resolution of a hypothetical future disagreement. The fact that the state court decision would not finally resolve the controversy, but would serve only as an interim resolution of some issues necessary to the final decision, was insufficient to render the issue nonjusticiable. When the issue of justiciability is in doubt, it should be resolved in favor of justiciability in cases of great public interest, such as the one at bar.

(3) Waters § 107--Navigable Waters and Tidelands--Rights and Powers of Government--Public Trust Doctrine--Purpose. --Among the purposes of the public trust in navigable waterways is the protection of recreational and ecological values.

(4) Waters § 107--Navigable Waters and Tidelands--Rights and Powers of Government--Public Trust Doctrine--Scope. --The public trust in navigable waterways is not limited by the reach of the tides, but encompasses all navigable lakes and streams.

(5) Waters § 111--Navigable Waters and Tidelands--Determination and Use of Navigable Waters--What Waters Are Deemed Navigable--Waters Usable for Pleasure Boating. --A waterway usable only for pleasure boating is nevertheless a navigable waterway protected by the public trust.

(6) Waters § 107--Navigable Waters and Tidelands--Rights and Powers of Government--Public Trust Doctrine--Scope. --The public trust doctrine, under which the state holds title to navigable waterways and the lands lying beneath them as trustee for benefit of the people, protects navigable waters from harm caused by diversion of nonnavigable tributaries.

(7) Waters § 107--Navigable Waters and Tidelands--Rights and Powers of Government--Public Trust Doctrine--Powers of State as Trustee. --While the state, as administrator of the public trust in navigable waterways, is empowered to prefer one trust use over another, it may not abrogate the public trust merely by authorizing a use inconsistent with the trust.

(8) Waters § 107--Navigable Waters and Tidelands--Rights and Powers of Government--Public Trust Doctrine--Powers of State as Trustee. --The continuing power of the state, as administrator of the public trust in navigable waterways, extends to the revocation of previously granted rights and to the enforcement of the trust against lands long thought free of the trust.

(9) Waters § 114--Navigable Waters and Tidelands--Determination and Use of Navigable Waters--Use--Public Trust Restrictions. --Except for those rare instances in which a grantee may acquire a right to use former trust property free of trust restrictions, a grantee holds subject to the trust, and while he may assert a vested right to the servient estate and to any improvements he erects, he can claim no vested right to bar recognition of the trust or state action to carry out its purposes.

(10) Waters § 114--Navigable Waters and Tidelands--Determination and Use of Navigable Waters--Use--Public Trust Restrictions. --The public trust in navigable waterways is more than an affirmation of state power to use public property for public purposes. It is an affirmation of the duty of the state to protect the people's common heritage of streams, lakes, marshlands, and tidelands, surrendering that right of protection only in rare cases when the abandonment of that right is consistent with the purposes of the trust.

(11) Waters § 3--Public Policy as to Use of Water--Reasonable Use Doctrine. --Cal. Const., art. X, § 2 (former art. XIV, § 3), establishes the state policy that all uses of water, including public trust uses, must conform to the standard of reasonable use. After its 1928 effective date, no one could acquire a vested right to the unreasonable use of water.

(12) Waters § 107--Navigable Waters and Tidelands--Rights and Powers of Government--Public Trust Doctrine--Powers of State as Trustee. --The state, as sovereign, retains continuing supervisory control over its navigable waters and the lands beneath those waters. This principle, fundamental to the concept of the public trust, applies to rights in flowing waters as well as to rights in tidelands and lakeshores. It prevents any party from acquiring a vested right to appropriate water in a manner harmful to the interests protected by the public trust, except in the case of property no longer adaptable to trust uses or when the original grant was made to further trust purposes.

(13) Waters § 107--Navigable Waters and Tidelands--Rights and Powers of Government--Public Trust Doctrine--Appropriation of Water From Flowing Stream. --The Legislature, acting directly or through an authorized agency, has the power to grant usufructuary licenses permitting an appropriator to take water from flowing streams and use that water in a distant part of the state, even though such taking does not promote, and may unavoidably harm, public trust uses at the source stream.

(14) Waters § 107--Navigable Waters and Tidelands--Rights and Powers of Government--Public Trust Doctrine--Duties of State as Trustee--Reconsideration of Allocation Decisions. --The state has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible. Once the state has approved an appropriation, the public trust imposes a duty of continuing supervision over the taking and use of the appropriated water. The state is not confined by past decisions and accordingly has the power to reconsider allocation decisions, even though such decisions were made after due consideration of their effect on the public trust. Decisions which failed to weigh and consider public trust uses present an even stronger case for reconsideration. Thus, a decision by a state water agency permitting a city's water and power department to divert the entire flow of a lake's tributaries into an aqueduct was entitled to reconsideration, where no responsible body had ever determined the impact of such diversion or whether some lesser taking would better balance the diverse interests involved, the state agency believing it lacked both the power and the duty to protect the lake environment. The city's substantial concerns, such as its need for the water, were entitled to be a part of any allocation decision, but did not preclude a reconsideration and reallocation which also took into account the impact of water diversion on the lake environment.

(15a) (15b) Waters § 185--Water Litigation--Proceedings Before Water Board--Exhaustion of Administrative Remedies. --Persons asserting the diversion of a lake's tributaries to a city's aqueduct violated the public trust doctrine were not required to exhaust their administrative remedies before the Water Board, since the courts and the board had concurrent jurisdiction over the claim. However, courts may refer cases to the board which raise issues calling for board consideration. Thus the courts, through the exercise of sound discretion and the use of their reference powers, can substantially eliminate the danger that litigation will bypass the board's expert knowledge and frustrate its duty of comprehensive planning.

(16) Waters § 185--Water Litigation--Proceedings Before Water Board. --Under *Wat. Code, § 2501*, which gives the Water Board broad substantive powers to adjudicate all competing claims to water resources, a person claiming that a use of water is harmful to interests protected by the public trust may seek a board determination of the allocation of water in a stream system, which determination may include reconsideration of rights previously granted in such system.

COUNSEL:

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No appearance for Respondent.

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Downey, Brand, Seymour & Rohwer, Anne J. Schneider, DeBlanc & Alexander and Anthony E. Alexander as Amici Curiae on behalf of Real Parties in Interest.

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JUDGES:

Opinion by Broussard, J., with Bird, C. J., Mosk, Kaus and Reynoso, JJ., concurring. Separate concurring opinion by Kaus, J. Separate concurring and dissenting opinion by Richardson, J.

OPINIONBY:

BROUSSARD

OPINION:

[*424] [**711] [***348] Mono Lake, the second largest lake in California, sits at the base of the Sierra Nevada escarpment near the eastern entrance to Yosemite National Park. The lake is saline; it contains no fish but supports a large population of brine shrimp which feed vast numbers of nesting and migratory birds. Islands in the lake protect a large breeding colony of California gulls, and the lake itself serves as a haven on the migration route for thousands of Northern Phalarope, Wilson's Phalarope, and Eared Grebe. Towers and spires of tufa on the north and south shores are matters of geological interest and a tourist attraction.

Although Mono Lake receives some water from rain and snow on the lake surface, historically most of its supply came from snowmelt in the Sierra Nevada. Five freshwater streams -- Mill, Lee Vining, Walker, Parker and Rush Creeks -- arise near the crest of the range and carry the annual runoff to the west shore of the lake. In 1940, however, the Division of Water Resources, the predecessor to the present California Water Resources Board, n1 granted the Department of Water and Power of the City of Los Angeles (hereafter DWP) a permit to appropriate virtually the entire flow of four of the five streams flowing into the lake. DWP promptly constructed facilities to divert about half the flow of these streams into DWP's Owens Valley aqueduct. In 1970 DWP completed a second diversion tunnel, and since that time has taken virtually the entire flow of these streams.

n1 For convenience we shall refer to the state agency with authority to grant appropriative rights as the Water Board or the board, without regard to the various names which this agency has borne since it was first created in 1913.

As a result of these diversions, the level of the lake has dropped; the surface area has diminished by one-third; one of the two principal islands in the lake has become a peninsula, exposing the gull rookery there to coyotes and other predators and causing the gulls to abandon the former island. The ultimate effect of continued diversions is a matter of intense dispute, but there seems little [*425] doubt that both the scenic beauty and the ecological values of Mono Lake are imperiled. n2

n2 For discussion of the effect of diversions on the ecology of Mono Lake, see Young, *The Troubled Waters of Mono Lake* (Oct. 1981) National Geographic, at page 504; Jehl, Jr., *Mono Lake: A Vital Way Station for the Wilson's Phalarope* (Oct. 1981) National Geographic, at page 520; Hoff, *The Legal Battle Over Mono Lake* (Jan. 1982) Cal. Law., at page 28; (Cal. Dept. Water Resources, Rep. of the Interagency Task Force on Mono Lake (Dec. 1969) (hereafter Task Force Report)).

[**712] Plaintiffs filed suit in superior court to enjoin the DWP diversions on the theory that the shores, bed and waters of Mono Lake are protected by a public trust. Plaintiffs' suit was transferred to the federal [***349] district court, which requested that the state courts determine the relationship between the public trust doctrine and the water rights system, and decide whether plaintiffs must exhaust administrative remedies before the Water Board prior to filing suit. The superior court then entered summary judgments against plaintiffs on both matters, ruling that the public trust doctrine offered no independent basis for challenging the DWP diversions, and that plaintiffs had failed to exhaust administrative remedies. Plaintiffs petitioned us directly for writ of mandate to review that decision; in view of the importance of the issues presented, we issued an alternative writ. (See *County of Sacramento v. Hickman (1967) 66 Cal.2d 841, 845 [59 Cal.Rptr. 609, 428 P.2d 593].)*

This case brings together for the first time two systems of legal thought: the appropriative water rights system which since the days of the gold rush has dominated California water law, and the public trust doctrine which, after evolving as a shield for the protection of tidelands, now extends its protective scope to navigable lakes. Ever since we first recognized that the public trust protects environmental and recreational values (*Marks v. Whitney (1971) 6 Cal.3d 251 [98 Cal.Rptr. 790, 491 P.2d 374]),* the two systems of legal thought have been on a collision course. (Johnson, *Public Trust Protection for Stream Flows and Lake Levels (1980) 14 U.C. Davis L.Rev. 233.)* They meet in a unique and dramatic setting which highlights the clash of values. Mono Lake is a scenic and ecological treasure of national significance, imperiled by continued diversions of water; yet, the need of Los Angeles for water is apparent, its reliance on rights granted by the board evident, the cost of curtailing diversions substantial.

Attempting to integrate the teachings and values of both the public trust and the appropriative water rights system, we have arrived at certain conclusions which we briefly summarize here. In our opinion, the core of the public trust doctrine is the state's authority as sovereign

to exercise a continuous supervision and control over the navigable waters of the state and the lands underlying those waters. This authority applies to the waters tributary to Mono Lake and [*426] bars DWP or any other party from claiming a vested right to divert waters once it becomes clear that such diversions harm the interests protected by the public trust. The corollary rule which evolved in tideland and lakeshore cases barring conveyance of rights free of the trust except to serve trust purposes cannot, however, apply without modification to flowing waters. The prosperity and habitability of much of this state requires the diversion of great quantities of water from its streams for purposes unconnected to any navigation, commerce, fishing, recreation, or ecological use relating to the source stream. The state must have the power to grant nonvested usufructuary rights to appropriate water even if diversions harm public trust uses. Approval of such diversion without considering public trust values, however, may result in needless destruction of those values. Accordingly, we believe that before state courts and agencies approve water diversions they should consider the effect of such diversions upon interests protected by the public trust, and attempt, so far as feasible, to avoid or minimize any harm to those interests.

The water rights enjoyed by DWP were granted, the diversion was commenced, and has continued to the present without any consideration of the impact upon the public trust. An objective study and reconsideration of the water rights in the Mono Basin is long overdue. The water law of California -- which we conceive to be an integration including both the public trust doctrine and the board-administered appropriative rights system -- permits such a reconsideration; the values underlying that integration require it.

[**713] With regard to the secondary issue of exhaustion of administrative remedies, the powers, experience, and expertise of the Water Board all argue in favor of granting that agency primary jurisdiction. Long-established precedent, however, declares that [***350] courts have concurrent jurisdiction in water right controversies. The Legislature, instead of overturning that precedent, has implicitly acknowledged its vitality by providing a procedure under which the courts can refer water rights disputes to the water board as referee. We therefore conclude that the courts may continue to exercise concurrent jurisdiction, but note that in cases where the board's experience or expert knowledge may be useful the courts should not hesitate to seek such aid.

1. *Background and history of the Mono Lake litigation.*

DWP supplies water to the City of Los Angeles. Early in this century, it became clear that the city's anticipated needs would exceed the water available from local sources, and so in 1913 the city constructed an aqueduct to carry water from the Owens River 233 miles over the Antelope-Mojave plateau into the coastal plain and thirsty city.

[*427] The city's attempt to acquire rights to water needed by local farmers met with fierce, and at times violent, opposition. (See generally *County of Inyo v. Public Utilities Com. (1980) 26 Cal.3d 154, 156-157 [161 Cal.Rptr. 172, 604 P.2d 566]*; Kahrl, Water and Power: The Conflict Over Los Angeles' Water Supply in the Owens Valley (1982).) But when the "Owens Valley War" was over, virtually all the waters of the Owens River and its tributaries flowed south to Los Angeles. Owens Lake was transformed into an alkali flat. n3

n3 Ironically, among the decisions reviewed in preparing this opinion was one in which Los Angeles was held liable for permitting water to flow into Owens Lake, damaging mineral extraction facilities constructed in reliance on the city taking the entire flow of the Owens River. (*Natural Soda Prod. Co. v. City of L.A. (1943) 23 Cal.2d 193 [143 P.2d 12].)*

The city's rapid expansion soon strained this new supply, too, and prompted a search for water from other regions. The Mono Basin was a predictable object of this extension, since it lay within 50 miles of the natural origin of Owens River, and thus could easily be integrated into the existing aqueduct system.

After purchasing the riparian rights incident to Lee Vining, Walker, Parker and Rush Creeks, as well as the riparian rights pertaining to Mono Lake, n4 the city applied to the Water Board in 1940 for permits to appropriate the waters of the four tributaries. At hearings before the board, various interested individuals protested that the city's proposed appropriations would lower the surface level of Mono Lake and thereby impair its commercial, recreational and scenic uses.

n4 Between 1920 and 1934, the city purchased lands riparian to creeks feeding Mono Lake and riparian rights incident to such lands. In 1934, the city brought an eminent domain proceeding for condemnation of the rights of Mono Lake landowners. (*City of Los Angeles v. Aitken (1935) 10 Cal.App.2d 460 [52 P.2d 585].)*

The board's primary authority to reject that application lay in a 1921 amendment to the Water Commission

Act of 1913, which authorized the board to reject an application "when in its judgment the proposed appropriation would not best conserve the public interest." (Stats. 1921, ch. 329, § 1, p. 443, now codified as *Wat. Code, § 1255.*) n5 The 1921 enactment, however, also "declared to be the established policy of this state that the use of water for domestic purposes is the highest use of water" (*id.*, now codified as *Wat. Code, § 1254*), and directed the Water Board to be guided by this declaration of policy. Since DWP sought water for domestic use, the board concluded that it had to grant the application notwithstanding [**714] the harm to public trust uses of Mono Lake. n6

n5 In theory, the board could have rejected the city's application on the ground that the waters of the streams were already being put to beneficial use or that the DWP proposed an unreasonable use of water in violation of article X, section 2 of the California Constitution. It does not appear that the board considered either proposition.

n6 DWP calls our attention to a 1940 decision of the Water Board involving Rock Creek, a tributary of the Owens River, in which the board stated that "the Water Commission Act requires it to protect streams in recreational areas by guarding against depletion below some minimum amount consonant with the general recreational conditions and the character of the stream." (Div. Wat. Resources Dec. 3850 (Apr. 11, 1940), at p. 24.) The decision concluded that the board had insufficient information to decide what conditions, if any, to place upon DWP's application to divert water from Rock Creek for hydroelectric generation.

We do not know why the board was seemingly more willing to limit diversions to protect recreational values for Rock Creek than for the creeks flowing into Mono Lake. (Neither do we know the eventual outcome of the Rock Creek application.) The language of the board's opinions suggests that the crucial distinction was that the application for the Mono Lake streams was for domestic use, the highest use under the Water Code, while the Rock Creek application was for power generation.

[*428] [***351] The board's decision states that "[it] is indeed unfortunate that the City's proposed development will result in decreasing the aesthetic advantages of Mono Basin but *there is apparently nothing that this office can do to prevent it.* The use to which the City proposes to put the water under its Applications . . . is defined by the Water Commission Act as the highest to which water may be applied and to make available unappropriated water for this use the City has, by the condemnation proceedings described above, acquired the littoral and riparian rights on Mono Lake and its tributaries south of Mill Creek. This office therefore has *no alternative but to dismiss all protests based upon the possible lowering of the water level in Mono Lake and the effect that the diversion of water from these streams may have upon the aesthetic and recreational value of the Basin.*" (Div. Wat. Resources Dec. 7053, 7055, 8042 & 8043 (Apr. 11, 1940), at p. 26, italics added.) n7

n7 Plaintiffs submitted an interrogatory to the present Water Board, inquiring: "Do you contend that the predecessor of the Water Board, at the time it issued the DWP appropriation permit, held the view that, notwithstanding the protests based on environmental concerns, it had no alternative but to issue DWP the permits DWP sought to export water from the Mono Basin?"

The Water Board replied: "The [Water] Board believes that its predecessor did hold the view that, notwithstanding protests based upon loss of land values resulting from diminished recreational opportunity, if unappropriated water is available, it had no alternative but to issue DWP the permits DWP sought in order to export water from the Mono Basin . . . ."

By April of 1941, the city had completed the extension of its aqueduct system into the Mono Basin by construction of certain conduits, reservoirs at Grant and Crowley Lakes, and the Mono Craters Tunnel from the Mono Basin to the Owens River. In the 1950's, the city constructed hydroelectric power plants along the system to generate electricity from the energy of the appropriated water as it flowed downhill into the Owens Valley. Between 1940 and 1970, the city diverted an average of 57,067 acre-feet of water per year from the Mono Basin. The impact of these diversions on Mono Lake was clear and immediate: the lake's surface level receded at an average of 1.1 feet per year.

In June of 1970, the city completed a second aqueduct designed to increase the total flow into the aqueduct by 50 percent. n8 Between 1970 and 1980, the city [*429] diverted an average of 99,580 acre-feet per year from the Mono Basin. By October of 1979, the lake had shrunk from its prediversion area of 85 square miles to

an area of 60.3 square miles. Its surface level had dropped to 6,373 feet above sea level, 43 feet below the prediversion level. n9

n8 In 1974 the Water Board confirmed that DWP had perfected its appropriative right by the actual taking and beneficial use of water, and issued two permanent licenses (board licenses Nos. 10191 and 10192) authorizing DWP to divert up to 167,000 acre-feet annually (far more than the average annual flow) from Lee Vining, Walker, Parker and Rush Creeks. The Water Board viewed this action as a ministerial action, based on the 1940 decision, and held no hearings on the matter.

n9 In 1979 the California Department of Water Resources and the United States Department of the Interior undertook a joint study of the Mono Basin. The study recommends that the level of Mono Lake be stabilized at 6,388 feet. To achieve this end it recommended that exports of water from the Mono Basin be reduced from the present average of 100,000 acre-feet annually to a limit of 15,000 acre-feet. (Task Force Report at pp. 36-55.) Legislation was introduced to implement this recommendation, but was not enacted.

[**715] No party seriously disputes the facts set forth above. However, the parties hotly [***352] dispute the projected effects of future diversions on the lake itself, as well as the indirect effects of past, present and future diversions on the Mono Basin environment.

DWP expects that its future diversions of about 100,000 acre-feet per year will lower the lake's surface level another 43 feet and reduce its surface area by about 22 square miles over the next 80 to 100 years, at which point the lake will gradually approach environmental equilibrium (the point at which inflow from precipitation, groundwater and nondiverted tributaries equals outflow by evaporation and other means). At this point, according to DWP, the lake will stabilize at a level 6,330 feet above the sea's, with a surface area of approximately 38 square miles. Thus, by DWP's own estimates, unabated diversions will ultimately produce a lake that is about 56 percent smaller on the surface and 42 percent shallower than its natural size.

Plaintiffs consider these projections unrealistically optimistic. They allege that, 50 years hence, the lake will be at least 50 feet shallower than it now is, and hold less than 20 percent of its natural volume. Further, plaintiffs fear that "the lake will not stabilize at this level," but "may continue to reduce in size until it is dried up." Moreover, unlike DWP, plaintiffs believe that the lake's gradual recession indirectly causes a host of adverse environmental impacts. Many of these alleged impacts are related to an increase in the lake's salinity, caused by the decrease in its water volume.

As noted above, Mono Lake has no outlets. The lake loses water only by evaporation and seepage. Natural salts do not evaporate with water, but are left behind. Prior to commencement of the DWP diversions, this naturally rising salinity was balanced by a constant and substantial supply of fresh water from the tributaries. Now, however, DWP diverts most of the fresh water inflow. The resultant imbalance between inflow and outflow not only diminishes the lake's size, but also drastically increases its salinity.

[*430] Plaintiffs predict that the lake's steadily increasing salinity, if unchecked, will wreck havoc throughout the local food chain. They contend that the lake's algae, and the brine shrimp and brine flies that feed on it, cannot survive the projected salinity increase. To support this assertion, plaintiffs point to a 50 percent reduction in the shrimp hatch for the spring of 1980 and a startling 95 percent reduction for the spring of 1981. These reductions affirm experimental evidence indicating that brine shrimp populations diminish as the salinity of the water surrounding them increases. (See Task Force Report at pp. 20-21.) DWP admits these substantial reductions, but blames them on factors other than salinity.

DWP's diversions also present several threats to the millions of local and migratory birds using the lake. First, since many species of birds feed on the lake's brine shrimp, any reduction in shrimp population allegedly caused by rising salinity endangers a major avian food source. The Task Force Report considered it "unlikely that any of Mono Lake's major bird species . . . will persist at the lake if populations of invertebrates disappear." (Task Force Report at p. 20.) Second, the increasing salinity makes it more difficult for the birds to maintain osmotic equilibrium with their environment. n10

n10 In the face of rising salinity, birds can maintain such equilibrium only by increasing either their secretion of salts or their intake of fresh water. The former option is foreclosed, however, because Mono Lake is already so salty that the birds have reached their limit of salt secretion. Thus, the birds must drink more fresh water to maintain the osmotic equilibrium necessary to their survival. As the Task Force predicts, "[the]

> need for more time and energy to obtain fresh water will mean reduced energy and time for other vital activities such as feeding, nesting, etc. Birds attempting to breed at Mono Lake . . . are likely to suffer the most from direct salinity effects, since the adult birds must devote so much time to obtain fresh water that they may not be able to raise young successfully." (Task Force Report, at p. 19.)

[**716] The California gull is especially endangered, both by the increase in salinity and by loss of nesting sites. Ninety-five percent of this state's gull population and 25 percent of the total species population nests at the lake. (Task Force Report at p. 21.) Most of the gulls nest on islands in the lake. [***353] As the lake recedes, land between the shore and some of the islands has been exposed, offering such predators as the coyote easy access to the gull nests and chicks. In 1979, coyotes reached Negrit Island, once the most popular nesting site, and the number of gull nests at the lake declined sharply. In 1981, 95 percent of the hatched chicks did not survive to maturity. Plaintiffs blame this decline and alarming mortality rate on the predator access created by the land bridges; DWP suggests numerous other causes, such as increased ambient temperatures and human activities, and claims that the joining of some islands with the mainland is offset by the emergence of new islands due to the lake's recession.

Plaintiffs allege that DWP's diversions adversely affect the human species and its activities as well. First, as the lake recedes, it has exposed more than [*431] 18,000 acres of lake bed composed of very fine silt which, once dry, easily becomes airborne in winds. This silt contains a high concentration of alkali and other minerals that irritate the mucous membranes and respiratory systems of humans and other animals. (See Task Force Report at p. 22.) While the precise extent of this threat to the public health has yet to be determined, such threat as exists can be expected to increase with the exposure of additional lake bed. DWP, however, claims that its diversions neither affect the air quality in Mono Basin nor present a hazard to human health.

Furthermore, the lake's recession obviously diminishes its value as an economic, recreational, and scenic resource. Of course, there will be less lake to use and enjoy. The declining shrimp hatch depresses a local shrimping industry. The rings of dry lake bed are difficult to traverse on foot, and thus impair human access to the lake, and reduce the lake's substantial scenic value. Mono Lake has long been treasured as a unique scenic, recreational and scientific resource (see, e.g., *City of Los Angeles v. Aitken, supra, 10 Cal.App.2d 460, 462-463;* Task Force Report at pp. 22-24), but continued diversions threaten to turn it into a desert wasteland like the dry bed of Owens Lake.

(1) (See fn. 1.) To abate this destruction, plaintiffs filed suit for injunctive and declaratory relief in the Superior Court for Mono County on May 21, 1979. n11 DWP moved to change venue. When the court granted the motion and transferred the case to Alpine County, DWP sought an extraordinary writ to bar this transfer. The writ was denied, and the Superior Court for Alpine County set a tentative trial date for March of 1980.

> n11 DWP contended that plaintiffs lack standing to sue to enjoin violations of the public trust, citing *Antioch v. Williams Irr. Dist. (1922) 188 Cal. 451 [205 P. 688]* and *Miller & Lux v. Enterprise etc. Co. (1904) 142 Cal. 208 [75 P. 770]*, both of which held that only the state or the United States could sue to enjoin diversions which might imperil downstream navigability. Judicial decisions since those cases, however, have greatly expanded the right of a member of the public to sue as a taxpayer or private attorney general. (See *Van Atta v. Scott (1980) 27 Cal.3d 424, 447-450 [166 Cal.Rptr. 149, 613 P.2d 210]*, and cases there cited.) Consistently with these decisions, *Marks v. Whitney, supra, 6 Cal.3d 251*, expressly held that any member of the general public (p. 261) has standing to raise a claim of harm to the public trust. (Pp. 261-262; see also *Environmental Defense Fund, Inc. v. East Bay Mun. Utility Dist. (1980) 26 Cal.3d 183 [161 Cal.Rptr. 466, 605 P.2d 1]*, in which we permitted a public interest organization to sue to enjoin allegedly unreasonable uses of water.) We conclude that plaintiffs have standing to sue to protect the public trust.

In January of that year, DWP cross-complained against 117 individuals and entities claiming water rights in the Mono Basin. On February 20, 1980, one cross-defendant, the United States, removed the case to the District Court for the Eastern District of [**717] California. On DWP's motion, the district court stayed its proceedings under the federal abstention doctrine n12 to allow resolution by [*432] California courts of two important issues of California law: "1. What is the [***354] interrelationship of the public trust doctrine and the California water rights system, in the context of the right of the Los Angeles Department of Water and Power ('Department') to divert water from Mono Lake pursuant to permits and licenses issued under the California water rights system? In other words, is the public trust doctrine in this context subsumed in the California

water rights system, or does it function independently of that system? Stated differently, can the plaintiffs challenge the Department's permits and licenses by arguing that those permits and licenses are limited by the public trust doctrine, or must the plaintiffs challenge the permits and licenses by arguing that the water diversions and uses authorized thereunder are not 'reasonable or beneficial' as required under the California water rights system? [para.] 2. Do the exhaustion principles applied in the water rights context apply to plaintiffs' action pending in the United States District Court for the Eastern District of California?" n13

n12 The federal practice of abstention sprang from the decision in *Railroad Comm'n. v. Pullman Co. (1941) 312 U.S. 496 [85 L.Ed. 971, 61 S.Ct. 643]*. (See generally, Wright et al., Federal Practice and Procedure, § 4241 et seq.) In *Pullman*, the Supreme Court held that, where resolution of an open state question presented in a federal action might prevent the federal court from reaching a constitutional question in that action, the court should stay its proceedings and order the parties to seek resolution of the state question in state courts. In *Pullman*-type cases, the federal court retains jurisdiction so that it may either apply the resolved state law, or resolve the state question itself if the state courts refuse to do so for any reason.

Though federal abstention was originally limited to *Pullman*-type cases, the grounds for abstention were later expanded in accordance with the policies of federalism. Abstention is now "appropriate where there have been presented difficult questions of state law bearing on policy problems of substantial public import whose importance transcends the result in the case then at bar." (*Colorado River Water Cons. Dist. v. U.S. (1976) 424 U.S. 800, 814 [47 L.Ed.2d 483, 496, 96 S.Ct. 1236]*, citing *Louisiana P. & L. Co. v. Thibodaux City (1959) 360 U.S. 25 [3 L.Ed.2d 1058, 79 S.Ct. 1070]* and *Kaiser Steel Corp. v. W. S. Ranch Co. (1968) 391 U.S. 593 [20 L.Ed.2d 835, 88 S.Ct. 1753].)*

Kaiser Steel is similar to the case at bar. In that diversity case, W. S. Ranch Co. sued Kaiser Steel for trespass. Kaiser claimed that a New Mexico statute authorized it to trespass as necessary for use of its water rights granted by New Mexico. The ranch replied that if the statute so authorized Kaiser, the statute would violate the state constitution, which allowed the taking of private property only for "public use." Both the district court and the court of appeals reached the merits of the case after denying Kaiser's motion to stay the determination until conclusion of a declaratory relief action then pending in New Mexico courts. The United States Supreme Court reversed, reasoning in a *per curiam* opinion that "[the] Court of Appeals erred in refusing to stay its hand. The state law issue which is crucial in this case is one of vital concern in the arid State of New Mexico, where water is one of the most valuable natural resources. The issue, moreover, is truly a novel one . . . [, and] will eventually have to be resolved by the New Mexico courts . . . . Sound judicial administration requires that the parties in this case be given the benefit of the same rule of law which will apply to all other businesses and landowners concerned with the use of this vital state resource." (*Kaiser Steel Corp. v. W. S. Ranch Co., supra, 391 U.S. at p. 594 [20 L.Ed.2d at p. 837.)*

n13 DWP objected to the form of the abstention order, and petitioned the United States Court of Appeals for the Ninth Circuit for leave to file an interlocutory appeal. The Ninth Circuit denied this petition.

(2) (See fn. 14.) In response to this order, plaintiffs filed a new complaint for declaratory relief in the Alpine County Superior Court. n14 On November 9, [*433] 1981, that court [**718] entered summary judgment against plaintiffs. Its notice of intended ruling stated that "[the] California water rights system is [***355] a comprehensive and exclusive system for determining the legality of the diversions of the City of Los Angeles in the Mono Basin . . . . The Public Trust Doctrine does not function independently of that system. This Court concludes that as regards the right of the City of Los Angeles to divert waters in the Mono Basin that the Public Trust Doctrine is subsumed in the water rights system of the state." With respect to exhaustion of administrative remedies, the superior court concluded that plaintiffs would be required to exhaust their remedy before the Water Board either under a challenge based on an independent public trust claim or one based on asserted unreasonable or nonbeneficial use of appropriated water.

n14 DWP argues that the second superior court action, filed after the federal court's abstention order, constitutes a request for an advisory opinion and thus seeks relief beyond the jurisdiction of the California courts. (See *Younger v. Su-*

perior Court (1978) 21 Cal.3d 102, 119-120 [145 Cal.Rptr. 674, 577 P.2d 1014], and cases there cited.) No California case has discussed the propriety of a declaratory relief action filed to resolve an unsettled issue of California law following a federal court abstention. A holding that such a suit is an improper attempt to obtain an advisory opinion, however, would constitute a decision by the California courts to refuse to cooperate in the federal abstention procedure. It would thus compel federal courts to decide unsettled questions of California law which under principles of sound judicial administration (see *Kaiser Steel Corp. v. W. S. Ranch Co., supra, 391 U.S. 593, 594 [20 L.Ed.2d 835, 837])* should be resolved by the state courts.

The usual objections to advisory opinions do not apply to the present case. This is not a collusive suit (compare *People v. Pratt (1866) 30 Cal. 223)*, nor an attempt to get the courts to resolve a hypothetical future disagreement (compare *Younger v. Superior Court, supra, 21 Cal.3d 102)*. It is, rather, one phase of a hotly contested current controversy. The only conceivable basis for refusing to decide the present case is that our decision will not finally resolve that controversy, but will serve only as an interim resolution of some issues necessary to the final decision. That fact, however, is insufficient to render the issue nonjusticiable. As the Court of Appeal stated in response to a similar contention, it is in the interest of the parties and the public that a determination be made; "even if that determination be but one step in the process, it is a useful one." (*Regents of University of California v. State Bd. of Equalization (1977) 73 Cal.App.3d 660, 664 [140 Cal.Rptr. 857].)*

If the issue of justiciability is in doubt, it should be resolved in favor of justiciability in cases of great public interest. (See, e.g., *California Physicians' Service v. Garrison (1946) 28 Cal.2d 790, 801 [172 P.2d 4, 167 A.L.R. 306]* [trial court's determination of justiciability will not be overturned on appeal absent clear showing of abuse of discretion]; *Golden Gate Bridge etc. Dist. v. Felt (1931) 214 Cal. 308, 315-319 [5 P.2d 585]* [jurisdiction retained over admittedly friendly suit of public importance, where dismissal would have delayed construction of Golden Gate Bridge]; *California Water & Telephone Co. v. County of Los Angeles (1967) 253 Cal.App.2d 16, 26 [61 Cal.Rptr. 618]* [doubts about the justiciability of a dispute should be resolved in favor of immediate adjudication, where "the public is interested in the settlement of the dispute."].)

Plaintiffs filed a petition for mandate directly with this court to review the summary judgment of the Alpine County Superior Court. We issued an alternative writ and set the case for argument.

2. *The Public Trust Doctrine in California.*

"By the law of nature these things are common to mankind -- the air, running water, the sea and consequently the shores of the sea." (Institutes of Justinian [*434] 2.1.1.) From this origin in Roman law, the English common law evolved the concept of the public trust, under which the sovereign owns "all of its navigable waterways and the lands lying beneath them 'as trustee of a public trust for the benefit of the people.'" (*Colberg, Inc. v. State of California ex rel. Dept. Pub. Wks. (1967) 67 Cal.2d 408, 416 [62 Cal.Rptr. 401, 432 P.2d 3].)* n15 The State of California acquired title as trustee to such lands and waterways upon its admission to the union (*City of Berkeley v. Superior Court (1980) 26 Cal.3d 515, 521 [162 Cal.Rptr. 327, 606 P.2d 362]* and cases there cited); from the earliest days (see *Eldridge v. Cowell (1854) 4 Cal. 80, 87)* its [**719] judicial decisions have recognized and enforced the trust obligation. n16

n15 Spanish law and subsequently Mexican law also recognized the public trust doctrine. (See *City of Los Angeles v. Venice Peninsula Properties (1982) 31 Cal.3d 288, 297 [182 Cal.Rptr. 599, 644 P.2d 792].)* Commentators have suggested that the public trust rights under Hispanic law, guaranteed by the Treaty of Guadalupe Hidalgo, serve as an independent basis for the public trust doctrine in California. (See Stevens, *The Public Trust: A Sovereign's Ancient Prerogative Becomes the People's Environmental Right (1980) 14 U.C. Davis L.Rev. 195, 197;* Dyer, *California Beach Access: The Mexican Law and the Public Trust (1972) 2 Ecology L.Q. 571.)*

n16 For the history of the public trust doctrine, see generally Sax, *The Public Trust Doctrine In Natural Resource Law: Effective Judicial Intervention (1970) 68 Mich.L.Rev. 471;* Stevens, *op. cit. supra, 14 U.C. Davis L.Rev. 195.*

Three aspects of the public trust doctrine require consideration in this opinion: the purpose of the trust; the scope of the trust, particularly as it applies to the nonnavigable tributaries of a navigable lake; and the powers and duties of the state as trustee of [***356] the public trust. We discuss these questions in the order listed.

(a) *The purpose of the public trust.*

The objective of the public trust has evolved in tandem with the changing public perception of the values and uses of waterways. As we observed in *Marks v. Whitney, supra, 6 Cal.3d 251,* "[public] trust easements [were] traditionally defined in terms of navigation, commerce and fisheries. They have been held to include the right to fish, hunt, bathe, swim, to use for boating and general recreation purposes the navigable waters of the state, and to use the bottom of the navigable waters for anchoring, standing, or other purposes." (P. 259.) We went on, however, to hold that the traditional triad of uses -- navigation, commerce and fishing -- did not limit the public interest in the trust res. In language of special importance to the present setting, we stated that "[the] public uses to which tidelands are subject are sufficiently flexible to encompass changing public needs. In administering the trust the state is not burdened with an outmoded classification favoring one mode of utilization over another. [Citation.] There is a growing public recognition that one of the most important public uses of the tidelands -- a use encompassed within the tidelands trust -- is the preservation of those lands in their natural state, so that they may [*435] serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably affect the scenery and climate of the area." (Pp. 259-260.)

(3) Mono Lake is a navigable waterway. (*City of Los Angeles v. Aitken, supra, 10 Cal.App.2d 460, 466.)* It supports a small local industry which harvests brine shrimp for sale as fish food, which endeavor probably qualifies the lake as a "fishery" under the traditional public trust cases. The principal values plaintiffs seek to protect, however, are recreational and ecological -- the scenic views of the lake and its shore, the purity of the air, and the use of the lake for nesting and feeding by birds. Under *Marks v. Whitney, supra, 6 Cal.3d 251,* it is clear that protection of these values is among the purposes of the public trust.

(b) *The scope of the public trust.*

Early English decisions generally assumed the public trust was limited to tidal waters and the lands exposed and covered by the daily tides (see Stevens, *op. cit. supra, 14 U.C. Davis L.Rev. 195, 201* and authorities there cited); many American decisions, including the leading California cases, also concern tidelands. (See, e.g., *City of Berkeley v. Superior Court (1980) 26 Cal.3d 515 [162 Cal.Rptr. 327, 606 P.2d 362]; Marks v. Whitney, supra, 6 Cal.3d 251; People v. California Fish Co. (1913) 166 Cal. 576 [138 P. 79].)* **(4)** It is, however, well settled in the United States generally and in California that the public trust is not limited by the reach of the tides, but encompasses all navigable lakes and streams. **(5)** (See fn. 17.) (See *Illinois Central Railroad Co. v. Illinois (1892) 146 U.S. 387 [36 L.Ed. 1018, 13 S.Ct. 110]* (Lake Michigan); *State of California v. Superior Court (Lyon) (1981) 29 Cal.3d 210 [172 Cal.Rptr. 696, 625 P.2d 239]* (Clear Lake); *State of California v. Superior Court (Fogerty) (1981) 29 Cal.3d 240 [172 Cal.Rptr. 713, 625 P.2d 256]* (Lake Tahoe); *People v. Gold Run D. & M. Co. (1884) 66 Cal. 138 [4 P. 1152]* (Sacramento River); *Hitchings v. Del Rio Woods Recreation & Park Dist. (1976) 55 Cal.App.3d 560* [**720] *[127 Cal.Rptr. 830]* (Russian River).) n17

n17 A waterway usable only for pleasure boating is nevertheless a navigable waterway and protected by the public trust. (See *People* ex rel. *Younger v. County of El Dorado (1979) 96 Cal.App.3d 403 [157 Cal.Rptr. 815]* (South Fork of American River); *People* ex rel. *Baker v. Mack (1971) 19 Cal.App.3d 1040 [97 Cal.Rptr. 448]* (Fall River).)

(6) Mono Lake is, as we have said, a navigable waterway. The beds, shores and waters of the lake are without question protected by the public trust. The streams diverted by DWP, however, are not themselves navigable. [***357] Accordingly, we must address in this case a question not discussed in any recent public trust case -- whether the public trust limits conduct affecting nonnavigable tributaries to navigable waterways.

[*436] This question was considered in two venerable California decisions. The first, *People v. Gold Run D. & M. Co., supra, 66 Cal. 138 [4 P. 1152],* is one of the epochal decisions of California history, a signpost which marked the transition from a mining economy to one predominately commercial and agricultural. The Gold Run Ditch and Mining Company and other mining operators used huge water cannon to wash gold-bearing gravel from hillsides; in the process they dumped 600,000 cubic yards of sand and gravel annually into the north fork of the American River. The debris, washed downstream, raised the beds of the American and Sacramento Rivers, impairing navigation, polluting the waters, and creating the danger that in time of flood the rivers would turn from their channels and inundate nearby lands.

Although recognizing that its decision might destroy the remains of the state's gold mining industry, the court affirmed an injunction barring the dumping. The opinion stressed the harm to the navigability of the Sacramento River, "a great public highway, in which the people of the State have paramount and controlling rights." (P. 146.) Defendant's dumping, the court said, was "an un-

authorized invasion of the rights of the public to its navigation." (P. 147.) Rejecting the argument that dumping was sanctioned by custom and legislative acquiescence, the opinion asserted that "the rights of the people in the navigable rivers of the State are paramount and controlling. The State holds the absolute right to all navigable waters and the soils under them . . . . The soil she holds as trustee of a public trust for the benefit of the people; and she may, by her legislature, grant it to an individual; but she cannot grant the rights of the people to the use of the navigable waters flowing over it . . . ." (Pp. 151-152.)

In the second decision, *People v. Russ (1901) 132 Cal. 102 [64 P. 111],* the defendant erected dams on sloughs which adjoined a navigable river. Finding the sloughs nonnavigable, the trial court gave judgment for defendant. We reversed, directing the trial court to make a finding as to the effect of the dams on the navigability of the river. "Directly diverting waters in material quantities from a navigable stream may be enjoined as a public nuisance. Neither may the waters of a navigable stream be diverted in substantial quantities by drawing from its tributaries . . . . If the dams upon these sloughs result in the obstruction of Salt River as a navigable stream, they constitute a public nuisance." (P. 106.)

DWP points out that the *Gold Run* decision did not involve diversion of water, and that in *Russ* there had been no finding of impairment to navigation. But the principles recognized by those decisions apply fully to a case in which diversions from a nonnavigable tributary impair the public trust in a downstream river or lake. "If the public trust doctrine applies to constrain *fills* which destroy navigation and other public trust uses in navigable waters, it should equally apply to constrain the *extraction* of water that destroys navigation and [*437] other public interests. Both actions result in the same damage to the public interest." (Johnson, *Public Trust Protection for Stream Flows and Lake Levels (1980) 14 U.C. Davis L.Rev. 233, 257-258;* see Dunning, *The Significance of California's Public Trust Easement for California* [**721] *Water Rights Law (1980) 14 U.C. Davis L.Rev. 357, 359-360.)*

We conclude that the public trust doctrine, as recognized and developed in California decisions, protects navigable waters n18 from harm caused by diversion of nonnavigable tributaries. n19

n18 For review of California decisions on navigability, see Dunning, *op. cit. supra, 14 U.C. Davis L.Rev. 357, 384-386.*

n19 In view of the conclusion stated in the text, we need not consider the question whether the public trust extends for some purposes -- such as protection of fishing, environmental values, and recreation interests -- to nonnavigable streams. For discussion of this subject, see Walston, *The Public Trust Doctrine in the Water Rights Context: The Wrong Environmental Remedy (1982) 22 Santa Clara L.Rev. 63, 85.*

[***358] (c) *Duties and powers of the state as trustee.*

In the following review of the authority and obligations of the state as administrator of the public trust, the dominant theme is the state's sovereign power and duty to exercise continued supervision over the trust. One consequence, of importance to this and many other cases, is that parties acquiring rights in trust property generally hold those rights subject to the trust, and can assert no vested right to use those rights in a manner harmful to the trust.

As we noted recently in *City of Berkeley v. Superior Court, supra, 26 Cal.3d 515,* the decision of the United States Supreme Court in *Illinois Central Railroad Company v. Illinois, supra, 146 U.S. 387,* "remains the primary authority even today, almost nine decades after it was decided." (P. 521.) The Illinois Legislature in 1886 had granted the railroad in fee simple 1,000 acres of submerged lands, virtually the entire Chicago waterfront. Four years later it sought to revoke that grant. The Supreme Court upheld the revocatory legislation. Its opinion explained that lands under navigable waters conveyed to private parties for wharves, docks, and other structures in furtherance of trust purposes could be granted free of the trust because the conveyance is consistent with the purpose of the trust. But the legislature, it held, did not have the power to convey the entire city waterfront free of trust, thus barring all future legislatures from protecting the public interest. The opinion declares that: "A grant of all the lands under the navigable waters of a State has never been adjudged to be within the legislative power; and any attempted grant of the kind would be held, if not absolutely void on its face, as subject to revocation. The State can no more abdicate its trust over property in which the whole people are interested, like navigable waters and soils under them, . . . than it can abdicate its police powers in the administration of government and the preservation of [*438] the peace. In the administration of government the use of such powers may for a limited period be delegated to a municipality or other body, but there always remains with the State the right to revoke those powers and exercise them in a more direct manner, and one more conformable to its wishes. So with trusts connected with public property, or property of a special character, like lands under navigable waterways, they cannot be placed

entirely beyond the direction and control of the State." (*Pp. 453-454 [36 L.Ed. pp. 1042-1043].)*

Turning to the *Illinois Central* grant, the court stated that: "Any grant of the kind is necessarily revocable, and the exercise of the trust by which the property was held by the State can be resumed at any time. Undoubtedly there may be expenses incurred in improvements made under such a grant which the State ought to pay; but, be that as it may, the power to resume the trust whenever the State judges best is, we think, incontrovertible. . . . The ownership of the navigable waters of the harbor and of the lands under them is a subject of public concern to the whole people of the State. The trust with which they are held, therefore, is governmental and cannot be alienated, except in those instances mentioned [**722] of parcels used in the improvement of the interest thus held, or when parcels can be disposed of without detriment to the public interest in the lands and waters remaining." (*Pp. 455-456 [36 L.Ed. p. 1043].)*

The California Supreme Court indorsed the *Illinois Central* principles in *People v. California Fish Co., supra, 166 Cal. 576 [138 P. 79]. California Fish* concerned title to about 80,000 acres of tidelands conveyed by [***359] state commissioners pursuant to statutory authorization. The court first set out principles to govern the interpretation of statutes conveying that property: "[Statutes] purporting to authorize an abandonment of . . . public use will be carefully scanned to ascertain whether or not such was the legislative intention, and that intent must be clearly expressed or necessarily implied. It will not be implied if any other inference is reasonably possible. And if any interpretation of the statute is reasonably possible which would not involve a destruction of the public use or an intention to terminate it in violation of the trust, the courts will give the statute such interpretation." (*Id., at p. 597.)* Applying these principles, the court held that because the statute in question and the grants pursuant thereto were not made for trust purposes, the grantees did not acquire absolute title; instead, the grantees "own the soil, subject to the easement of the public for the public uses of navigation and commerce, and to the right of the state, as administrator and controller of these public uses and the public trust therefor, to enter upon and possess the same for the preservation and advancement of the public uses and to make such changes and improvements as may be deemed advisable for those purposes." (*Id., at pp. 598-599.)*

Finally, rejecting the claim of the tideland purchasers for compensation, the court stated they did not lose title, but retained it subject to the public trust. (See [*439] pp. 599-601.) While the state may not "retake the absolute title without compensation" (p. 599), it may without such payment erect improvements to further navigation and take other actions to promote the public trust. n20

n20 In *Mallon v. City of Long Beach (1955) 44 Cal.2d 199 [282 P.2d 481],* the court held that revenues derived from the use of trust property ordinarily must be used for trust purposes. (Pp. 205-206.) (See also *City of Long Beach v. Morse (1947) 31 Cal.2d 254 [188 P.2d 17]; State of California* ex rel. *State Lands Com. v. County of Orange (1982) 134 Cal.App.3d 20 [184 Cal.Rptr. 423].)* The Legislature could abandon the trust over the proceeds, the court said, absent evidence that the abandonment would impair the power of future legislatures to protect and promote trust uses. (P. 207.) So long as the tidelands themselves remained subject to the trust, however, future legislatures would have the power to revoke the abandonment and reestablish a trust on the revenues. (*Ibid.*) (See *City of Coronado v. San Diego Unified Port District (1964) 227 Cal.App.2d 455, 473-474 [38 Cal.Rptr. 834].)*

Boone v. Kingsbury (1928) 206 Cal. 148 [273 P. 797], presents another aspect of this matter. The Legislature authorized the Surveyor-General to lease trust lands for oil drilling. Applying the principles of *Illinois Central*, the court upheld that statute on the ground that the derricks would not substantially interfere with the trust. **(7)** (See fn. 21.) Any licenses granted by the statute, moreover, remained subject to the trust: "The state may at any time remove [the] structures . . ., even though they have been erected with its license or consent, if it subsequently determines them to be purprestures or finds that they substantially interfere with navigation or commerce." (Pp. 192-193.) n21

n21 In *Colberg, Inc. v. State of California ex rel. Dept. Pub. Wks., supra, 67 Cal.2d 408,* the state constructed a freeway bridge which partially impaired navigation in the Stockton Deep Water Ship Channel. Upstream shipyard owners, disclaiming any reliance on the public trust, filed suit for damages on a theory of inverse condemnation. The opinion stated that "the state, as trustee for the benefit of the people, has power to deal with its navigable waters in any manner consistent with the improvement of commercial intercourse, whether navigational or otherwise." (P. 419.) It then concluded that lands littoral to navigable waters are burdened by a navigational servitude in favor of the state and, absent an actual

taking of those lands, the owners cannot claim damages when the state acts within its powers.

We agree with DWP and the state that *Colberg* demonstrates the power of the state, as administrator of the public trust, to prefer one trust use over another. We cannot agree, however, with DWP's further contention that *Colberg* proves the power of a state agency to abrogate the public trust merely by authorizing a use inconsistent with the trust. Not only did plaintiffs in *Colberg* deliberately decline to assert public trust rights, but the decision rests on the power of the state to promote one trust purpose (commerce) over another (navigation), not on any power to grant rights free of the trust. (See Dunning, *op. cit. supra, 14 U.C. Davis L.Rev. 357, 382-288.)*

[**723] [***360] Finally, in our recent decision in *City of Berkeley v. Superior Court, supra, 26 Cal.3d 515,* we considered whether deeds executed by the Board of Tidelands Commissioners pursuant to an 1870 act conferred title free of the trust. Applying the principles of earlier decisions, we held that the grantees' title was subject to the trust, both because the Legislature had not made clear its intention to authorize a conveyance free of the trust and because the 1870 act and the conveyances under it were not intended to further trust purposes.

[*440] Once again we rejected the claim that establishment of the public trust constituted a taking of property for which compensation was required: "We do not divest anyone of title to property; the consequence of our decision will be only that some landowners whose predecessors in interest acquired property under the 1870 act will, like the grantees in *California Fish*, hold it subject to the public trust." (P. 532.) n22

n22 We noted, however, that "any improvements made on such lands could not be appropriated by the state without compensation." (Pp. 533-534, citing *Illinois Central Railroad Co. v. Illinois, supra, 146 U.S. 387, 455 [36 L.Ed. 1018, 1043].)*

In *State of California v. Superior Court (Fogerty), supra, 29 Cal.3d 240, 249,* we stated that owners of shoreline property in Lake Tahoe would be entitled to compensation if enforcement of the public trust required them to remove improvements. By implication, however, the determination that the property was subject to the trust, despite its implication as to future uses and improvements, was not considered a taking requiring compensation.

(8) In summary, the foregoing cases amply demonstrate the continuing power of the state as administrator of the public trust, a power which extends to the revocation of previously granted rights or to the enforcement of the trust against lands long thought free of the trust (see *City of Berkeley v. Superior Court, supra, 26 Cal.3d 515).* **(9)** Except for those rare instances in which a grantee may acquire a right to use former trust property free of trust restrictions, the grantee holds subject to the trust, and while he may assert a vested right to the servient estate (the right of use subject to the trust) and to any improvements he erects, he can claim no vested right to bar recognition of the trust or state action to carry out its purposes.

(10) Since the public trust doctrine does not prevent the state from choosing between trust uses (*Colberg, Inc. v. State of California, supra, 67 Cal.2d 408, 419; County of Orange v. Heim (1973) 30 Cal.App.3d 694, 707 [106 Cal.Rptr. 825]),* the Attorney General of California, seeking to maximize state power under the trust, argues for a broad concept of trust uses. In his view, "trust uses" encompass all public uses, so that in practical effect the doctrine would impose no restrictions on the state's ability to allocate trust property. We know of no authority which supports this view of the public trust, except perhaps the dissenting opinion in *Illinois Central Railroad Co. v. Illinois, supra, 146 U.S. 387.* Most decisions and commentators assume that "trust uses" relate to uses and activities in the vicinity of the lake, stream, or tidal reach at issue (see e.g., *City of Los Angeles v. Aitken, supra, 10 Cal.App.2d 460, 468-469; State of Cal.* ex rel. *State Lands Com. v. County of Orange, supra, 134 Cal.App.3d 20;* Sax, *op. cit. supra, 68* [**724] *Mich.L.Rev. 471, 542).* The tideland cases make this point clear; after *City of Berkeley v. Superior Court, supra, 26 Cal.3d 515,* no one could contend that the state could grant tidelands free of the trust merely because the grant served some public purpose, such as increasing tax revenues, or because the grantee might put the property to a commercial use.

[*441] Thus, the public trust is more than an affirmation of state power to use public property for public purposes. It is an affirmation [***361] of the duty of the state to protect the people's common heritage of streams, lakes, marshlands and tidelands, surrendering that right of protection only in rare cases when the abandonment of that right is consistent with the purposes of the trust.

3. *The California Water Rights System.*

"It is laid down by our law writers, that the right of property in water is usufructuary, and consists not so much of the fluid itself as the advantage of its use." (

Eddy v. Simpson (1853) 3 Cal. 249, 252.) Hence, the cases do not speak of the ownership of water, but only of the right to its use. (*Rancho Santa Margarita v. Vail (1938) 11 Cal.2d 501, 554-555 [81 P.2d 533];* see generally Hutchins, The Cal. Law of Water Rights (1956) pp. 36-38; 1 Rogers & Nichols, Water for Cal. (1967) p. 191.) Accordingly, *Water Code section 102* provides that "[all] water within the State is the property of the people of the State, but the right to the use of water may be acquired by appropriation in the manner provided by law."

Our recent decision in *People v. Shirokow (1980) 26 Cal.3d 301 [162 Cal.Rptr. 30, 605 P.2d 859],* described the early history of the appropriative water rights system in California. We explained that "California operates under the so-called dual system of water rights which recognizes both the appropriation and the riparian doctrines. (Hutchins, The California Law of Water Rights, *supra,* at pp. 40, 55-67.) The riparian doctrine confers upon the owner of land contiguous to a watercourse the right to the reasonable and beneficial use of water on his land. The appropriation doctrine contemplates the diversion of water and applies to 'any taking of water for other than riparian or overlying uses.' (*City of Pasadena v. City of Alhambra (1949) 33 Cal.2d 908, 925 [207 P.2d 17],* and cases there cited.) . . .

". . . .

"Common law appropriation originated in the gold rush days when miners diverted water necessary to work their placer mining claims. The miners adopted among themselves the priority rule of 'first in time, first in right,' and California courts looked to principles of equity and of real property law to adjudicate conflicting claims. [Citations.] Thus it was initially the law in this state that a person could appropriate water merely by diverting it and putting it to use.

[*442] "The first appropriation statute was enacted in 1872 and provided for initiation of the appropriative right by the posting and recordation of notice. (*Civ. Code, § § 1410- 1422.*) The nonstatutory method retained its vitality and appropriative rights were acquired by following either procedure. [Citation.]

"Both methods were superseded by the 1913 enactment of the Water Commission Act, which created a Water Commission and provided a procedure for the appropriation of water for useful and beneficial purposes. The main purpose of the act was 'to provide an orderly method for the appropriation of [unappropriated] waters.' (*Temescal Water Co. v. Dept. Public Works (1955) 44 Cal.2d 90, 95 [280 P.2d 1]; Bloss v. Rahilly (1940) 16 Cal.2d 70, 75 [104 P.2d 1049].)* By amendment in 1923, the statutory procedure became the exclusive means of acquiring appropriative rights. (§ 1225, Stats. 1923, ch. 87.) The provisions of the Water Commission Act, as amended from time to time, have been codified in Water Code, divisions 1 and 2. (Stats. 1943, ch. 368.)" (Pp. 307-308, fns. omitted.)

[**725] The role of the Water Board under the 1913 act, as *Shirokow* indicated, was a very limited one. The only water subject to appropriation under the act was water which was not then being applied to useful and beneficial purposes, and was not otherwise appropriated. (See *Wat. Code, § 1201,* based upon Stats. 1913, ch. 586, § 11, p. 1017.) Thus, appropriative rights acquired under the act were inferior to preexisting rights such as riparian rights, pueblo rights, and prior prescriptive appropriations. (See *City of San Diego v. Cuyamaca Water Co. (1930) 209 Cal. 105 [287 P. 475].)*

Judical decisions confirmed this limited role. According to the courts, the function of the Water Board was restricted to determining [***362] if unappropriated water was available; if it was, and no competing appropriator submitted a claim, the grant of an appropriation was a ministerial act. (*Tulare Water Co. v. State Water Com. (1921) 187 Cal. 533 [202 P. 874].)*

In 1926, however, a decision of this court led to a constitutional amendment which radically altered water law in California and led to an expansion of the powers of the board. In *Herminghaus v. South. California Edison Co. (1926) 200 Cal. 81 [252 P. 607],* we held not only that riparian rights took priority over appropriations authorized by the Water Board, a point which had always been clear, but that as between the riparian and the appropriator, the former's use of water was not limited by the doctrine of reasonable use. (Pp. 100-101.) That decision led to a constitutional amendment which abolished the right of a riparian to devote water to unreasonable uses, and established the doctrine of reasonable use as an overriding feature of California water law. (See *Fullerton v. State Water Resources Control Bd. (1979) 90 Cal.App.3d 590, 596 [153 Cal.Rptr. 518],* and cases there cited..)

[*443] Article X, section 2 (enacted in 1928 as art. XIV, § 3) reads in pertinent part as follows: "It is hereby declared that because of the conditions prevailing in this State the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare. The right to water or to the use or flow of water in or from any natural stream or water course in this State is and shall be limited to such water as shall be reasonably required for the beneficial use to be served, and such right does not and shall not extend to the waste

or unreasonable use or unreasonable method of use or unreasonable method of diversion of water. . . . This section shall be self-executing, and the Legislature may also enact laws in the furtherance of the policy in this section contained."

(11) This amendment does more than merely overturn *Herminghaus* -- it establishes state water policy. All uses of water, including public trust uses, must now conform to the standard of reasonable use. (See *Peabody v. City of Vallejo (1935) 2 Cal.2d 351, 367 [40 P.2d 486]; People* ex rel. *State Water Resources Control Bd. v. Forni (1976) 54 Cal.App.3d 743, 749-750 [126 Cal.Rptr. 851].)* n23

> n23 After the effective date of the 1928 amendment, no one can acquire a vested right to the unreasonable use of water. (See *Joslin v. Marin Mun. Water Dist. (1967) 67 Cal.2d 132, 145 [60 Cal.Rptr. 377, 429 P.2d 889];* 1 Rogers & Nichols, *op. cit. supra*, p. 413 and cases there cited.)

The 1928 amendment did not declare whether the in-stream uses protected by the public trust could be considered reasonable and beneficial uses. In a 1936 case involving Mono Lake, however, the court squarely rejected DWP's argument that use of stream water to maintain the lake's scenic and recreational values violated the constitutional provision barring unreasonable uses. [**726] (*County of Los Angeles v. Aitken, supra, 10 Cal.App.2d 460.)* The point is now settled by statute, *Water Code section 1243* providing that "[the] use of water for recreation and preservation and enhancement of fish and wildlife resources is a beneficial use of water." (See also *California Trout, Inc. v. State Water Resources Control Bd. (1979) 90 Cal.App.3d 816, 821 [153 Cal.Rptr. 672].)*

The 1928 amendment itself did not expand the authority of the Water Board. The board remained, under controlling judicial decisions, a ministerial body with the limited task of determining priorities between claimants seeking to appropriate unclaimed water. More recent statutory and judicial developments, however, have greatly enhanced the power of the Water Board to oversee the [*444] reasonable use of water and, in the process, made clear its authority to weigh and protect public trust values.

[***363] In 1955, the Legislature declared that in acting on appropriative applications, "the board shall consider the relative benefit to be derived from (1) all beneficial uses of the water concerned including, but not limited to, use for domestic, irrigation, municipal, industrial, preservation and enhancement of fish and wildlife, recreational, mining and power purposes . . . . The board may subject such appropriations to such terms and conditions as in its judgment will best develop, conserve, and utilize in the public interest, the water sought to be appropriated." (*Wat. Code, § 1257.*) In 1959 it stated that "[the] use of water for recreation and preservation and enhancement of fish and wildlife resources is a beneficial use of water." (*Wat. Code, § 1243.*) Finally in 1969 the Legislature instructed that "[in] determining the amount of water available for appropriation, the board shall take into account, whenever it is in the public interest, the amounts of water needed to remain in the source for protection of beneficial uses." (*Wat. Code, § 1243.5.*)

Judicial decisions have also expanded the powers of the Water Board. In *Temescal Water Co. v. Dept. Public Works (1955) 44 Cal.2d 90 [280 P.2d 1],* we rejected the holding of *Tulare Water Co. v. State Water Com., supra, 187 Cal. 533,* and held that the decision of the board to grant an application to appropriate water was a quasi-judicial decision, not a ministerial act. In *People v. Shirokow, supra, 26 Cal.3d 301,* we held that the board could enjoin diversion of water by the owner of a prescriptive right who refused to comply with water conservation programs, even though his right was not based on a board license. Our decision rested on the legislative intent "to vest in the board expansive powers to safeguard the scarce water resources of the state." (P. 309; see also *Environmental Defense Fund, Inc. v. East Bay Mun. Utility Dist., supra, 26 Cal.3d 183, 194-195; In re Waters of Long Valley Creek Stream System (1979) 25 Cal.3d 339 [158 Cal.Rptr. 350, 599 P.2d 656].)* Although the courts have refused to allow the board to appropriate water for in-stream uses, even those decisions have declared that the board has the power and duty to protect such uses by withholding water from appropriation. (*Fullerton v. State Water Resources Control Bd., supra, 90 Cal.App.3d 590, 603-604; California Trout, Inc. v. State Water Resources Control Bd., supra, 90 Cal.App.3d 816, 821.)*

Thus, the function of the Water Board has steadily evolved from the narrow role of deciding priorities between competing appropriators to the charge of comprehensive planning and allocation of waters. This change necessarily affects the board's responsibility with respect to the public trust. The board of limited powers of 1913 had neither the power nor duty to consider interests protected by the public trust; the present board, in undertaking planning and allocation of water resources, is required by statute to take those interests into account.

[*445] 4. *The relationship between the Public Trust Doctrine and the California Water Rights System.*

As we have seen, the public trust doctrine and the appropriative water rights system [**727] administered by the Water Board developed independently of each other. Each developed comprehensive rules and principles which, if applied to the full extent of their scope, would occupy the field of allocation of stream waters to the exclusion of any competing system of legal thought. Plaintiffs, for example, argue that the public trust is antecedent to and thus limits all appropriative water rights, an argument which implies that most appropriative water rights in California were acquired and are presently being used unlawfully. n24 Defendant DWP, on the other hand, argues that the public trust doctrine as to stream [***364] waters has been "subsumed" into the appropriative water rights system and, absorbed by that body of law, quietly disappeared; according to DWP, the recipient of a board license enjoys a vested right in perpetuity to take water without concern for the consequences to the trust.

n24 Plaintiffs suggest that appropriative rights expressly conferred by the Legislature would not be limited by the public trust doctrine. The Attorney General informs us, however, that the Legislature has rarely created water rights by express legislation, but instead has delegated that task to the Water Board.

We are unable to accept either position. In our opinion, both the public trust doctrine and the water rights system embody important precepts which make the law more responsive to the diverse needs and interests involved in the planning and allocation of water resources. To embrace one system of thought and reject the other would lead to an unbalanced structure, one which would either decry as a breach of trust appropriations essential to the economic development of this state, or deny any duty to protect or even consider the values promoted by the public trust. Therefore, seeking an accommodation which will make use of the pertinent principles of both the public trust doctrine and the appropriative water rights system, and drawing upon the history of the public trust and the water rights system, the body of judicial precedent, and the views of expert commentators, we reach the following conclusions:

(12) a. The state as sovereign retains continuing supervisory control over its navigable waters and the lands beneath those waters. This principle, fundamental to the concept of the public trust, applies to rights in flowing waters as well as to rights in tidelands and lakeshores; it prevents any party from acquiring a vested right to appropriate water in a manner harmful to the interests protected by the public trust. n25

n25 As we discussed earlier (*ante*, p. 440), there are rare exceptions to the rule stated in the text. It is unlikely that these exceptions will often apply to usufructuary water rights. (See discussion in Johnson, *op. cit. supra, 14 U.C. Davis L.Rev. 233, 263-264.)*

[*446] **(13)** b. As a matter of current and historical necessity, the Legislature, acting directly or through an authorized agency such as the Water Board, has the power to grant usufructuary licenses that will permit an appropriator to take water from flowing streams and use that water in a distant part of the state, even though this taking does not promote, and may unavoidably harm, the trust uses at the source stream. The population and economy of this state depend upon the appropriation of vast quantities of water for uses unrelated to in-stream trust values. n26 California's Constitution (see art. X, § 2), its statutes (see *Wat. Code, § § 100, 104*), decisions (see, e.g., *Waterford I. Dist. v. Turlock I. Dist. (1920) 50 Cal.App. 213, 220 [194 P. 757])*, and commentators (e.g., Hutchins, The Cal. Law of Water Rights, *op. cit. supra*, p. 11) all emphasize the need to make efficient use of California's limited water resources: all [**728] recognize, at least implicitly, that efficient use requires diverting water from in-stream uses. Now that the economy and population centers of this state have developed in reliance upon appropriated water, it would be disingenuous to hold that such appropriations are and have always been improper to the extent that they harm public trust uses, and can be justified only upon theories of reliance or estoppel.

n26 In contrast, the population and economy of this state does *not* depend on the conveyance of vast expanses of tidelands or other property underlying navigable waters. (See Comment, *The Public Trust Doctrine and California Water Law: National Audubon Society* v. *Dept. of Water and Power (1982) 33 Hastings L.J. 653, 668.)* Our opinion does not affect the restrictions imposed by the public trust doctrine upon transfer of such properties free of the trust.

(14) c. The state has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible. n27 Just as the history of [***365] this state shows that appropriation may be necessary for efficient use of water despite unavoidable harm to public trust values, it demonstrates that an appropriative water rights system administered without consideration of the

public trust may cause unnecessary and unjustified harm to trust interests. (See Johnson, *op. cit. supra, 14 U.C. Davis L.Rev. 233, 256-257;* Robie, *Some Reflections on Environmental Considerations in Water Rights Administration (1972) 2 Ecology L.Q. 695, 710-711;* Comment, *op. cit. supra, 33 Hastings L.J. 653, 654.)* As a matter of practical necessity the state may have to approve appropriations despite foreseeable harm to public trust uses. In so doing, however, the state must bear in mind its duty as trustee to consider the effect of the taking on the public trust (see *United Plainsmen v. N.D. State Water Cons. Commission (N.D. 1976)* [*447] *247 N.W.2d 457, 462-463),* and to preserve, so far as consistent with the public interest, the uses protected by the trust.

n27 Amendments to the Water Code enacted in 1955 and subsequent years codify in part the duty of the Water Board to consider public trust uses of stream water. (See, *ante*, at p. 444.) The requirements of the California Environmental Quality Act (*Pub. Resources Code, § 21000* et seq.) impose a similar obligation. (See Robie, *op. cit. supra, 2 Ecology L.Q. 695.)*

These enactments do not render the judicially fashioned public trust doctrine superfluous. Aside from the possibility that statutory protections can be repealed, the noncodified public trust doctrine remains important both to confirm the state's sovereign supervision and to require consideration of public trust uses in cases filed directly in the courts without prior proceedings before the board.

Once the state has approved an appropriation, the public trust imposes a duty of continuing supervision over the taking and use of the appropriated water. In exercising its sovereign power to allocate water resources in the public interest, the state is not confined by past allocation decisions which may be incorrect in light of current knowledge or inconsistent with current needs.

The state accordingly has the power to reconsider allocation decisions even though those decisions were made after due consideration of their effect on the public trust. n28 The case for reconsidering a particular decision, however, is even stronger when that decision failed to weigh and consider public trust uses. In the case before us, the salient fact is that no responsible body has ever determined the impact of diverting the entire flow of the Mono Lake tributaries into the Los Angeles Aqueduct. This is not a case in which the Legislature, the Water Board, or any judicial body has determined that the needs of Los Angeles outweigh the needs of the Mono Basin, that the benefit gained is worth the price. Neither has any responsible body determined whether some lesser taking would better balance the diverse interests. n29 Instead, [**729] DWP acquired rights to the entire flow in 1940 from a water board which believed it lacked both the power and the duty to protect the Mono Lake environment, and continues to exercise those rights in apparent disregard for the resulting damage to the scenery, ecology, and human uses of Mono Lake.

n28 The state Attorney General asserts that the Water Board could also reconsider the DWP water rights under the doctrine of unreasonable use under article X, section 2. DWP maintains, however, that its use of the water for domestic consumption is prima facie reasonable. The dispute centers on the test of unreasonable use -- does it refer only to inordinate and wasteful use of water, as in *Peabody v. City of Vallejo, supra, 2.* Cal.2d 351, or to any use less than the optimum allocation of water? (On this question, see generally *Joslin v. Marin Mun. Water Dist., supra, 67 Cal.2d 132, 138-141.)* In view of our reliance on the public trust doctrine as a basis for reconsideration of DWP's usufructuary rights, we need not resolve that controversy.

n29 The one objective study which has been done to date, the Report of the Interagency Task Force on Mono Lake recommended a sharp curtailment in the diversion of water by the DWP. (See Task Force Report at pp. 36-40.) The task force, however, had only the authority to make recommendations, and lacked power to adjudicate disputed issues of fact or law or to allocate water.

It is clear that some responsible body ought to reconsider the allocation of the waters of the Mono Basin. n30 No vested rights bar such reconsideration. We [*448] recognize [***366] the substantial concerns voiced by Los Angeles -- the city's need for water, its reliance upon the 1940 board decision, the cost both in terms of money and environmental impact of obtaining water elsewhere. Such concerns must enter into any allocation decision. We hold only that they do not preclude a reconsideration and reallocation which also takes into account the impact of water diversion on the Mono Lake environment.

n30 In approving the DWP appropriative claim, the 1940 Water Board relied on *Water Code section 106* which states that "[it] is hereby

declared to be the established policy of this State that the use of water for domestic purposes is the highest use of water and that the next highest use is for irrigation." DWP points to this section, and to a 1945 enactment which declares a policy of protecting municipal water rights (*Wat. Code, § 106.5*), and inquires into the role of these policy declarations in any reconsideration of DWP's rights in the Mono Lake tributaries.

Although the primary function of these provisions, particularly section 106, is to establish priorities between competing appropriators, these enactments also declare principles of California water policy applicable to any allocation of water resources. In the latter context, however, these policy declarations must be read in conjunction with later enactments requiring consideration of in-stream uses (*Wat. Code, § § 1243, 1257*, quoted *ante* at pp. 443-444) and judicial decisions explaining the policy embodied in the public trust doctrine. Thus, neither domestic and municipal uses nor in-stream uses can claim an absolute priority.

5. *Exhaustion of Administrative Remedies.*

(15a) On motion for summary judgment, the trial court held that plaintiffs must exhaust their administrative remedies before the Water Board prior to filing suit in superior court. Plaintiffs, supported on this point by DWP, contend that the courts and the board have concurrent jurisdiction over the merits of their claim, and thus that they had no duty to exhaust any administrative remedy before filing suit.

The first question we must face is whether plaintiffs had any Water Board remedy to exhaust. There appear to be two possible grounds upon which plaintiffs could initiate a board proceeding. First, they could claim that DWP was making an unreasonable use of water, in violation either of controlling constitutional and statutory provisions or of the terms of DWP's license. (See Cal. Admin. Code, tit. 23, § 764.10.) Plaintiffs, however, expressly disclaim any intent to charge unreasonable use, and announced instead their intent to found their action solely on the public trust doctrine, so this remedy is unavailable.

(16) The only alternative method of bringing the issue before the board is a proceeding invoking *Water Code section 2501*, which provides that "[the] board may determine, in the proceedings provided for in this chapter, all rights to water of a stream system whether based upon appropriation, riparian right, or other basis of right." We recognize certain difficulties in applying this remedy to the present case. It is unclear whether a claim based on the public trust is a "water right" in the technical sense of that term. (See Dunning, *op. cit. supra, 14 U.C. Davis L.Rev. 357, 383;* cf. *Fullerton v. State Water Resources Control Bd., supra, 90 Cal.App.3d 590, 604.)* Also, the relevant chapter of the Water Code refers to petitions filed by "claimants to water" (see, e.g., *Wat. Code, § 2525*); it is uncertain whether a person asserting the interest of the public trust would be considered a "claimant."

[*449] [**730] In recent decisions, however, we have discerned a legislative intent to grant the Water Board a "broad," "open-ended," "expansive" authority to undertake comprehensive planning and allocation of water resources. (*In re Waters of Long Valley Creek Stream System (1979) 25 Cal.3d 339, 348-349, 350, fn. 5 [158 Cal.Rptr. 350, 599 P.2d 656]; People v. Shirokow, supra , 26 Cal.3d 301, 309.)* Both cases emphasized the board's power to adjudicate *all* competing claims, even riparian claims (*Long Beach*) and prescriptive claims (*Shirokow*) which do not fall within the appropriative licensing system. Having construed section 2501 to give the board broad substantive powers -- powers adequate to carry out the legislative mandate of comprehensive protection of water resources -- it would be inconsistent to read that statute so narrowly that the board lacked jurisdiction to employ those powers.

We therefore construe *Water Code section 2501* to permit a person claiming [***367] that a use of water is harmful to interests protected by the public trust to seek a board determination of the allocation of water in a stream system, a determination which may include reconsideration of rights previously granted in that system. Under this interpretation of section 2501, plaintiffs have a remedy before the Water Board.

(15b) Must plaintiffs exhaust this administrative remedy before filing suit in superior court? A long line of decisions indicates that remedies before the Water Board are not exclusive, but that the courts have concurrent original jurisdiction.

As we observed earlier in this opinion (see *ante*, pp. 442-443), for much of its history the Water Board was an agency of limited scope and power. Many water right disputes, such as those involving riparian rights, pueblo rights, and prescriptive rights, did not fall within the jurisdiction of the board. But even in cases which arguably came within the board's limited jurisdiction, the parties often filed directly in the superior court, which assumed jurisdiction and decided the case. (See, e.g., *Allen v. California Water & Tel. Co. (1946) 29 Cal.2d 466 [176 P.2d 8].)* All public trust cases cited in this opinion were filed directly in the courts. Thus, a 1967 treatise on California water law could conclude that "[generally], the superior courts of California have original jurisdiction

over water rights controversies . . ." but in some cases must share concurrent jurisdiction with administrative bodies. (1 Rogers & Nichols, *op. cit. supra*, at p. 528.)

Although prior cases had assumed jurisdictional concurrency, we first discussed that question in our decision in *Environmental Defense Fund, Inc. v. Easy Bay Mun. Utility Dist. (1977) 20 Cal.3d 327 [142 Cal.Rptr. 904, 572 P.2d 1128]* (EDF *I*), and our later decision in the same case on remand from the United States Supreme Court, *Environmental Defense Fund, Inc. v. East Bay* [*450] *Mun. Utility Dist., supra, 26 Cal.3d 183 (EDF II)*. Plaintiff in that case sued to enjoin performance of a contract for diversion of water from the American River on the ground that under the doctrine of reasonable use the utility district should instead use reclaimed waste water. Intervener County of Sacramento claimed the diversion was an unreasonable use because the diversion point was too far upstream, and would deprive downstream users of the water.

In *EDF I* we held that the Legislature had intended to vest regulation of waste water reclamation in the Water Board because of the need for expert evaluation of the health and feasibility problems involved. We therefore concluded that the plaintiffs' superior court action to compel waste water reclamation was barred by failure to exhaust administrative remedies. *(20 Cal.3d 327, 343-344.)*

EDF I further held the intervener's claim concerning the diversion point was barred by federal preemption (p. 340), but the United States Supreme Court vacated our decision and remanded for reconsideration [**731] in light of *California v. United States (1978) 438 U.S. 645 [57 L.Ed.2d 1018, 98 S.Ct. 2985]*. On remand, we found no federal preemption, and further held that intervener's claim was not defeated by failure to exhaust administrative remedies. Noting that "the courts [had] traditionally exercised jurisdiction of claims of unreasonable water use" (*EDF II, 26 Cal.3d 183, 199),* we stated that "[apart] from overriding considerations such as are presented by health and safety dangers involved in the reclamation of waste water, we are satisfied that the courts have concurrent jurisdiction with . . . administrative agencies to enforce the self-executing provisions of article X, section 2." (P. 200.) n31

> n31 This case does not fall within the exception established in *EDF II* granting the board exclusive jurisdiction over reclamation of waste waters and other matters involving a potential danger to public health. (See *EDF II*, pp. 199-200.) The issues involving Mono Lake are complex, and because the emerging lakebed may contribute to dust storms, the case includes a public health aspect. Nevertheless, those issues are more analogous to those typically decided by the courts under their concurrent jurisdiction (such as the claim of intervener in *EDF II* that the diversion point of water was too far upstream) than they are to the narrow and specialized problem of reclaiming waste water. If we read the exception in *EDF II* so broadly that any complex case with tangential effect on public health came within the board's exclusive jurisdiction, that exception would consume the rule of concurrent jurisdiction.

[***368] The present case involves the same considerations as those before us in the *EDF* cases. On the one hand, we have the board with experience and expert knowledge, not only in the intricacies of water law but in the economic and engineering problems involved in implementing water policy. n32 The board, moreover, is charged with a duty of comprehensive planning, a function difficult to perform if some cases bypass board jurisdiction. On the other hand, we [*451] have an established line of authority declaring the concurrent jurisdiction of the courts, and reliance upon that authority by the plaintiffs.

> n32 We noted in *EDF I* that "[the] scope and technical complexity of issues concerning water resource management are unequalled by virtually any other type of activity presented to the courts." (*EDF I, supra, 20 Cal.3d 327, 344.)*

We have seriously considered whether, in light of the broad powers and duties which the Legislature has conferred on the Water Board, we should overrule *EDF II* and declare that henceforth the board has exclusive primary jurisdiction in matters falling within its purview. We perceive, however, that the Legislature has chosen an alternative means of reconciling board expertise and judicial precedent. Instead of granting the board exclusive primary jurisdiction, it has enacted a series of statutes designed to permit state courts, and even federal courts, to make use of the experience and expert knowledge of the board.

Water Code section 2000 provides that "[in] any suit brought in any court of competent jurisdiction in this State for determination of rights to water, the court may order a reference to the board, as referee, of any or all issues involved in the suit." Section 2001 provides alternatively that the court "may refer the suit to the board for investigation of and report upon any or all of the physical facts involved." Finally, recognizing that some water cases will be filed in or transferred to federal courts, sec-

tion 2075 provides that "[in] case suit is brought in a federal court for determination of the rights to water within, or partially within, this State, the board may accept a reference of such suit as master or referee for the court."

These statutes necessarily imply that the superior court has concurrent original jurisdiction in suits to determine water rights, for a reference to the board as referee or master would rarely if ever be appropriate in a case filed originally with the board. The court, however, need not proceed in ignorance, nor need it invest the time required to acquire the skills and knowledge [**732] the board already possesses. When the case raises issues which should be considered by the board, the court may refer the case to the board. Thus the courts, through the exercise of sound discretion and the use of their reference powers, can substantially eliminate the danger that litigation will bypass the board's expert knowledge and frustrate its duty of comprehensive planning. n33

n33 The state Attorney General argues that even though the courts generally possess concurrent jurisdiction in water cases, the board should have exclusive jurisdiction over actions attacking a board-granted water right. In view of the reference power of the courts, we think this exception unnecessary. The court presently has the power to refer such cases to the board whenever reference is appropriate; a rule of exclusive jurisdiction, requiring all such cases to be initiated before the board, would not significantly improve the fairness or efficiency of the process. In some cases, including the present one, it would lead to unproductive controversy over whether the plaintiff is challenging a right granted by the board or merely asserting an alleged right of higher priority.

[*452] 6. *Conclusion.*

This has been a long and involved answer to the two questions posed by the federal [***369] district court. In summarizing our opinion, we will essay a shorter version of our response.

The federal court inquired first of the interrelationship between the public trust doctrine and the California water rights system, asking whether the "public trust doctrine in this context [is] subsumed in the California water rights system, or . . . [functions] independently of that system?" Our answer is "neither." The public trust doctrine and the appropriative water rights system are parts of an integrated system of water law. The public trust doctrine serves the function in that integrated system of preserving the continuing sovereign power of the state to protect public trust uses, a power which precludes anyone from acquiring a vested right to harm the public trust, and imposes a continuing duty on the state to take such uses into account in allocating water resources.

Restating its question, the federal court asked: "[Can] the plaintiffs challenge the Department's permits and licenses by arguing that those permits and licenses are limited by the public trust doctrine, or must the plaintiffs . . . [argue] that the water diversions and uses authorized thereunder are not 'reasonable or beneficial' as required under the California water rights system?" We reply that plaintiffs can rely on the public trust doctrine in seeking reconsideration of the allocation of the waters of the Mono Basin.

The federal court's second question asked whether plaintiffs must exhaust an administrative remedy before filing suit. Our response is "no." The courts and the Water Board have concurrent jurisdiction in cases of this kind. If the nature or complexity of the issues indicate that an initial determination by the board is appropriate, the courts may refer the matter to the board.

This opinion is but one step in the eventual resolution of the Mono Lake controversy. We do not dictate any particular allocation of water. Our objective is to resolve a legal conundrum in which two competing systems of thought -- the public trust doctrine and the appropriative water rights system -- existed independently of each other, espousing principles which seemingly suggested opposite results. We hope by integrating these two doctrines to clear away the legal barriers which have so far prevented either the Water Board or the courts from taking a new and objective look at the water resources of the Mono Basin. The human and environmental uses of Mono Lake -- uses protected by the public trust doctrine -- deserve to be taken into account. Such uses should not be destroyed because the state mistakenly thought itself powerless to protect them.

[*453] Let a peremptory writ of mandate issue commanding the Superior Court of Alpine County to vacate its judgment in this action [**733] and to enter a new judgment consistent with the views stated in this opinion. n34

n34 The superior court should determine whether plaintiffs are entitled to attorney fees under *Code of Civil Procedure section 1021.5* and *Woodland Hills Residents Assn., Inc. v. City Council (1979) 23 Cal.3d 917, 938-940 [154 Cal.Rptr. 503, 593 P.2d 200].*

CONCURBY:

KAUS; RICHARDSON (In Part)

CONCUR:

KAUS, J. I concur in the court's opinion. While I share Justice Richardson's reservations on the issue of concurrent jurisdiction, I doubt that the problem can be solved by making the question of exclusive board jurisdiction depend on such rather vague tests as those announced in *EDF I* and *EDF II*. If a majority of the court were inclined to reconsider the issue, I would respectfully suggest that the exclusive jurisdiction of the board should be broadened to include disputes such as the present one. This would, obviously, involve the overruling of certain precedents on which plaintiffs justifiably [***370] relied. The new rule should, therefore, not be applicable to them.

Since, however, the requisite majority interest in reconsidering the question of concurrent jurisdiction is lacking, I join the court's opinion.

DISSENTBY:

RICHARDSON (In Part)

DISSENT:

RICHARDSON, J. I concur with parts 1 through 4 of the majority opinion and with its analysis of the relationship between the public trust doctrine and the water rights system in this state. I respectfully dissent, however, from part 5 of the opinion wherein the majority holds that the courts and the California Water Resources Board (Water Board) have *concurrent* jurisdiction in cases of this kind. In my view, there are several compelling reasons for holding that the Water Board has exclusive original jurisdiction over the present dispute, subject of course to judicial review of its decision.

As the majority recognizes, the matter of concurrent jurisdiction involves the related issue of exhaustion of administrative remedies. It is well settled that where an administrative remedy is provided by statute, that remedy must be pursued and exhausted before the courts will act. (*Abelleira v. District Court of Appeal (1941) 17 Cal.2d 280, 292 [109 P.2d 942, 132 A.L.R. 715].)* This doctrine applies to disputes regarding water appropriated pursuant to permits issued by the Water Board. (*Temescal Water Co. v. Dept. Public Works (1955) 44 Cal.2d 90, 106 [280 P.2d 1].)* The majority concedes that plaintiffs had an administrative remedy available to them in the present case, namely, a proceeding under *Water Code section 2501* "to seek a board determination of the allocation of water in a stream system," including "reconsideration of rights previously granted in that system." (*Ante*, p. 450.) Nevertheless, the majority [*454] concludes that prior cases of this court, together with certain statutory provisions *permitting* (but not requiring) reference of water disputes to the Water Board, both excuse plaintiffs' failure to exhaust their administrative remedy and allow the courts to exercise concurrent jurisdiction in cases of this kind. I reach a contrary conclusion.

As the majority explains (*ante*, p. 450), earlier cases which held that the court shared concurrent jurisdiction with the Water Board were decided at a time when the board "was an agency of limited scope and power," without authority to consider many water right issues such as the application of the public trust. Indeed, the Water Board in the present case itself had assumed that it lacked jurisdiction over public trust issues; the board's 1940 decision granting appropriative permits reflects that assumption. (*Ante*, pp. 427-428.) If, as the majority now holds, the Water Board's jurisdiction extends to public trust issues, it is entirely proper to apply the exhaustion of [**734] remedies principle and insist that plaintiffs seek reconsideration from the board before litigating the matter in court.

The majority relies primarily upon *Environmental Defense Fund, Inc. v. East Bay Mun. Utility Dist. (1980) 26 Cal.3d 183, 198-200 [161 Cal.Rptr. 466, 605 P.2d 1]* (*EDF II*), but our language in that case supports the view that, in cases of the kind now before us, the board has exclusive jurisdiction. In *EDF II*, we held that "Apart from overriding considerations," the courts have concurrent jurisdiction with the Water Board to enforce the self-executing constitutional proscriptions against unreasonable water use and diversion. (P. 200.) Most of the "overriding considerations" referred to in *EDF II* are present here.

Thus, in that case we observed that waste water reclamation disputes require consideration of such complex and "transcendent" factors as the potential danger to public health and safety and the feasibility of reclamation, factors which would require deference to "appropriate administrative agencies," [***371] such as the Water Board, and would foreclose concurrent court jurisdiction. (P. 199; see also *Environmental Defense Fund, Inc. v. East Bay Mun. Utility Dist. (1977) 20 Cal.3d 327, 343-344 [142 Cal.Rptr. 904, 572 P.2d 1128]* (*EDF I*).) We repeated our earlier observation that "private judicial litigation involves piecemeal adjudication determining only the relative rights of the parties before the court, whereas in administrative proceedings comprehensive adjudication considers the interests of other concerned persons who may not be parties to the court action." (*EDF II*, at p. 199; see *In re Waters of Long Valley Creek Stream System (1979) 25 Cal.3d 339, 359-360 [158 Cal.Rptr. 350, 599 P.2d 656].)*

The same "overriding considerations" catalogued by us in *EDF II* seem applicable here. Although this case does not involve waste water reclamation, nevertheless the balancing of public trust values affecting Mono Lake and the [*455] water rights of a large metropolitan community presents similarly complex, overriding and "transcendent" issues which demand initial consideration by the Water Board. Only the board, which had issued the very licenses and permits now under challenge, possesses the experience and expertise needed to balance all of the various competing interests in reaching a fair and reasonable resolution of this vastly important litigation.

As we noted in *EDF I*, "The scope and technical complexity of issues concerning water resource management are unequalled by virtually any other type of activity presented to the courts." *(20 Cal.3d at p. 344.)* As the majority opinion herein amply demonstrates, similar complexities are presented here. The majority concedes that (1) "The present case involves the same considerations as those before us in the *EDF* cases," (2) the Water Board possesses the expertise to resolve "the intricacies of water law" and "the economic and engineering problems involved in implementing water policy," and (3) the board "is charged with a duty of comprehensive planning, a function difficult to perform if some cases bypass board jurisdiction." (*Ante*, p. 450.) Thus, the case for exclusive board jurisdiction seems to me truly overwhelming.

The majority's suggestion that various statutory provisions contemplate the exercise of concurrent jurisdiction in cases of this kind is unconvincing. These provisions (*Wat. Code, § § 2000, 2001, 2075*) merely authorize the courts in water rights cases to refer the issues to the Water Board for its determination as a referee. Obviously, these provisions do not purport to excuse a prior failure to exhaust available administrative remedies before the Water Board. Moreover, these provisions do not attempt to resolve the question, presented in the *EDF* cases, whether "overriding considerations" dictate an exception to the general rule of concurrent jurisdiction.

As we said in *EDF I*, "When . . . the statutory pattern regulating a subject matter integrates the administrative agency [**735] into the regulatory scheme and the subject of the litigation demands a high level of expertise within the agency's special competence, we are satisfied that the litigation in the first instance must be addressed to the agency. [Citation.]" *(20 Cal.3d at p. 344.)* That principle seems fully applicable here.

I would affirm the judgment.

1 of 3 DOCUMENTS

S. D. WARREN COMPANY, Petitioner v. MAINE BOARD OF ENVIRONMENTAL PROTECTION et al.

No. 04-1527

SUPREME COURT OF THE UNITED STATES

126 S. Ct. 1843; 164 L. Ed. 2d 625; 2006 U.S. LEXIS 3955; 74 U.S.L.W. 4244; 62 ERC (BNA) 1257

February 21, 2006, Argued
May 15, 2006, Decided

NOTICE: [***1]

The LEXIS pagination of this document is subject to change pending release of the final published version.

PRIOR HISTORY: ON WRIT OF CERTIORARI TO THE SUPREME JUDICIAL COURT OF MAINE. *S.D. Warren Co. v. Bd. of Envtl. Prot., 2005 ME 27, 868 A.2d 210, 2005 Me. LEXIS 28 (2005)*

DISPOSITION: Affirmed.

DECISION: [**625]

Federal licensing of hydroelectric dams held to require state certification, under § 401 of Clean Water Act (33 U.S.C.S. § 1341), that operation of dams would not violate federal or state water-protection laws.

SUMMARY:

Under *§ 401* of the Clean Water Act (CWA) (*33 U.S.C.S. § 1341*), federal licensing of an activity that might cause a "discharge" into navigable waters was conditioned on certification, from the state in which the discharge might originate, that the activity would not violate federal or state water-protection laws.

When a company asked the Federal Energy Regulatory Commission (FERC) to renew the required federal licenses for five of the hydroelectric dams--which impounded river water, ran it through turbines, and returned the water to the riverbed after passing it around part of the river--that the company operated on a Maine river to generate power for the company's paper mill, the company (1) applied for certifications under *§ 401* from Maine's department of environmental protection, but (2) filed the application under protest on the basis of the company's assertion that the dams did not cause any "discharge" into the river.

After the state agency issued the requested certifications, and FERC licensed the dams subject to compliance with the conditions contained in the certifications, the company was unsuccessful in its state administrative appeal asserting that the certifications were not required.

The company, contending that the dams in question did not cause a "discharge" under *§ 401*, filed suit in the Superior Court of Maine, Cumberland County. The Superior Court, rejecting this contention, affirmed the administrative decision (*2004 Me. Super. LEXIS 115*), and the Supreme Judicial Court of Maine affirmed (*2005 ME 27, 868 A. 2d 210*).

[**626] On certiorari, the United States Supreme Court affirmed. In an opinion by Souter, J., joined by Roberts, Ch. J., and Stevens, Kennedy, Thomas, Ginsburg, Breyer, and Alito, JJ., and

joined in pertinent part by Scalia, J., it was held that operating the dams might result in a "discharge" under *§ 401*, and thus, the dams required state certification, as:

(1) When applied to water, "discharge" commonly meant a "flowing or issuing out."

(2) This ordinary sense had consistently been the meaning intended when the United States Supreme Court had used the term in prior water cases.

(3) The fact that the Environmental Protection Agency and FERC had each regularly read "discharge" as having its plain meaning confirmed the court's understanding of the everyday sense of the term.

(4) The company's arguments against reading "discharge" in its common sense failed on their own terms.

(5) Reading *§ 401* to give "discharge" its common and ordinary meaning preserved the state authority apparently intended under the CWA.

LAWYERS' EDITION HEADNOTES:

[**LEdHN1]
ENVIRONMENTAL LAW § 32
-- Clean Water Act -- hydroelectric dams -- state certification -- discharge into navigable waters
Headnote: [1A] [1B] [1C] [1D] [1E] [1F] [1G] [1H]

Under *§ 401* of the Clean Water Act (CWA) (*33 U.S.C.S. § 1341*)--which conditioned federal licensing of an activity that might cause a "discharge" into navigable waters on certification, from the state in which the discharge might originate, that the activity would not violate federal or state water-protection laws--operating a dam to produce hydroelectricity might result in such a discharge. Thus, when a company asked the Federal Energy Regulatory Commission (FERC) to renew the required federal licenses for five of the hydroelectric dams (which impounded river water, ran it through turbines, and returned the water to the riverbed after passing it around part of the river) that the company operated to generate power for the company's paper mill, the company was required to obtain *§ 401* certification from the state in which the dams were located, as:

(1) Although the CWA, in *33 U.S.C.S. § 1362(16)*, provided that the term "discharge," when used without qualification, included a discharge of a pollutant and a discharge of pollutants--and in *33 U.S.C.S. § 1362(12)*, defined "discharge of a pollutant" and "discharge of pollutants" as meaning "any addition of any pollutant to navigable waters from any point source"--"discharge" presumably was broader, as otherwise superfluous.

(2) When applied to water, "discharge" commonly meant a "flowing or issuing out."

(3) This ordinary sense had consistently been the meaning intended when the United States Supreme Court had used the term in prior water cases.

(4) The fact that the Environmental Protection Agency and FERC had each regularly read "discharge" as having its plain meaning and thus covering releases from hydroelectric dams confirmed the court's understanding [**627] of the everyday sense of the term.

(5) The company's arguments against reading "discharge" in its common sense failed on their own terms, for (a) the CWA did not stop at controlling the "addition of pollutants," but dealt with "pollution" generally, which Congress defined in *33 U.S.C.S. § 1362(19)* to mean "the man-made or man-induced alteration of the chemical, physical, biological, and radiological integrity of water"; and (b) the alteration of water quality as thus defined was a risk inherent in limiting river flow and releasing water through turbines.

(6) Reading *§ 401* to give "discharge" its common and ordinary meaning preserved the state authority apparently intended under the CWA.

[**LEdHN2]
ENVIRONMENTAL LAW § 32
-- Clean Water Act -- state certification
Headnote: [2A] [2B]

State water quality standards adopted pursuant to *§ 303* of the Clean Water Act (CWA) (*33 U.S.C.S. § 1313*) were among the "other limitations" in § 401 of the CWA (*33 U.S.C.S. § 1341*)--which conditioned federal licensing of an activity that might cause a "discharge" into navigable waters on certification, from the state in which the discharge might originate, that the activity would not

violate federal or state water-protection laws--with which a state might insure compliance through the *§ 401* certification process.

[**LEdHN3]
STATUTES § 165
-- "discharge" -- natural meaning
Headnote: [3]

For purposes of deciding whether operating a dam to produce hydroelectricity might cause a "discharge" under *§ 401* of the Clean Water Act (*33 U.S.C.S. § 1341*), the United States Supreme Court was left to construe the term "discharge" in accordance with its ordinary or natural meaning, as the term was neither defined in the statute nor a term of art.

[**LEdHN4]
STATUTES § 162.7
-- "discharge" into navigable waters -- EPA and FERC understanding
Headnote: [4]

For purposes of deciding whether operating a dam to produce hydroelectricity might cause a "discharge" under *§ 401* of the Clean Water Act (CWA) (*33 U.S.C.S. § 1341*), where neither the Environmental Protection Agency nor the Federal Energy Regulator Commission had formally settled the definition of the term "discharge" or even set out agency reasoning, these agencies' expressions of their understanding of the term did not command deference from the United States Supreme Court.

[**LEdHN5]
STATUTES § 112
-- construction -- associated terms
Headnote: [5A] [5B] [5C]

For purposes of deciding whether operating a dam to produce hydroelectricity might cause a "discharge" under *§ 401* of the Clean Water Act (CWA) (*33 U.S.C.S. § 1341*), the interpretive canon that a word is known by the company it keeps--which canon is invoked when a string of statutory terms raises the implication that the words grouped in a list ought to be given related meaning--was out of place, where (1) it was argued that since § 502(16) of the CWA (*33 U.S.C.S. § 1362(16)*) provided that the term "discharge," when used without qualification, included a discharge of a pollutant and a discharge of pollutants, "discharge" standing alone had to require the addition of something foreign to the water into which the [**628] discharge flowed; (2) this argument seemed to assume that pairing a broad statutory term with a narrow one shrank the broad one; (3) there was no such general usage, for giving one example did not convert express inclusion into restrictive equation; and (4) uncritical use of interpretive rules was especially risky in making sense of a complicated statute like the CWA, where technical definitions were worked out with great effort in the legislative process.

[**LEdHN6]
ENVIRONMENTAL LAW § 32
-- Clean Water Act -- "discharge" into navigable waters
Headnote: [6A] [6B]

For purposes of *§ 401* of the Clean Water Act (*33 U.S.C.S. § 1341*)--which conditions federal licensing of an activity that might cause a discharge into navigable waters on certification, from the state in which the discharge might originate, that the activity would not violate federal or state water-protection laws--an addition of something foreign to the water is not fundamental to a "discharge."

[**LEdHN7]
ENVIRONMENTAL LAW § 30
WATERS § 27
-- Clean Water Act -- waters of United States
Headnote: [7A] [7B]

For purposes of the Clean Water Act (*33 U.S.C.S. § § 1251 et seq.*), river waters diverted from their natural course by some private hydroelectric dams did not lose their status as waters of the United States--nor did such river waters become an addition to the waters of the United States when redeposited into the river--as one cannot denationalize national waters by exerting private control over them.

[**LEdHN8]
STATUTES § 145.6
-- Clean Water Act -- "discharge" into navigable waters -- failure to enact proposed definition
Headnote: [8]

For purposes of deciding whether operating a dam to produce hydroelectricity might cause a "discharge" under *§ 401* of the Clean Water Act (CWA) (*33 U.S.C.S. § 1341*), the CWA's legislative history, if it meant anything, went against the argument for avoiding the common meaning of "discharge," as:

(1) Although a proposed definition had read, "[t]he term 'discharge' when used without qualification includes a discharge of a pollutant, a discharge of pollutants, and a thermal discharge," Congress omitted the reference to "thermal discharge" in the CWA.

(2) It was implausible speculation to say that the word "includes" was left in the description of a "discharge" by mere inattention.

(3) The legislative history demonstrated only the congressional rejection of language that would have created a short series of terms with a common implication of an addition of something foreign to the water into which the discharge flowed.

(4) Congress probably distinguished the terms "discharge" and "discharge of pollutants" deliberately, in order to use them in separate places and to separate ends.

(Souter, J., joined by Roberts, Ch. J., and Stevens, Kennedy, Thomas, Ginsburg, Breyer, and Alito, JJ.)

[**LEdHN9]
ENVIRONMENTAL LAW § 32
-- Clean Water Act -- review of state certification
Headnote: [9A] [9B]

Nothing in § 511(c)(2) of the Clean Water Act (CWA) (*33 U.S.C.S. § 1371(c)(2)*) was disturbed by the United States Supreme Court's holding that federal licensing of a company's hydroelectric dams required [**629] state certification, under § 401 of the CWA (*33 U.S.C.S. § 1341*), that operation of the dams would not violate federal or state water-protection laws, as (1) § 511(c)(2) made the point that nothing in the National Environmental Policy Act of 1969 (NEPA) (*42 U.S.C.S. § 4321*) authorized any federal agency "authorized to license or permit the conduct of any activity which may result in the discharge of a pollutant" to review "any effluent limitation or other requirement established pursuant to this chapter or the adequacy of any certification under [*§ 401*] of this title;" but (2) notwithstanding the Supreme Court's holding, it was still the case that, when a state issued a certification covering a discharge that added no pollutant, no federal agency would be deemed to have authority under NEPA to "review" any limitations or the adequacy of the *§ 401* certification.

[**LEdHN10]
ENVIRONMENTAL LAW § 32
-- federal and state cooperation
Headnote: [10A] [10B]

With respect to some matters concerning river dams--that (1) such dams can cause changes in the movement, flow, and circulation of the river, causing it to absorb less oxygen and to be less passable by boaters and fish; and (2) some particular dams purportedly (a) caused chemical modification of a river with immediate impact on aquatic organisms, (b) eliminated the opportunity for fishing in long stretches of river, and (c) prevented recreational access to and use of the river--such changes in the river fall within a state's legitimate legislative business, and the Clean Water Act (*33 U.S.C.S. § § 1251 et seq.*) provides for a system that respects the states' concerns.

SYLLABUS:

[**630] Petitioner company (Warren) asked the Federal Energy Regulatory Commission (FERC) to renew federal licenses for five of the hydroelectric dams it operates on a Maine river to generate power for its paper mill. Each dam impounds water, which is then run through turbines and returned to the riverbed, passing around a section of the river. Under protest, Warren applied for water quality certifications from respondent Maine Board of Environmental Protection pursuant to *§ 401 of the Clean Water Act*, which requires state approval of "any activity" "which may result in any discharge into the [Nation's] navigable waters. [***2] " FERC licensed the dams subject to compliance with those certifications, which require Warren to maintain a minimum stream flow and to allow passage for certain fish and eels. After losing state administrative appeals, Warren filed suit in a state court, which rejected Warren's claim that its

dams do not result in a "discharge" under *§ 401*. The State Supreme Judicial Court affirmed.

Held:

Because a dam raises a potential for a discharge, *§ 401* is triggered and state certification is required.

(a) The Clean Water Act does not define "discharge," but provides that the term "when used without qualification includes a discharge of a pollutant, and a discharge of pollutants," *33 U.S.C. § 1362(16)*. But "discharge" is presumably broader, else superfluous, and since it is neither defined nor a term of art, it should be construed "in accordance with its ordinary or natural meaning," *FDIC v. Meyer, 510 U.S. 471, 476, 114 S. Ct. 996, 127 L. Ed. 2d 308*. When applied to water, discharge commonly means "flowing or issuing out," Webster's New International Dictionary 742. This Court has consistently intended that meaning in prior water cases, including the only [***3] case focused on *§ 401, PUD No. 1 v. Washington Dep't of Ecology, 511 U.S. 700, 114 S. Ct. 1900, 128 L. Ed. 2d 716*, in which no one questioned that the discharge of water from a dam fell within *§ 401*'s ambit. The Environmental Protection Agency and FERC have also regularly read "discharge" to cover releases from hydroelectric dams.

(b) Warren's three arguments for avoiding this common reading are unavailing. The canon *noscitur a sociis*--"a word is known by the company it keeps," *Gustafson v. Alloyd Co., 513 U.S. 561, 575, 115 S. Ct. 1061, 131 L. Ed. 2d 1*--does not apply here. Warren claims that since "discharge" is keeping company with "discharge" defined as adding one or more pollutants, see *§ 1362(12)*, discharge standing alone must also require the addition of something foreign to the water. This argument seems to assume that pairing a broad statutory term with a narrow one shrinks the broad one, but there is no such general usage of language this way. Warren also relies on *South Fla. Water Management Dist. v. Miccosukee Tribe, 541 U.S. 95, 124 S. Ct.* [**631] *1537, 158 L. Ed. 2d 264*, but that case is not on point. It addressed *§ 402*, not *§ 401*, and the two sections are not interchangeable, [***4] as they serve different purposes and use different language to reach them. Thus, that something must be added in order to implicate *§ 402* does not explain what suffices for a discharge under *§ 401*. Finally, the Clean Water Act's legislative history, if it means anything, goes against Warren's reading of "discharge."

(c) Warren's arguments against reading "discharge" in its common sense also miss the forest for the trees. Congress passed the Clean Water Act to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters," *33 U.S.C. § 1251(a)*, the "national goal" being to achieve "water quality [providing] for the protection and propagation of fish . . . and . . . for recreation," *§ 1251(a)(2)*. To do this, the Act deals with "pollution" generally, see *§ 1251(b)*, which it defines as "the man-made or man-induced alteration of the [water's] chemical, physical, biological, and radiological integrity," *§ 1362(19)*. Because the alteration of water quality as thus defined is a risk inherent in limiting river flow and releasing water through turbines, changes in the river's flow, movement, and circulation fall within [***5] a State's legitimate legislative business. State certifications under *§ 401* are essential in the scheme to preserve state authority to address the broad range of pollution. Reading *§ 401* to give "discharge" its common and ordinary meaning preserves the state authority apparently intended.

2005 ME 27, 868 A. 2d 210, affirmed.

COUNSEL:

William J. Kayatta, Jr. argued the cause for petitioner.

G. Steven Rowe argued the cause for respondent Maine Board of Environmental Protection.

Jeffrey P. Minear argued the cause for the United States, as amicus curiae, by special leave of court.

JUDGES: Souter, J., delivered the opinion of the Court, in which Roberts, C. J., and Stevens, Kennedy, Thomas, Ginsburg, Breyer, and Alito, JJ., joined, and in which Scalia, J., joined as to all but Part III-C.

OPINIONBY: SOUTER

OPINION: [*1846] Justice **Souter** delivered the opinion of the Court. *

*Justice Scalia joins all but Part III-C of this opinion.

[**LEdHR1A] [1A] The issue in this case is whether operating a dam to produce hydroelectricity "may result in any discharge into the navigable waters" of the United States. If so, a federal license under *§ 401 of the Clean Water Act* requires state certification that water protection laws will not be violated. We hold that a dam does raise a potential [***6] for a discharge, and state approval is needed.

I

The Presumpscot River runs through southern Maine from Sebago Lake to Casco Bay, and in the course of its 25 miles petitioner, S. D. Warren Company, operates several hydropower dams to generate electricity for its paper mill. Each dam creates a pond, from which water funnels into a "power canal," through turbines, and back to the riverbed, passing around a section of the river just below the impoundment.

It is undisputed that since 1935, Warren has needed a license to operate the dams, currently within the authority of the Federal Energy Regulatory Commission (FERC) under the Federal Power Act. *16 U.S.C. § § 817(1), 792*; see also Public Utility [**632] Act of 1935, § 210, 49 Stat. 846. FERC grants these licenses for periods up to 50 years, *16 U.S.C. § 799*, after a review that looks to environmental issues as well as the rising demand for power, *§ 797(e)*.

[**LEdHR2A] [2A] Over 30 years ago, Congress enacted a specific provision for licensing an activity that could cause a "discharge" into navigable waters; a license is conditioned on a certification from the State in which the discharge may originate that it will [***7] not violate certain water quality standards, including those set by the State's own laws. See Water Quality Improvement Act of 1970, § 103, 84 Stat. 108. Today, this requirement can be found in § 401 of the Clean Water Act, 86 Stat. 877, codified at *33 U.S.C. § 1341*: "Any applicant for a Federal license or permit to conduct any activity . . . which may result in any discharge into the navigable water[s] shall provide the licensing or permitting agency a certification from the State in which the discharge originates . . . ." *§ 1341(a)(1)*.

> "Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with [*§ § 1311, 1312, 1316*, and *1317*] and with any other appropriate requirement of State law set forth in such certification, and shall become a condition on any Federal license or permit subject to the provisions of this section." n1 *§ 1341(d)*.

n1 [**LEdHR2B] [2B] The statutes cross-referenced go to effluent limitations and other limitations, *33 U.S.C. § § 1311, 1312*, standards of performance, *§ 1316*, and toxic effluent standards, *§ 1317*. As we have explained before, "state water quality standards adopted pursuant to *§ 303* [of the Clean Water Act, *33 U.S.C. § 1313*,] are among the 'other limitations' with which a State may ensure compliance through the *§ 401* certification process." *PUD No. 1 v. Washington Dep't of Ecology, 511 U.S. 700, 713, 114 S. Ct. 1900, 128 L. Ed. 2d 716 (1994)*.

[***8]

[*1847] In 1999, Warren sought to renew federal licenses for five of its hydroelectric dams. It applied for water quality certifications from the Maine Department of Environmental Protection (the state agency responsible for what have come to be known as "*401* state certifications"), but it filed its application under protest, claiming that its dams do not result in any "discharge into" the river triggering application of *§ 401*.

The Maine agency issued certifications that required Warren to maintain a minimum stream flow in the bypassed portions of the river and to allow passage for various migratory fish and eels. When

FERC eventually licensed the five dams, it did so subject to the Maine conditions, and Warren continued to deny any need of *§ 401* state certification. After appealing unsuccessfully to Maine's administrative appeals tribunal, the Board of Environmental Protection, Warren filed this suit in the State's Cumberland County Superior Court. That court rejected Warren's argument that its dams do not result in discharges, and the Supreme Judicial Court of Maine affirmed. *S. D. Warren Co. v. Board of Environmental Protection, 2005 ME 27, 868 A.2d 210.* We granted [***9] certiorari, *546 U.S. ___, 126 S. Ct. 415, 163 L. Ed. 2d 316 (2005)*, and now affirm as well.

II

[**LEdHR1B] [1B] [**LEdHR3] [3] The dispute turns on the meaning of the word "discharge," the [**633] key to the state certification requirement under *§ 401*. n2 The Act has no definition of the term, but provides that "[t]he term 'discharge' when used without qualification includes a discharge of a pollutant, and a discharge of pollutants." n3 *33 U.S.C. § 1362(16)*. It does define "discharge of a pollutant" and "discharge of pollutants," as meaning "any addition of any pollutant to navigable waters from any point source." *§ 1362(12)*. But "discharge" presumably is broader, else superfluous, and since it is neither defined in the statute nor a term of art, we are left to construe it "in accordance with its ordinary or natural meaning." *FDIC v. Meyer, 510 U.S. 471, 476, 114 S. Ct. 996, 127 L. Ed. 2d 308 (1994)*.

n2 No one disputes that the Presumpscot River is a navigable water of the United States.

n3 The term "pollutant" is defined in the Act to mean "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water." *33 U.S.C. § 1362(6)*.

[***10]

[**LEdHR1C] [1C] When it applies to water, "discharge" commonly means a "flowing or issuing out," Webster's New International Dictionary 742 (2d ed. 1949); see also *ibid.* ("[t]o emit; to give outlet to; to pour forth; as, the Hudson *discharges* its waters into the bay"), and this ordinary sense has consistently been the meaning intended when this Court has used the term in prior water cases. See, *e.g., Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 364, 109 S. Ct. 1851, 104 L. Ed. 2d 377 (1989)* (describing a dam's "'multiport' structure, which will permit discharge of water from any of five levels"); *Arizona v. California, 373 U.S. 546, 619, n. 25, 83 S. Ct. 1468, 10 L. Ed. 2d 542 (1963)* (Harlan, J., dissenting in part) (quoting congressional testimony regarding those who "'take . . . water out of the stream which has been discharged from the reservoir'"); *United States v. Arizona, 295 U.S. 174, 181, 55 S. Ct. 666, 79* [*1848] *L. Ed. 1371 (1935)* ("Parker Dam will intercept waters discharged at Boulder Dam").

In fact, this understanding of the word "discharge" was accepted by all Members of the Court sitting in our only other case focused on *§ 401 of the Clean Water Act, PUD No. 1 v. Washington Dep't of Ecology, 511 U.S. 700, 114 S. Ct. 1900, 128 L. Ed. 2d 716 (1994)*. [***11] At issue in *PUD No. 1* was the State of Washington's authority to impose minimum stream flow rates on a hydroelectric dam, and in posing the question presented, the Court said this:

> "There is no dispute that petitioners were required to obtain a certification from the State pursuant to *§ 401*. Petitioners concede that, at a minimum, the project will result in two possible discharges--the release of dredged and fill material during the construction of the project, and the discharge of water at the end of the tailrace after the water has been used to generate electricity." *Id., at 711, 114 S. Ct. 1900, 128 L. Ed. 2d 716.*

The *PUD No. 1* petitioners claimed that a state condition imposing a stream flow requirement on discharges of water from a dam exceeded the State's *§ 401* authority to prevent degradation of water quality, but neither the parties nor the Court questioned that the "discharge [**634] of water" from

the dam was a discharge within the ambit of *§ 401*. *Ibid.* And although the Court's opinion made no mention of the dam as adding anything to the water, the majority's use of the phrase "discharge of water" drew no criticism from the dissent, which specifically noted that "[t]he term [***12] 'discharge' is not defined in the [Clean Water Act] but its plain and ordinary meaning suggests 'a flowing or issuing out,' or 'something that is emitted.'" *Id., at 725, 114 S. Ct. 1900, 128 L. Ed. 2d 716* (opinion of Thomas, J.) (quoting Webster's Ninth New Collegiate Dictionary 360 (1991)).

[**LEdHR1D] [1D] [**LEdHR4] [4] In resort to common usage under *§ 401*, this Court has not been alone, for the Environmental Protection Agency (EPA) and FERC have each regularly read "discharge" as having its plain meaning and thus covering releases from hydroelectric dams. See, *e.g.*, EPA, Water Quality Standards Handbook § 7.6.3, p 7-10 (2d ed. 1994) ("EPA has identified five Federal permits and/or licenses that authorize activities that may result in a discharge to the waters[, including] licenses required for hydroelectric projects issued under the Federal Power Act"); *FPL Energy Maine Hydro LLC, 111 FERC P61,104, P. 61,505 (2005)* (rejecting, in a recent adjudication, the argument that Congress "used the term 'discharge' as nothing more than a shorthand expression for 'discharge of a pollutant or pollutants'"). n4 Warren is, of course, entirely correct in cautioning us that because neither the EPA nor FERC has formally [***13] settled the definition, or even set out agency reasoning, these expressions of agency understanding do not command deference from this Court. See *Gonzales v. Oregon, 546 U.S. ___, ___, 126 S. Ct. 904, 916, 163 L. Ed. 2d 748, 768 (2006)*) ("*Chevron* deference [*1849] . . . is not accorded merely because the statute is ambiguous and an administrative official is involved"); *Skidmore v. Swift & Co., 323 U.S. 134, 140, 65 S. Ct. 161, 89 L. Ed. 124 (1944)*. But even so, the administrative usage of "discharge" in this way confirms our understanding of the everyday sense of the term.

n4 Warren relies on a document from the EPA as a counterexample of the EPA's position in this regard. See Memorandum from Ann R. Klee, EPA General Counsel et al., to Regional Administrators, regarding "Agency Interpretation on Applicability of *Section 402 of the Clean Water Act* to Water Transfers" (Aug. 5, 2005), available at http://www.epa.gov/ogc/documents/water_transfers.pdf (as visited Apr. 13, 2006, and available in Clerk of Court's case file). The memorandum does not help Warren, however; it interprets *§ 402 of the Clean Water Act*, not *§ 401*, and construes the statutory phrase "discharge of a pollutant," which, as explained below, implies a meaning different under the statute from the word "discharge" used alone. The memorandum, in fact, declares that "[i]t does not address any . . . terms under the statute other than 'addition.'" *Id.*, at 18.

[***14]

III

Warren makes three principal arguments for reading the term "discharge" differently from the ordinary way. We find none availing.

A

[**LEdHR5A] [5A] The first involves an interpretive canon we think is out of place here. The canon, *noscitur a sociis*, reminds us that "a word is known by the company it keeps," *Gustafson v. Alloyd Co., 513 U.S. 561, 575, 115 S. Ct. 1061, 131 L. Ed. 2d 1 (1995)*, and is invoked when a string of statutory terms raises the implication that the "words grouped in a list should be given related meaning," *Dole v. Steelworkers*, [**635] *494 U.S. 26, 36, 110 S. Ct. 929, 108 L. Ed. 2d 23 (1990)* (internal quotation marks omitted); see also *Beecham v. United States, 511 U.S. 368, 371, 114 S. Ct. 1669, 128 L. Ed. 2d 383 (1994)* ("That several items in a list share an attribute counsels in favor of interpreting the other items as possessing that attribute as well").

[**LEdHR5B] [5B] [**LEdHR6A] [6A] [**LEdHR7A] [7A] Warren claims that the canon applies to § 502(16) of the Clean Water Act, which provides that "[t]he term 'discharge' when used without qualification includes a discharge of a pollutant, and a discharge of pollutants." *33 U.S.C. § 1362(16)*. Warren emphasizes that the "include[d]" terms, pollutant discharges, are themselves defined to require [***15] an "addition" of pollutants to

water. *§ 1362(12)*. Since "discharge" pure and simple is keeping company with "discharge" defined as adding one or more pollutants, Warren says "discharge" standing alone must require the addition of something foreign to the water into which the discharge flows. And because the release of water from the dams adds nothing to the river that was not there above the dams, Warren concludes that water flowing out of the turbines cannot be a discharge into the river. n5

n5 [**LEdHR6B] [6B] [**LEdHR7B] [7B] We note that the Supreme Judicial Court of Maine accepted the assertion that "[a]n 'addition' is the fundamental characteristic of any discharge." *2005 Me 27, P11, 868 A.2d 210, 215*. It then held that Warren's dams add to the Presumpscot River because the water "los[es its] status as waters of the United States" when diverted from its natural course, and becomes an addition to the waters of the United States when redeposited into the river. *868 A. 2d, at 216* (emphasis deleted). We disagree that an addition is fundamental to any discharge, nor can we agree that one can denationalize national waters by exerting private control over them. Cf. *United States v. Chandler-Dunbar Water Power Co., 229 U.S. 53, 69, 33 S. Ct. 667, 57 L. Ed. 1063 (1913)* ("[T]hat the running water in a great navigable stream is capable of private ownership is inconceivable"). Thus, though we affirm the Maine judgment, we do so on different reasoning.

[***16]

[**LEdHR5C] [5C] The problem with Warren's argument is that it purports to extrapolate a common feature from what amounts to a single item (discharge of a pollutant plus the plural variant involving more than one pollutant). See *Beecham, supra, at 371, 114 S. Ct. 1669, 128 L. Ed. 2d 383*. The argument seems to assume that pairing a broad statutory term with a narrow one shrinks the broad one, but there is no such general usage; giving one example does not convert express inclusion into restrictive equation, and *noscitur a sociis* is no help absent some sort of gathering with a common feature to extrapolate. It should also go without saying that uncritical use of interpretive [*1850] rules is especially risky in making sense of a complicated statute like the Clean Water Act, where technical definitions are worked out with great effort in the legislative process. Cf. H. R. Rep. No. 92-911, p 125 (1972) ("[I]t is extremely important to an understanding of [*§ 402*] to know the definition of the various terms used and a careful reading of the definitions . . . is recommended. Of particular significance [are] the words 'discharge of pollutants'").

B

Regardless, Warren says the statute should, and even must, be read its way, [***17] on the authority of *South Fla. Water Management Dist. v. Miccosukee Tribe, 541 U.S. 95, 124 S. Ct. 1537, 158 L. Ed. 2d 264 (2004)*. But that case is not on point. *Miccosukee* addressed *§ 402 of the Clean Water Act*, not *§ 401*, and the two sections [**636] are not interchangeable, as they serve different purposes and use different language to reach them. *Section 401* recast pre-existing law and was meant to "continu[e] the authority of the State . . . to act to deny a permit and thereby prevent a Federal license or permit from issuing to a discharge source within such State." S. Rep. No. 92-414, p 69 (1971). Its terms have a broad reach, requiring state approval any time a federally licensed activity "may" result in a discharge ("discharge" of course being without any qualifiers here), *33 U.S.C. § 1341(a)(1)*, and its object comprehends maintaining state water quality standards, see n 1, *supra*.

Section 402 has a historical parallel with *§ 401*, for the legislative record suggests that it, too, was enacted to consolidate and ease the administration of some predecessor regulatory schemes, see H. R. Rep. No. 92-911, at 124-125. But it contrasts with *§ 401* in its more specific focus. [***18] It establishes what Congress called the National Pollutant Discharge Elimination System, requiring a permit for the "discharge of any pollutant" into the navigable waters of the United States, *33 U.S.C. § 1342(a)*. The triggering statutory term here is not the word "discharge" alone, but "discharge of a pollutant," a phrase made narrower by its specific definition requiring an "addition" of a pollutant to the water. *§ 1362(12)*.

The question in *Miccosukee* was whether a pump between a canal and an impoundment pro-

duced a "discharge of a pollutant" within the meaning of *§ 402*, see *541 U.S., at 102-103, 124 S. Ct. 1537, 158 L. Ed. 2d 264*, and the Court accepted the shared view of the parties that if two identified volumes of water are "simply two parts of the same water body, pumping water from one into the other cannot constitute an 'addition' of pollutants," *id., at 109, 124 S. Ct. 1537, 158 L. Ed. 2d 264*. *Miccosukee* was thus concerned only with whether an "addition" had been made (phosphorous being the substance in issue) as required by the definition of the phrase "discharge of a pollutant"; it did not matter under *§ 402* whether pumping the water produced a discharge without any addition. [***19] In sum, the understanding that something must be added in order to implicate *§ 402* does not explain what suffices for a discharge under *§ 401*. n6

> n6 The fact that the parties in *Miccosukee* conceded that the water being pumped was polluted does not transform the Court's analysis from one centered on the word "addition" to one centered on the word "discharge." Before *Miccosukee*, one could have argued that transferring polluted water from a canal to a connected impoundment constituted an "addition." *Miccosukee* is at odds with that construction of the statute, but it says nothing about whether the transfer of polluted water from the canal to the impoundment constitutes a "discharge." Likewise, we are not persuaded by Warren's claim that the word "into" somehow changes the meaning of the word "discharge" so as to require an addition. See Reply Brief for Petitioner 1-2 ("However one might read the lone word 'discharge' by itself, the complete statutory phrase 'discharge into the navigable waters' entails the introduction of something into the waters"). The force of this argument escapes us, since one can easily refer to water being poured or discharged out of one place into another without implying that an addition of some hitherto unencountered mixture or quality of water is made. Indeed, the preposition "into" was used without connoting an addition in the *Miccosukee* analogy cited by Warren. See *541 U.S., at 110, 124 S. Ct. 1537, 158 L. Ed. 2d 264* ("[I]f one takes a ladle of soup from a pot . . . and pours it back into the pot, one has not 'added' soup or anything else to the pot" (internal quotation marks and brackets omitted)).

[***20]

[*1851] C

[**LEdHR8] [8] Warren's third argument for [**637] avoiding the common meaning of "discharge" relies on the Act's legislative history, but we think that if the history means anything it actually goes against Warren's position. Warren suggests that the word "includes" in the definition of "discharge" should not be read with any spacious connotation, because the word was simply left on the books inadvertently after a failed attempt to deal specifically with "thermal discharges." As Warren describes it, several Members of Congress recognized that "heat is not as harmful as what most of us view as 'pollutants,' because it dissipates quickly in most bodies of receiving waters," 1 Legislative History of the Water Pollution Control Act Amendments of 1972 (Committee Print compiled for the Senate Committee on Public Works by the Library of Congress), Ser. No. 93-1, p 273 (1973) (remarks of Cong. Clark), and they proposed to regulate thermal discharges less stringently than others. They offered an amendment to exclude thermal discharges from the requirements under *§ 402*, but they also wanted to ensure that thermal discharges remained within the scope of *§ 401* and so sought to include them expressly in the general [***21] provision covering "discharge." See *id.*, at 1069-1070, 1071. The proposed definition read, "[t]he term 'discharge' when used without qualification includes a discharge of a pollutant, a discharge of pollutants, and a thermal discharge." *Id.*, at 1071.

Of course, Congress omitted the reference to "thermal discharge," and settled on the definition we have today. See *Federal Water Pollution Control Act Amendments of 1972, § 502(16), 86 Stat. 887*. Warren reasons that once Congress abandoned the special treatment for thermal pollutants, it merely struck the words "thermal discharge" from *33 U.S.C. § 1362(16)* and carelessly left in the word "includes." Thus, Warren argues, there is no reason to assume that describing "discharge" as including certain acts was meant to extend the reach of *§ 401* beyond acts of the kind specifically men-

tioned; n7 the terminology of *§ 401* simply reflects a failed effort to narrow the scope of *§ 402*.

n7 Warren is hesitant to follow its own logic to completion by simply claiming that *§ 401* covers nothing but what *§ 502(16)* mentions, the discharge of a pollutant or pollutants.

[***22]

This is what might be called a lawyer's argument. We will assume that Warren is entirely correct about the impetus behind the failed attempt to rework the scope of pollutant discharge under *§ 402*. It is simply speculation, though, to say that the word "includes" was left in the description of a "discharge" by mere inattention, and for reasons given in Part IV of this opinion it is implausible speculation at that. But if we confine our view for a moment strictly to the drafting history, the one thing clear is that if Congress had left "thermal discharge" as an included subclass of a "discharge" under *§ 502(16)*, Warren would have a stronger *noscitur a sociis* argument. [*1852] For a thermal discharge adds something, the pollutant heat, see n 3, *supra*. Had the list of examples of discharge been lengthened to include thermal discharges, there would have been at least a short series with the common feature of addition. As it stands, however, the only thing the legislative history cited by Warren [**638] demonstrates is the congressional rejection of language that would have created a short series of terms with a common implication of an addition.

Warren's theory, moreover, has the unintended consequence [***23] of underscoring that Congress probably distinguished the terms "discharge" and "discharge of pollutants" deliberately, in order to use them in separate places and to separate ends. Warren hypothesizes that Congress attempted to tinker with the definition of "discharge" because it wanted to subject thermal discharges to the requirements of *§ 401*, but not *§ 402*. But this assumption about Congress's motives only confirms the point that when Congress fine-tunes its statutory definitions, it tends to do so with a purpose in mind. See *Bates v. United States, 522 U.S. 23, 29-30, 118 S. Ct. 285, 139 L. Ed. 2d 215 (1997)* (if "Congress includes particular language in one section of a statute but omits it in another section of the same Act, it is generally presumed that Congress acts intentionally and purposely in the disparate inclusion or exclusion" (internal quotation marks omitted)).

IV

[**LEdHR1E] [1E] [**LEdHR9A] [9A] Warren's arguments against reading the word "discharge" in its common sense fail on their own terms. n8 They also miss the forest for the trees.

n8 [**LEdHR9B] [9B] Warren briefly makes another argument for disregarding the plain meaning of the word "discharge," relying on § 511(c)(2) of the Clean Water Act, *33 U.S.C. § 1371(c)(2)*. This section addresses the intersection of the Act with another statute, the National Environmental Policy Act of 1969 (NEPA), *42 U.S.C. § 4321 et seq.* NEPA "imposes only procedural requirements on federal agencies with a particular focus on requiring agencies to undertake analyses of the environmental impact of their proposals and actions." *Department of Transportation v. Public Citizen, 541 U.S. 752, 756-757, 124 S. Ct. 2204, 159 L. Ed. 2d 60 (2004)*. *Section 511(c)(2)* makes the point that nothing in NEPA authorizes any federal agency "authorized to license or permit the conduct of any activity which may result in the discharge of a pollutant" to review "any effluent limitation or other requirement established pursuant to this chapter or the adequacy of any certification under *[§ 401]* of this title." *33 U.S.C. § 1371(c)(2)*. Warren argues that reading *§ 401* to cover discharges generally would preclude duplicative NEPA review of certifications involving pollutant discharges, but allow such review of those involving nonpollutant discharges. But Warren overlooks the fact that "discharge of a pollutant" is used in *§ 511(c)(2)* in the course of identifying the agency, not the activity to be certified. Whether a *§ 401* certification involves an activity that discharges pollutants or one that simply discharges, FERC (as an agency that may be described, always, as one with "author[ity] to license or

> permit the conduct of any activity which may result in the discharge of a pollutant," *ibid.*) may not review it. Thus, nothing in *§ 511(c)(2)* is disturbed by our holding that hydroelectric dams require *§ 401* state certifications. It is still the case that, when a State has issued a certification covering a discharge that adds no pollutant, no federal agency will be deemed to have authority under NEPA to "review" any limitations or the adequacy of the *§ 401* certification.

[***24]

[**LEdHR1F] [1F] Congress passed the Clean Water Act to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters," *33 U.S.C. § 1251(a)*; see also *PUD No. 1, 511 U.S., at 714, 114 S. Ct. 1900, 128 L. Ed. 2d 716*, the "national goal" being to achieve "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." *33 U.S.C. § 1251(a)(2)*. To do this, the Act does not stop at controlling [*1853] the "addition of pollutants," but deals with "pollution" generally, see *§ 1251(b)*, which Congress defined to mean "the man-made or man-induced alteration of [**639] the chemical, physical, biological, and radiological integrity of water." *§ 1362(19)*.

[**LEdHR1G] [1G] [**LEdHR10A] [10A] The alteration of water quality as thus defined is a risk inherent in limiting river flow and releasing water through turbines. Warren itself admits that its dams "can cause changes in the movement, flow, and circulation of a river . . . caus[ing] a river to absorb less oxygen and to be less passable by boaters and fish." Brief for Petitioner 23. And several *amici* alert us to the chemical modification caused by the dams, with "immediate [***25] impact on aquatic organisms, which of course rely on dissolved oxygen in water to breathe." Brief for Trout Unlimited et al. as *Amici Curiae* 13; see also, *e.g.*, Brief for National Wildlife Federation et al. as *Amici Curiae* 6 (explaining that when air and water mix in a turbine, nitrogen dissolves in the water and can be potentially lethal to fish). Then there are the findings of the Maine Department of Environmental Protection that led to this appeal:

> "The record in this case demonstrates that Warren's dams have caused long stretches of the natural river bed to be essentially dry and thus unavailable as habitat for indigenous populations of fish and other aquatic organisms; that the dams have blocked the passage of eels and sea-run fish to their natural spawning and nursery waters; that the dams have eliminated the opportunity for fishing in long stretches of river, and that the dams have prevented recreational access to and use of the river." *In re S. D. Warren Co.*, Maine Board of Environmental Protection (2003), in App. to Pet. for Cert. A-49.

[**LEdHR10B] [10B] Changes in the river like these fall within a State's legitimate legislative business, and the Clean Water Act provides [***26] for a system that respects the States' concerns. See *33 U.S.C. § 1251(b)* ("It is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution"); *§ 1256(a)* (federal funds for state efforts to prevent pollution); see also *§ 1370* (States may impose standards on the discharge of pollutants that are stricter than federal ones).

State certifications under *§ 401* are essential in the scheme to preserve state authority to address the broad range of pollution, as Senator Muskie explained on the floor when what is now *§ 401* was first proposed:

> "No polluter will be able to hide behind a Federal license or permit as an excuse for a violation of water quality standard[s]. No polluter will be able to make major investments in facilities under a Federal license or permit without providing assurance that the facility will comply with water quality standards. No State water pollution control agency will be confronted with a fait accompli by an industry that has built a plant without consideration of water quality requirements." 116 Cong. Rec. 8984 (1970).

These are the very [***27] reasons that Congress provided the States with power to enforce "any other appropriate requirement of State law," *33 U.S.C. § 1341(d)*, by imposing conditions on federal licenses for activities that may result in a discharge, *ibid.*

[**LEdHR1H] [1H] Reading *§ 401* to give "discharge" its common and ordinary meaning preserves the state authority [**640] apparently intended. The judgment of the Supreme Judicial Court of Maine is therefore affirmed.

It is so ordered.

REFERENCES: Go To Full Text Opinion

Go To Supreme Court Brief(s)

Go To Supreme Court Transcripts

61C Am Jur 2d, Pollution Control § § 719, 737

33 U.S.C.S. § 1341

Treatise on Environmental Law § 3.03 (Matthew Bender)

L Ed Digest, Environmental Law § 32

L Ed Index, Hydroelectric Power; Water Pollution

Annotation References

Supreme Court's views as to construction and application of Federal [***28] Water Pollution Control (Clean Water) Act (*33 U.S.C.S. § § 1251-1376*). *84 L. Ed. 2d 895*.

What are "navigable waters" subject to Federal Water Pollution Control Act (*33 U.S.C.A. § § 1251 et seq.* [*33 U.S.C.S. § § 1251 et seq.*]). *160 A.L.R. Fed. 585*.

What constitutes "point source" of pollution subject to control by provisions of Water Pollution Control Act, as amended (*33 U.S.C.A. § 1362(14)* [*33 U.S.C.S. § 1362(14)*]). *52 A.L.R. Fed 885*.

LEXSTAT CA FISH G 5937

*** THIS DOCUMENT REFLECTS ALL URGENCY LEGISLATION ENACTED ***
*** THROUGH 2006 CH. 65, APPROVED 7/12/06 ***

FISH AND GAME CODE
Division 6. Fish
Part 1. Generally
Chapter 3. Dams, Conduits, and Screens
Article 2. Dams and Obstructions

GO TO CALIFORNIA CODES ARCHIVE DIRECTORY

Cal Fish & G Code § 5937 (2006)

§ 5937. Passage of water for fish below dam

The owner of any dam shall allow sufficient water at all times to pass through a fishway, or in the absence of a fishway, allow sufficient water to pass over, around or through the dam, to keep in good condition any fish that may be planted or exist below the dam. During the minimum flow of water in any river or stream, permission may be granted by the department to the owner of any dam to allow sufficient water to pass through a culvert, waste gate, or over or around the dam, to keep in good condition any fish that may be planted or exist below the dam, when, in the judgment of the department, it is impracticable or detrimental to the owner to pass the water through the fishway.

HISTORY:

Enacted 1957.

NOTES:
Historical Derivation:

(a) Former F & G C § 525, as amended Stats 1937 ch 456 p 1400.

(b) Former Pen C § 637, as enacted Stats 1872, amended Stats 1891 ch 89 § 1, Stats 1903 ch 22 § 5, Stats 1915 ch 491 § 1, Stats 1917 ch 749 § 1.

Cross References:

Necessity of compliance with section, in District 41/2 before issuance of permit to appropriate water: *F & G C § 5946.*

Law Review Articles:

California Fish & G. Code, § 5937, and in-stream fishery resources. *14 UCD LR 431.*

Environmental Law Journal: Symposium Edition: "City Rivers": Outside Article: A Perpetual Experiment to Restore and Manage Silicon Valley's Guadalupe River. *35 Golden Gate LR 291.*

Symposium on the 25th Anniversary of the Report of the Governor's Commission to Review California Water Rights Law Part 2 of 2: Protection of Instream Flows: An Overview of the Protection of Instream Uses. 36 McGeorge LR 295.

Symposium on the 25th Anniversary of the Report of the Governor's Commission to Review California Water Rights Law Part 2 of 2: Protection of Instream Flows: Submerged in the Yuba River: The State Water Resources Control Board's Prioritization of the Governor's Commissions Proposals. 36 McGeorge LR 331.

Symposium on the 25th Anniversary of the Report of the Governor's Commission to Review California Water Rights Law Part 2 of 2: Protection of Instream Flows: California Instream Flow Protection Law: Then and Now. 36 McGeorge LR 363.

Symposium on the 25th Anniversary of the Report of the Governor's Commission to Review California Water Rights Law Part 2 of 2: Protection of Instream Flows: California Instream Flow Protection Law: Then and Now. 36 McGeorge LR 393.

Attorney General's Opinions:

Construction of section; United States as not being required by state law to allow sufficient water to pass Friant Dam to preserve fish life below the dam. *18 Ops. Cal. Atty. Gen. 31.*

Hierarchy Notes:

Fish & G Code Note

Div. 6 Note

Div. 6, Pt. 1, Ch. 3, Art. 2 Note

NOTES OF DECISIONS

A variety of public trust interests pertain to non-navigable streams that sustain a fishery. Wild fish have always been recognized as a species of property the general right and ownership of which is in the people of the *State. California Trout, Inc. v State Water Resources Control Bd. (1989, 3rd Dist) 207 Cal App 3d 585, 255 Cal Rptr 184.*

Plaintiffs properly stated claim under Section 8 of federal Reclamation Act for violation of state statute governing passage of water affecting fish below dam, where state statute related, though indirectly, to control, appropriation, use or distribution of water used in irrigation. *Natural Resources Defense Council v Patterson (1992, ED Cal) 791 F Supp 1425.*

As to whether the federal Bureau of Reclamation violated the Endangered Species Act by renewing water contracts prior to completing required endangered species consultations, and whether federal law mandated compliance with *F & G C § 5937* (owner of dam to allow water to pass through to keep fish in good condition), the court held that where the Bureau was not complying with *F & G C § 5937* and its obligation to comply was in dispute, a determination of the *F & G C § 5937* issue was ripe. The *F & G C § 5937* claim was directed towards the owner of the dam, the Bureau, whose duty to comply with state law existed independently of any contractual arrangements. *F & G C § 5937* was not, on its face, preempted by federal law requiring an environmental impact statement. *Natural Resources Defense Council v Houston (1998, CA9 Cal) 146 F3d 1118.*

Where there was no genuine dispute as to whether the Bureau of Reclamation had failed to release the amount of water through a dam to keep a river's historic fisheries in good condition, the court found that the Bureau had violated *F & G C § 5937*, and granted summary judgment in favor of plaintiffs. *NRDC v Patterson (2004, ED Cal) 2004 US Dist LEXIS 17190.*

Environmental groups' summary judgment motion on the issue of the federal officials' liability for violating *43 USCS § 383* was granted where the court had previously rejected the federal officials' claims regarding standing, preemption, and the preclusive effect of a state water board adjudication, the groups' claim was actionable under *5 USCS § 706*(1) given the specific legal duty imposed by *43 USCS § 383*, and there was no factual dispute that the United States Bureau of Reclamation had failed to meet the requirement of *F & G C § 5937*, to release an amount of water through a dam as required to keep the historic fisheries in good condition. *NRDC v Patterson (2004, ED Cal) 2004 US Dist LEXIS 22499.*

Plain meaning, legislative history, and state court construction of *F & G C § 5937* indicated that it placed a single duty on a dam owner, i.e. to maintain any fish that fell into one of two enumerated categories. *NRDC v Patterson (2004, ED Cal) 2004 US Dist LEXIS 22499.*

Central Valley Project Improvement Act did not preempt *F & G C § 5937* where the requirement that the United States Secretary of the Interior develop a plan to address fish below a dam did not necessarily preclude application of the state requirement. *NRDC v Patterson (2004, ED Cal) 2004 US Dist LEXIS 22499.*

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August 15, 2006

Mike Napolitano
Environmental Scientist
San Francisco Bay Regional Water Quality Control Board
1515 Clay St # 1400
Oakland, CA 94612

Re: Proposed Basin Plan Amendment for the Napa River Sediment Total Maximum Daily Load

Dear Mr. Napolitano:

This office represents Living Rivers Council ("LRC"), a non-profit association, with respect to the proposed Basin Plan Amendment for the Napa River Sediment Total Maximum Daily Load ("TMDL"). I am writing to submit comments regarding the proposed TMDL on LRC's behalf. LRC objects to the Regional Board's adoption of the proposed TMDL on grounds that the Board has not complied with California Environmental Quality Act ("CEQA"), the Clean Water Act or the Porter-Cologne Water Quality Act. LRC also submits herewith detailed analyses prepared by two hydrologists, Dr. Robert Curry and Dennis Jackson (Exhibits 1 and 3) and fish biologist Patrick Higgins (Exhibits 5) that demonstrate that the proposed TMDL will not achieve applicable Basin Plan standards.

Peak Flows and Nuisance Flooding.

1. The Staff Report and proposed Basin Plan Amendment acknowledge the importance of human caused increases in peak flows as a result of changes in land use. Indeed, since 2000 the Sierra Club and later, Earth Defense for the Environment Now ("EDEN"), have documented the importance of increases in peak flows caused by conversions of natural vegetation to vineyard cultivation as a primary vector causing channel instability, including bank failures, channel incision and increases in sediment transport to low gradient reaches of Napa River tributary stream and to the Napa River mainstream.

2. Since 2000 the Sierra Club or EDEN have retained, through my office, the services of hydrologists Dr. Robert Curry and Dennis Jackson to comment on a number of "vineyard conversion" projects in the Napa River watershed and the Erosion Control Plans ("ECPs") prepared by vineyard owners pursuant to Napa County Conservation regulations. Both Dr. Curry and Mr. Jackson have consistently found that these ECPs do not accurately evaluate or adequately mitigate impacts associated with increases in runoff from these changes in land use. *See e.g.*, Exhibits 7 through 16 and 30 through 32. As Dr. Curry explained in his overview critique of the Conservation

Regulations in 2000:

> "The approach of the Napa County ordinances is fundamentally incorrect and cannot protect either public health and safety or long-term land productivity. The existing ordinances seem to assume that by attempting to capture sediments from upland vineyard conversion areas, downstream cumulative effects are reduced to insignificance. This is not correct. Increased upland sediment yields, while important, are less hazardous to Napa Valley than are the changes in runoff timing, volumes, and rates. Increased runoff does have cumulative downstream effects through changes in rates of runoff and frequency of runoff events of a given magnitude. These changes are likely to be a significant factor in changing sediment loads in the main Napa River through changes in stability of its side tributaries." Exhibit 7, p. 1.

3. Despite the importance of this mechanism of environmental impact, the proposed Basin Plan Amendment does not propose any specific regulatory limits on human caused increases in peak flows as a result of changes in land use. As shown by Dennis Jackson and Dr. Robert Curry (Exhibits 3 and 1, respectively), this oversight dooms any chance of this TMDL achieving the Basin Plan standards it is designed to achieve.

4. Instead, the TMDL Implementation Plan proposes to rely on County's enforcement of its Conservation Regulations, stating: "To avoid this problem when new hillside vineyards are proposed, the design review process should incorporate rigorous hydrological analysis (as appears to be the current practice by Napa County) to predict potential change in peak runoff rates, and the potential for off-site channel enlargement." Staff report at p 73-74. With all due respect, characterizing Napa County's hydrological analysis as "rigorous" is absurd. *See e.g.*, Exhibits 7 through 16 and 30 through 32. The Staff Report references a number of private cooperative efforts in the Napa River watershed, but ignores the Sierra Club's and EDEN's work in this regard.

5. Perhaps the Regional Board staff has assumed it does not have the legal authority to regulate human caused increases in peak flows as a result of changes in land use. Any such assumption is incorrect. Indeed, the North Coast Regional Water Quality Control Board recently adopted "Resolution No. R1-2006-0040 Adopting Watershed-Wide Waste Discharge Requirements for Timber Harvesting Plan Activities Conducted by Scotia Pacific Company, Salmon Creek Corporation, and The Pacific Lumber Company in the Freshwater Creek Watershed, Humboldt County" in which it found that where receiving waters are subject to chronic nuisance flooding, the Board may regulate limits on increases in peak flows, citing Water Code §§ 13050 and 13263. *See e.g.*, Resolution No. R1-2206-0040 page 6, ¶ 15, page 7, ¶ 19b; and page 15, ¶ 39 through page 21, ¶ 67 attached hereto as Exhibit 25.

6. It is well known that the Napa River has suffered and continues to suffer chronic nuisance flooding. *See e.g.*, Exhibit 23 (Revised Draft Environmental Impact Report, St. Helena Flood Control Project, August 2003; pp. ES-2 and 2-1; *see also*, Exhibit 24, Napa County Flood Protection

Sales Tax Ordinance, section 2, subdivisions A and B. Therefore, the Regional Board has the legal authority to regulate human caused increases in peak flows as a result of changes in land use.

Clean Water Act and Porter-Cologne Water Quality Act issues.

7. The TMDL Includes No Margin of Safety. When establishing a TMDL, the Board must include a Margin of Safety ("MOS"), as required by 40 CFR 130.7(c)(1):

> "Each State shall establish TMDLs for the water quality limited segments identified in paragraph (b)(1) of this section....TMDLs shall be established ... with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality."

8. There is no mention of any MOS in the TMDL, but the concept is mentioned without any substance or analysis in Staff Report at pp. 66-67. The Staff mentions margin of safety in relation to streambed scour, but there is no mention at all of any margin of safety for spawning gravel permeability or of the 125% of background standard. *See also* Patrick Higgins Comments on the lack of any Margin of Safety at Exhibit 5, pp 13-15.

9. EPA's May 20, 2002 "Guidelines for Reviewing TMDLs under Existing Regulations issued in 1992" (Exhibit 17) explains that the MOS may be implicit, *i.e.*, incorporated into the TMDL through conservative assumptions in the analysis, or explicit, *i.e.*, expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit (as claimed here), the conservative assumptions in the analysis that account for the MOS *must be described.*

10. The Margin of Safety discussion in the Staff Report involves only *actions to be taken (i.e.,* sediment source reductions and channel restoration). It *does not* mention how any assumptions are conservative, and so *does not* establish a valid Margin of Safety.

11. Reasonable Assurances. The TMDL must include Reasonable Assurances that Non-point sources will be adequately regulated. According to the EPA's "Guidelines for Reviewing TMDLs under Existing Regulations issued in 1992" (2002) (Attached as Exhibit 17):

> When a TMDL is developed for waters impaired by both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur, EPA's 1991 TMDL Guidance states that the TMDL should provide reasonable assurances that nonpoint source control measures will achieve expected load reductions in order for the TMDL to be approvable. This information is necessary for EPA to determine that the TMDL, including the load and wasteload allocations, has been established at a level necessary to implement water quality standards." p. 4.

12. Reasonable Assurances are mentioned in Staff Report, p. 68, but there are no explicit standards and no analysis of any kind. In contrast, the "Draft Pathogen TMDL for the Concord River

Watershed," (attached as Exhibit 21; see page 56) includes a significant discussion of Reasonable Assurances:

> Reasonable assurances that the TMDL will be implemented include both enforcement of current regulations, availability of financial incentives including low or no-interest loans to communities for wastewater treatment facilities through the State Revolving Fund (SRF), and the various local, state and federal programs for pollution control. Storm water NPDES permit coverage will address discharges from municipal owned storm water drainage systems. Enforcement of regulations controlling non-point discharges includes local enforcement of the states Wetlands Protection Act and Rivers Protection Act; Title 5 regulations for septic systems and various local regulations including zoning regulations. Financial incentives include Federal monies available under the CWA Section 319 NPS program and the CWA Section 604 and 104b programs, which are provided as part of the Performance Partnership Agreement between MADEP and the EPA. Additional financial incentives include state income tax credits for Title 5 upgrades, and low interest loans for Title 5 septic system upgrades through municipalities participating in this portion of the state revolving fund program.

In contrast, the Napa Sediment TMDL includes nothing of any specificity or value in regard to reasonable assurances that the TMDL will be implemented for nonpoint sources.

13. Further, the reports by Higgins, Curry and Jackson (Exhibits 5, 1 and 3, respectively) indicate that the TMDL as drafted is unlikely to achieve Basin Plan standards. Without a probing discussion and demonstration of reasonable assurances that the TMDL will be implemented and will achieve Basin Plan standards, the TMDL is deficient.

14. There is an inherent bias in the calculation of Total Sediment Input Rate into Four Representative Tributaries. *See* Staff Report, p. 28: The tributaries were selected on the basis of permission to enter. This introduces bias into the calculation, because it is highly likely that tributaries whose owners denied permission to enter have more introduced sediment. Thus, the actual sediment input rate into tributaries is likely higher than the calculated rate. This bias must be acknowledged and the Staff must account for it.

15. Additional Numeric Targets Are Required. The Staff Report analyzes three Water Quality Objectives: Sediment, Settleable Material, and Population and Community Ecology. Proposed Basin Plan Amendment, p. 19; Staff Report, p. 54. There are other Basin Plan standards that are implicated by this TMDL proposal and targets that must be included in the TMDL for successful achievement of these water quality standards, including Turbidity and Toxicity standards (*See* Jackson, at Exhibit 3) and Temperature (*See* Higgins at Exhibit 5).

16. The Guide to Selection of Sediment Targets for Use in Idaho TMDLs (2003) ("Idaho Guide") (Attached as Exhibit 18) also suggests other appropriate targets many of which are related to turbidity, at p. 3:

- Light penetration *(related to turbidity)*
- Total suspended solids *(related to turbidity)*
- Total suspended sediment *(related to turbidity)*
- Surface sediment *(related to permeability)*
- Riffle stability *(related to streambed scour)*
- Intergravel dissolved oxygen *(related to permeability)*

17. The Idaho Guide also states that previous California Sediment TMDL's include targets for:

- Turbidity, p. 8
- Pebble count, p. 17 *(related to permeability)*
- Riffle embeddedness, p. 20 *(related to permeability)*
- Subsurface sediment, p. 25 *(related to permeability)*
- Residual pool volume, pp. 26-27.

Based on the apparent relationships between suggested targets and those actually proposed, we find a significant gap for turbidity-related targets, including total suspended solids and sediment, and light penetration. Although it is distantly related to spawning gravel permeability, a target for residual pool volume is also missing.

18. Inadequate Linkage Analysis. The staff's Linkage Analysis "evaluates linkage between sediment inputs and habitat conditions." Staff Report, Chapter 5, p. 63. There are several problems with this analysis.

19. First, the Linkage Analysis is incomplete because it assumes that the previous analysis, which determined appropriate numerical targets for channel incision and streambed permeability, is complete. If there are other causes of harm to fish from sediment (besides incision and lack of permeability, *i.e.*, turbidity), they will continue to be ignored, and the TMDL will be incomplete. This will result in a failure to achieve water quality standards. Therefore, as discussed above, it is imperative that other numerical targets be examined.

20. There are also numeric problems with the "natural background" value. The Staff Report, p. 65, states that 125% of the natural background is approximately 325 tons per km^2 per year. This means the background is 325/1.25 or 260 tons per km^2 per year (this value appears nowhere in the Staff Report). On the other hand, the Staff Report says natural background for sediment is 99,000 t/yr (Table 7), adding upstream of dams (7,000 t/yr) and downstream (92,000 t/yr). When this value is divided by the area of the drainage (584 km^2, Table 7 note), a value of 169 tons per km^2 per year results. This disagrees with the value of 260 tons per km^2 per year. This inconsistency must be reconciled.

21. The Staff Report translates the sediment delivery value into a permeability value (the

numerical target) using Figure 12 (p. 65), but the uncertainty inherent in this translation is so large as to swallow the calculation itself. Figure 12 does not provide a linear or curvilinear relationship that can be trusted with any degree of certainty. Therefore, the permeability target is unreliable.

22. Finally, the Staff Report does not provide any calculations that demonstrate the statistical error embedded in the curve depicted in Figure 12. Further, the Staff Report does not provide any calculations that demonstrate the statistical error arising from the use of a point on the curve depicted in Figure 12 as the point of departure for calculating the conversion from the sediment delivery value into a permeability value. As a result, the permeability calculations cannot be trusted, and the impacts of the lack of a Margin of Safety are compounded.

23. In addition to turbidity-related targets, the Linkage Analysis also needs to address both low flow and increased peak flow vectors. With regard to low flows, the Napa River Basin Limiting Factors Analysis Executive Summary states:

> Without sufficient flows, juvenile steelhead and other coldwater species may experience low growth, weight loss, or mortality. Reduced flows or dry reaches may also impede migration, increase predation and competition for increasingly scarce food and habitat, or affect territorial behavior and aggression among members of the same species. (Exhibit 22, pp. ES 20-22.)

Thus, unless low flows are considered at the same time as other sediment-related impacts, the TMDL will be incomplete.

24. As for increased peak flows, such flows in turn boost both channel incision and bank failure, and thus also are a significant source of sediment entrainment and downstream transport. Increases in runoff peak flows have the potential to generate downstream sedimentation by breaking down and sweeping away the bed and banks of streams below the project site, destroying riparian habitat and steelhead habitat. Thus, unless the Linkage Analysis is amended to address peak flow increases, it will remain deficient. (*See e.g.*, Curry at Exhibits 1, 7.)

25. <u>The Seasonal Variation Analysis is incomplete.</u> The Staff Report does not really say anything about how *sediment* or its *impacts* vary seasonally. It only refers to flows. In fact, accounting for seasonal sediment and turbidity variations is essential. According to Jackson, "identifying chronic turbidity thresholds for different portions of the annual hydrograph is an important step in developing TMDLs because it recognizes that the vulnerability of salmonids varies seasonally with position of the annual hydrograph." Exhibit 3, p. 3. This represents a serious flaw in the Linkage Analysis.

26. This flaw also seriously undermines the rationale for setting a sediment target of 125% of natural level. The Staff claims that the Napa River has a highly variable natural sediment load due to Mediterranean climate and active tectonics. Native biota are adapted to this variability. (Staff

Report p. 64). However, native biota are NOT adapted to chronic increases in sediment like those currently caused by humans. Therefore, to emulate natural sediment dynamics and the native adaptations, the Staff recommends that the TMDL be expressed as a percentage of the natural load.

27. This conclusion does not make any sense. The natural load to be used to calculate the TMDL will be a set number, not a variable range (as seen in nature), and the resulting TMDL will also be a number, not a range. Thus the allowed sediment will be *constant* and higher than natural (125%), not at all like the natural variability, which is low most years with occasional spikes (*see* Staff Report at p. 64). There is no explanation of how the actual amount of sediment will vary seasonally, whether human-caused or natural.

CEQA issues.

28. Project Description. CEQA requires an accurate ,stable and finite project description. ("An accurate, stable and finite project description is the sine qua non of an informative and legally sufficient EIR." *San Joaquin Raptor/Wildlife Rescue Ctr. v. County of Stanislaus* (1994) 27 Cal.App.4th 713, 730). As explained in detail by Patrick Higgins, the proposed Basin Plan Amendment and TMDL Implementation Plan are fatally vague with respect to what measures will be used to achieve the TMDL standard. (*See e.g.*, Exhibit 5, pp. 9-10).

29. Cumulative Effects. CEQA requires that the Board consider the cumulative effects of the project in combination with other closely related projects. Again, explained by Patrick Higgins, the proposed Basin Plan Amendment and TMDL Implementation do not include a consideration of many aspects of the hydrologic regime in the Napa River watershed, or of the changes in land use that are responsible for this hydrologic regime. (*See e.g.*, Exhibit 5, pp. 6).

30. Deferral of Mitigation Measures. In *City of Arcadia v. SWRCB* (2006) 135 Cal.App.4th 1392, the Court of Appeal considered a TMDL for trash in the Los Angeles River. The Court's main holding was that for TMDLs, CEQA must be followed, and a "checklist" format for analyzing environmental impacts is insufficient. Specifically, the Court stated that "Public Resources Code section 21159 ... provides that an agency 'shall perform ... an environmental analysis of the reasonably foreseeable methods of compliance . . . The environmental analysis shall, at a minimum, include, all of the following: ... An analysis of reasonably foreseeable mitigation measures.'" 135 Cal.App.4th at 1424. The Court also noted that "The checklist and the Trash TMDL ignore the temporary impacts of the construction of these pollution controls, which logically may result in soil disruptions and displacements, an increase in noise levels and changes in traffic circulation." *Id.* at 1425.

31. The Napa River Sediment TMDL includes a checklist as its CEQA documentation, as well as a brief analysis of some potential environmental impacts of TMDL implementation. However, the TMDL and its supporting documentation does not analyze any of the necessary mitigation measures for those impacts. Therefore, the TMDL and checklist fail to satisfy CEQA. *See also*

Sundstrom v. County of Mendocino (1988) 202 Cal.App.3d 296, 306-307:

> "The requirement that the applicant adopt mitigation measures recommended in a future study is in direct conflict with the guidelines implementing CEQA. California Code of Regulations, title 14, section 15070, subdivision (b)(1) provides that if an applicant proposes measures that will mitigate environmental effects, the project plans must be revised to incorporate these mitigation measures '*before* the proposed negative declaration is released for public review . . . .' (Italics added.) Here, the use permit contemplates that project plans may be revised to incorporate needed mitigation measures after the final adoption of the negative declaration. This procedure, we repeat, is contrary to law."

32. The Napa Sediment TMDL Staff Report includes examples of foreseeable mitigation for many kinds of impacts. However, analysis of many necessary mitigation measures is deferred to local lead agencies, including the following:

a. Air pollution. "Construction that would occur as a result of Basin Plan amendment implementation, including earthmoving operations, would be of short-term duration. . . . The Bay Area Air Quality Management District has identified readily available measures to control construction-related air quality emissions. . . . *These measures include watering active construction areas; covering trucks hauling soil; and applying water or applying soil stabilizers on unpaved areas*. Lead agencies would ensure that appropriate emissions control measures are implemented." Staff Report, p. 103.

b. Biological resources. "... lead agencies would ensure that readily available mitigation measures are implemented, *such as avoiding or, if feasible, relocating or replacing sensitive habitat"* and *"avoiding sensitive wetland and riparian habitat or mitigating for unavoidable fill or removal of significant vegetation stands."* In addition, the TMDL may require "construction or earthmoving activities that could interfere with fish or wildlife movement, migratory corridors, or nurseries (*e.g.*, channel habitat enhancement projects, fish passage enhancement projects, riparian corridor planting, etc.)" In that case, "local agencies would require necessary mitigation through their environmental reviews. Lead agencies would ensure that readily available measures are implemented, such as avoiding construction during the breeding season, avoiding sensitive habitat areas, and minimizing disturbances." Staff Report, p. 103-104.

c. Cultural resources. "Lead agencies would ensure that readily available measures are implemented, such as requiring a trained professional to observe major earthmoving work and stop the work if evidence of cultural resources is discovered." Staff Report, p. 104.

d. Geology and soils. "Local agencies would require necessary mitigation measures through their environmental review and *grading permit* processes." Impacts of grading are well known, as are available and effective mitigation measures that can be discussed. Staff

Report, p. 104.

e. Hydrology and water quality. "Lead agencies would ensure that readily available measures are implemented, such as dust suppression (*e.g.*, spraying water), use of erosion control best management practices, and proper construction site management." Staff Report, p. 105.

f. Noise. ".... restricting the hours of operations and ensuring that earthmoving equipment is equipped with mufflers to reduce noise." Staff Report, p. 106.

33. Without analyzing mitigation measures, the conclusion that the impacts would be mitigated below the level of significance can not be supported by the evidence. This has been the ruling in at least two cases: "The agency should not be allowed to hide behind its own failure to gather relevant data." *Sundstrom,* 202 Cal.App.3d at 311. "There cannot be meaningful scrutiny of a mitigated negative declaration when the mitigation measures are not set forth at the time of project approval." *Oro Fino Gold Mining Corp. v. County of El Dorado* (1990) 225 Cal.App.3d 872, 884.

34. The Staff Report (pp. 110-113) fails to consider a reasonable range of alternatives, such as alternatives that would include numeric targets for the Turbidity, Toxicity and Temperature Basin Plan standards discussed above and by Jackson and Higgins.

Thank you for your attention to this matter.

Very truly yours,

Martin Bourke, for

Thomas N. Lippe

List of Exhibits

1. Comment letter dated August 11, 2006 from Dr. Robert Curry to Thomas Lippe re: Napa River Sediment TMDL.

2. Curriculum Vitae of Robert Curry.

3. Comment letter dated August 11, 2006 from Dennis Jackson to Thomas Lippe re: Napa River Sediment TMDL.

4. Curriculum Vitae of Dennis Jackson.

5. Comment letter dated August 12, 2006 from Patrick Higgins to Thomas Lippe re Napa River Sediment TMDL.

6. Curriculum Vitae of Patrick Higgins.

7. Comment Letter on Cumulative Effects of Conversion of Upland Woodlands and Chaparral to Vineyards, from Robert Curry to Thomas Lippe, dated December 24, 2000.

8. Comment letter dated May 19, 2003 from Robert Curry to Napa County Planning Department re: Terra Springs Conversion.

9. Comment letter dated May 1, 2003 from Robert Curry to Napa County Planning Department re: Atwater Vineyard Conversion.

10. Comment letter dated October 15, 2002 from Robert Curry to Thomas Lippe re: Cort/Goldman Vineyard Conversion.

11. Comment letter dated June 30, 2004 from Robert Curry to Thomas Lippe re: Mondavi Vineyard Draft EIR.

12. Comment letter dated April 8, 2005 from Robert Curry to Thomas Lippe re: Mondavi Vineyard Final EIR.

13. Comment letter dated October 16, 2002 from Robert Curry to Thomas Lippe re: Craig Vineyard Conversion.

14. Comment letter dated February 6, 2002 from Robert Curry to Thomas Lippe re: Stark-Collom Vineyard.

15. Comment letter dated March 30, 2006 from Dennis Jackson to Thomas Lippe re: Abreu

Vineyard Conversion.

16. Comment letter dated January 15, 2005 from Dennis Jackson to Thomas Lippe re: Napa Canyon Vineyard Conversion.

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30. Comment letter dated August 20, 2003 from Robert Curry to Thomas Lippe re: Diamond Creek Conversion.

31. Comment letter dated August 20, 2003 from Robert Curry to Thomas Lippe re: Awni Conversion.

32. Comment letter dated August 20, 2003 from Robert Curry to Thomas Lippe re: Lewis Conversion.

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Watershed Systems
Hydrology - Geology - Soil Science

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August 11, 2006

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Re: Napa River Sediment TMDL

Dear Mr. Lippe:

You have asked me to review the Proposed Basin Plan Amendment: Napa River Sediment Reduction and Habitat Enhancement Plan and the Napa River Sediment TMDL Staff Report dated June 30, 2006.

I shall address the issue of whether or not this TMDL will bring the Napa River into compliance with Basin Plan standards that are currently not met due to excessive sediment or mechanisms that produce sediment, such as increases in peak flow from land use changes. I shall also address the issues related to implementation of Basin Plan standards as proposed by the Regional Board and the issue of regulation or non-regulation of headwater areas upstream from dams and reservoirs.

You asked me two questions:

1. Is the actual TMDL (i.e., 125% of background and the two numeric targets), assuming it is achieved, substantively adequate to achieve compliance with Basin Plan standards.
2. Is the Implementation Plan adequate to achieve the TMDL?

Primary Initial Concerns:

1. There is a basic flaw inherent in the implementation of a strategy of upland sediment source reduction while not simultaneously addressing the problem of peak flow induced channel incision in the mainstem Napa River and lower reaches of tributaries. This is the stated purpose or primary focus of the proposed Napa River sediment TMDL (staff report p. 48). Basically, one cannot simultaneously reduce sediment input and reduce mainstem channel incision. The river system is one that balances sediment load and transport capacity. If the Napa River is deprived of

sediment load without a simultaneous reduction in peak flows, it will incise or cut laterally to make up that sediment deficit in its lower reaches.

If, as the Regional Board Staff Report acknowledges, the Napa River is not able to meet Basin Plan standards for fish habitat due to incision of the mainstem channel and impacts to spawning and rearing habitat caused by excess fine-grained sediment in the system, a TMDL sediment reduction control strategy alone will not be sufficient to achieve Basin Plan standards for the following reasons:

a. As recognized in the background documents to the Staff Report, the numerous reservoirs and dams located on Napa Valley watercourses trap coarse sediment load that is beneficial for fish habitat and stream equilibrium, while passing fine grained sediment that is deleterious to these two benefits in the main channel system. The approach of the staff of the Regional Board is thus to try to reduce fine-grained load because they cannot readily increase the ratio of coarse to fine load. Thus the sediment TMDL must be interpreted as a fine-grained sediment TMDL, not a total sediment TMDL. It is well to remember here that the geologic work of rivers is the transport of sediment with the help of water.

b. Napa County Hillside Erosion Control Ordinances also shift the balance of coarse and fine grained sediment by trapping and reducing coarse sediment eroding from hillside vineyards and other developments while doing little to control passage of silt-sized sediments that fill, pass through, and pass under the various erosion control structures and treatments that are prescribed through the ordinances. I believe that the Regional Board errs in relying too much on county control through vineyard conversion and other erosion control ordinances that do little to reduce fine grained sediment yield and exacerbate sediment and stormflow routing.

c. The river has now incised to the point that it is no longer connected to much of its historic floodplain. This prevents the main Napa River from capturing its fine-grained sediment load through periodic overbank flooding into the wide riparian zone that is seen in the historic aerial photos. (cf Staff and Dietrich reports) To try to achieve a fluvial equilibrium of flood flows and sediment transport in the contemporary environment of increased peak flow frequency and magnitudes, we either need more sediment or we need decreased flow velocities with wide riparian corridors and contiguous floodplains to prevent scour of spawning habitat and to effect capture of fine-grained sediments.

2. There is insufficient thought given to the historic character of the Napa River and its watershed. As pointed out by several early reviewers of study drafts, there is little basis for assuming that the characteristics of the Napa River as captured in the oldest historical aerial photography are those characteristics that may have supported both Steelhead and Coho populations. Thus, the question raised by others about the advisability of trying to achieve a target condition for the Napa River and its tributaries through this TMDL that is based on the date of the earliest aerial photography is quite valid. Based on well-accepted principles of geomorphology, it is likely that the pre-European Napa River was a meandering single-thread channel with a wide active well-vegetated floodplain. Upon introduction of cattle by Mexican

and early European settlers, and later land clearing and logging, storm-period sediment yields would have increased dramatically, and the channel may have aggraded and become braided. Then as we move into the 20th century with valley-floor agriculture and vineyards and cessation of grazing and logging, there would have been economic pressure to confine the river to a single channel and an accompanying reduction in sediment yield that led to modest incision. Then, in the modern era, with expansion again onto the hillsides and intensive competition of valley-floor prime vineyards and urban lands, coupled with needs for frost protection and surface reservoirs, we moved to the present hydrologic regime.

While this historical scenario has not been, and maybe cannot be, absolutely verified, it fits the available historic maps and is clearly reflected in the strata of the Napa River cut-banks that I have inspected at and above St Helena. The moderately incised mainstem river in the reach between Calistoga and St Helena exposes miles of failing riverbanks. Almost all reveal a 60 to 130 cm surface overbank silt and sand deposit that incorporates occasional logs and roots that overlie pockets of gravel and clay deposited by a meandering river within 1 to 1.5 meters of the present thalweg. The old river meandered. The present river has been remarkably stable in its position in the valley and is quite straight. The old river left floodplain deposits in riparian areas that accumulated organic-rich soils. Today those soils are largely oxidized and no longer accumulating organic-rich fine-grained sediments. If this reconstructed history of the river is accurate, then restoration to a 1940's model would be inappropriate for restoration of historical fish and aquatic wildlife habitats.

We need to accept that the proposed TMDL implementation plan may freeze in time a transitional metastable condition that is not ideal for the biotic components that are also part of the Basin Plan. I appreciate that this issue has been debated and that there are differing professional opinions. However, it is clear that upland sediment yield is only one of several factors that are currently causing sediment related impairment of the Napa River. Other major factors include channel incision caused by increases in peak flow and the resulting lack of connection between the river and its historic floodplain. Therefore, from a geomorphic standpoint, efforts focused solely on reducing future upland sediment yield are likely to be ineffective unless combined with efforts to regulate increases in peak flow and to structurally reconnect the river with its floodplain.

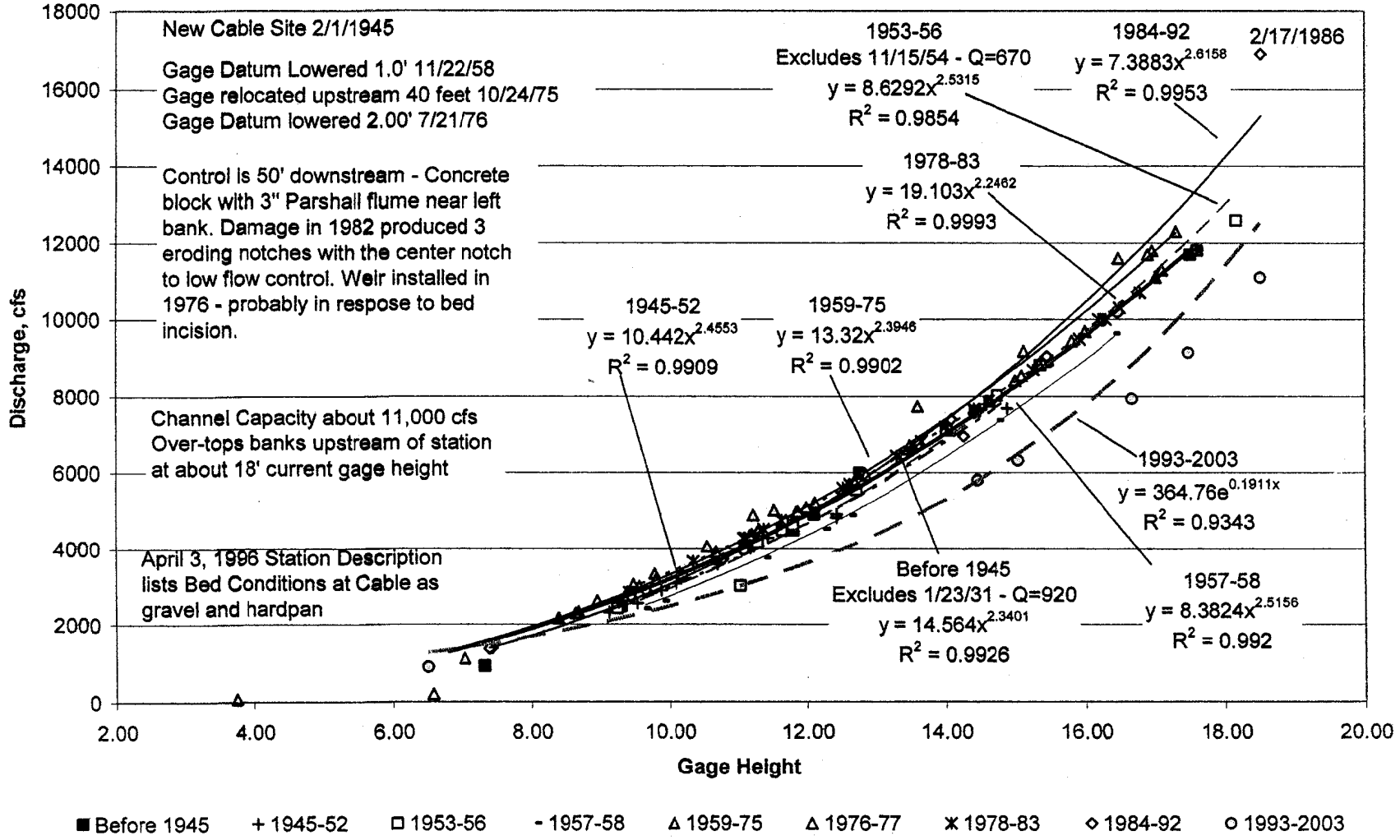
Observations:

The riverbanks are eroding and failing where agricultural development has reduced or eliminated natural riparian forest and where misguided bank protection efforts have concentrated lateral erosion. This bank-cutting is caused both by the frequent channelized high flows of the river itself and by pore-water pressure in the oversteepened streambanks. Today it takes a discharge of about 11,000 cfs to overtop the channel just upstream of the St. Helena gauging station. Although this site is not natural and unaltered, it appears to have overtopped at substantially smaller flows (as little as 5000 cfs, or close to the 2-yr return interval) 50 years ago. This opinion is based on an analysis of the complicated gauging records for the Napa River near St. Helena US Geological Survey station (Figure 1, *spreadsheet available on request*). Significantly, the trends of aggradation and incision in the

main Napa River channel have not been consistent. Major floods have altered and even reversed briefly the channel cutting trends, as have channel maintenance activities (based on review of all historic meeting notes of past Supervisors' meetings up to 1996). However, the trend today is toward deeper channel incision and some channel widening.

Revised

Napa River near St. Helena
Peak Discharge vs.Stage, Adjusted for Datum Changes



Without addressing the mainstem channel equilibrium problems, the proposed 125% of background limit for the sediment TMDL cannot restore sediment-impaired habitat in that channel. It may be effective in tributaries that are important for spawning habitats if this TMDL is adequately implemented. Sediment sources that supply the mainstem are not limited to tributaries. As can be readily seen in the cutbanks of the Napa River between Calistoga and St. Helena, a significant source of fine-grained sediment is being added from erosion of cleared fields. These are "recycled" overbank flood deposits and old backwater deposits that are now eroding into the channel. These sediment sources are particularly damaging to in-stream gravels because they may be added to the river when it is not in flood flow and cannot readily transport them. Seasonal high winter water tables and bank storage water contribute to the failures of the fine-grained stream bank materials at non-flood times. This sediment is then simply redistributed in the immediate vicinity of the bank failures to fill pools and impair streambed permeability. It creates a short-term localized transient sediment load that is difficult to monitor and control, and is underestimated in the Regional Board models. This difficulty was acknowledged in the Limiting Factors Analysis as quoted below.

Another observation is that on-stream reservoirs become very turbid during episodic intense rainstorms of 5-inches or more that fall within 1-to-3 consecutive days. That turbid water passes through the smaller reservoirs and into lower tributaries to be discharged into the mainstem river. These 5-inch storms often fill small (1-acre or less) sumps and detention basins installed below hillside vineyards to catch sand sand-sized material, after which runoff from a later sequential storm is not trapped at all. It is not possible to clean these sumps and return the captured sediment to fields and vineyards during the wettest times of the winter, and thus the erosion control structures are often ineffective during wet winters.

Implementation:

The Implementation Plan cannot achieve the stated goal of fine-grained sediment reduction to 125% of background for several reasons. First, we do not have a very good idea of what background levels are. The short dry-year sampling that was done, through no fault of the investigators, simply cannot be used to establish a baseline. Sediment transport is episodic with the first large storm of the season and the first rising flood-stage flush of flow as the primary transport media. Not only were the two sampling periods not representative of the 5-20-year return period primary sediment transport events, but they missed the early season concentrated flows. Analysis to demonstrate that the sampling captured mean annual flow events, while a good academic exercise, is not indicative of representative sediment loads.

As pointed out in that Limiting Factors Analysis, Final Technical Report, 2002, § 6.2.1:

> We did not perform a sediment source analysis, and therefore do not know if potential significant sources of fine sediment and clays (dirt roads, freshly ploughed agricultural fields, etc.) were exposed during the period of measurement. Within the time frame of this study, no turbidity effects were found, despite our examination of 17 tributaries and 7 sites on the mainstem Napa River. This suggests that there is not a permanently elevated chronic source of sediment causing deleterious turbidity levels.

permanently elevated chronic source of sediment causing deleterious turbidity levels. However, our results reflect conditions during only two water years and may not have captured the effects of episodic or rare phenomena such as periods with higher rates of land conversion or road construction or infrequently-occurring natural events, such as landslides or extremely large storms.

Second, by assuming that the watershed areas above reservoirs and dams are not necessary to consider for reduced fine-grained sediment management and regulation, a significant contribution may be missed. I believe I understand the reasoning behind the assumptions made in developing the TMDL models to assess sediment sources. The East Side hillsides underlain by Tertiary volcanic rocks are assumed less erodible source areas and the reservoirs trap sediments. These volcanic flow rocks are mapped as covering about 27 percent of the entire Napa watershed area. But most of the reservoirs are small enough to allow passage of fine grained sediment through them during characteristic intense winter storms and the East Side Sonoma Volcanic rocks are not really all bedrock at the surface. There is a mantle of fine-grained volcanic ash 2 or more feet deep under the chaparral that originally mantled these volcanic lands. As a geologist, we always map what we believe to be the bedrock, and that is primarily dense volcanic rock as shown on the bedrock geology map figure for this TMDL. But that is not what is exposed when lands are initially cleared, or planted in vineyards or converted for grazing. The soil maps recognize a fine-grained loam or even clay-loam where the geologists say dense volcanic bedrock. They are both correct, but it is the soil mantle that must be managed to reduce fine-grained sediment flux. The mantling of geologically young volcanic ash is not recognized in the tabulation and maps of geologic substrates that were a basis for modeling the sediment yield of various parts of the watershed (see Table 3-3 in the Limiting Factors Analysis). To this end, it does not seem prudent to dismiss or underestimate sediment yields from East Side areas, even those above smaller reservoirs.

The Staff Report of June, 2006, is well organized and comprehensive. It acknowledges many of the basic problem issues that must be addressed by the TMDL and Basin Plan Amendments such as riparian zone restoration, flood routing problems contributing to high peak flows, low-flow problems as the affect fish habitat, and channel incision. But it does not attempt to develop an implementation strategy that addresses these fundamental and overriding issues. It acknowledges that channel incision can be regulated but then proposes only an unenforceable implementation standard of ≤15 cm scour. Our abilities to measure scour during winter floods are very limited and not very accurate and the measures necessary to reduce or offset such scour are limited to long-term extraordinary watershed-wide control of peak runoff.

The Increased Runoff problem:

- A subset of the implementation issues involves increases in peak flows. The Staff Report acknowledges that increased peak flow storm runoff contributes to in-channel erosion and channel instability. With the exception of urban areas with stormwater management plans, this problem is not addressed by the simplified approach of attempting to regulate sediment to 125% of background. The entire issue of upland sediment non-point source control to achieve the

target sediment yield level is not adequately addressed. If dirt roads are seen as a primary source of sediment, how does the Regional Board expect the County and private landowners to regulate this source? If road miles are seen as a proxy for rural development, then that development itself needs to be regulated because focusing only of overland sheet flow from roads will be ineffective.

- To simply focus on primary sediment sources without simultaneously looking at control of increased peak flow frequency and magnitude does not provide the tools for adequate implementation of this TMDL. The North Coast Regional Board has determined that peak flow increases are proper targets for regulation (see North Coast Regional Board Freshwater Creek resolution R1-2006-40, § 19b and 39-67).
- The Central Coast Regional Board has is proposing to adopt a "land disturbance" regulation to achieve their sediment TMDL for the Pajaro River watershed (Resolution R3-2005-0132). That TMDL implementation plan requires compliance with a new land disturbance prohibition for sediment within the Pajaro watershed. In that case, multiple county jurisdictions and differing county concerns may have led that Regional Board to choose this different implementation strategy. However, the basic issues of legacy sediment sources and inadequate county expertise are the same, and an overlay of Regional Board monitoring and review of Napa County ordinance implementation seems necessary to achieve Basin Plan goals.
- Road-related upland sediment sources may include both dispersed sheet-flow erosion from dirt roads and concentrated road-ditch and road prism erosion. The Staff report recognizes these but does not propose an implementation plan that can effectively deal with remote rural roads.
- The Staff report recognizes the necessities of a riparian zone focus to protect and enhance mainstem and lower tributary riparian zones and establish functional setbacks to reduce sediment input and protect spawning gravels. This could be done with an implementation plan that focuses of streamside restoration and riparian setbacks. Such a plan should be at least as important as the almost impossible goal of reducing private dirt road runoff contributions.
- Upland road-related sediment source control and road-related flood routing are not readily regulated. If the County requires lined ditches and lots of culverts on rural dirt roads, they will then exacerbate faster flood routing and greater channel scour, while trying to reduce fine sediment discharge. The best fine sediment control is a reconnection of the floodplain to trap sediment at the bottoms of tributaries.

CONCLUSIONS

The proposed sediment TMDL is the result of comprehensive good research but its focus on in-channel fine-grained sediment to the exclusion of other more easily regulated parameters such as riparian zone stabilization, reconnecting flood plains to the mainstem river and peak flow increases creates serious doubts about the effectiveness of the TMDL to meet Basin Plan goals and standards. The Regional Board's approach as explained in the Staff Report summary statement is "*To achieve the 125% of background sediment TMDL controllable sediment delivery resulting from human actions needs to be reduced by 50% from the current proportion of the total load.*" The key word there is "controllable". The approach

chosen is to address primarily erosion control at the source rather than capture in the valley. This approach is difficult to implement and enforce, and a multipronged approach of sediment source reduction, including reduction of sediment generated by peak flow effects on channel stability, coupled with restoration of natural riparian system functions to trap and disperse sediment has a much higher probability of success. The Staff Report concludes that funding for channel restoration is difficult to obtain and thus fall back to upland sediment source reduction. It does, however, recognize that:

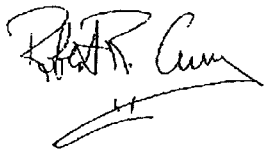
Problems associated with channel incision, related rapid bank erosion, and loss of essential habitat features, reflect and integrate multiple historical and ongoing disturbances, some of which are local and direct, and others are indirect and distal. Effectively addressing these issues will require cooperative and coordinated actions by multiple landowners, working with public agencies, over significant distances along the river. The most effective means of controlling channel incision and related fine sediment delivery to the river is a channel restoration program that reestablished width-to-depth ratios and sinuosity values conducive to formation of alternate bars and a modest floodplain. The Water Board will work with stakeholders along Napa River, through local stewardship groups, to implement such channel restoration/habitat enhancement projects.

This is good language and good intent and does address the real issues. But it is not part of the TMDL implementation program. It should be.

The basic standard of 125% of background is reasonable as presented, but the estimates of background are based on USLE models that were not verified in the time frame for development of this TMDL and probably underestimate actual long-term background for highly episodic sediment runoff events. Thus, the actual numbers and the estimate of 50% of human contributions are potentially far outside of the range necessary to restore biotic and water quality parameters.

The models used to estimate background sediment contributions appear to underestimate inputs from channel bank erosion. Those estimates were based on 1980's grain size distributions for bed and bank deposits collected at several locations along Napa River (Staff Report, p 26) and do not appear to represent the more recent trends in riparian zone clearing and *de facto* attempts to stabilize channels.

Respectfully Submitted



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August 11, 2006
Tom Lippe
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Re: Napa River Sediment TMDL

Dear Mr. Lippe:

You have asked me to review and comment on the following documents (a) Proposed Basin Plan Amendment: Napa River Sediment Reduction and Habitat Enhancement Plan (b) and the Napa River Sediment Total Daily Maximum Load Staff Report dated June 30, 2006. Both of these documents were obtained from the San Francisco Bay Regional Water Quality Control Board web site.

Your review of the Basin Plan Amendment raised several questions. I respond to your questions below.

Question: Are there other Basin Plan Standards that the Napa River may not meet which should be addressed by the Sediment TMDL?

Response:

In my opinion, both the Turbidity and Toxicity Basin Plan Standards should be included in the Napa River Sediment TMDL. The Basin Plan Standard for turbidity is:

> **TURBIDITY**
>
> Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. Increases from normal background light penetration or turbidity relatable to waste discharge shall not be greater than 10 percent in areas where natural turbidity is greater than 50 NTU.

The rationale for including the Turbidity Standard in the TMDL is that:

(a) The Basin Plan Amendment and the sediment TMDL staff report both identify fine sediment as the primary problem. Fine sediment is carried as suspended sediment load or wash load.

(b) Typically there is a strong correlation between suspended sediment load and turbidity.

(c) The Turbidity Standard says that a discharge shall not increase the turbidity by more than 10% above the background level when the observed turbidity is greater than 50 NTU.

(d) The Basin Plan Amendment and the TMDL staff report both state that the average annual sediment load during the 1994-2004 reference time period was 183% of the natural (background) sediment load. These two reports suggest that human caused non-point source discharges have increased the sediment load to 183% of background. Therefore, it is very likely that human caused non-point source sediment discharges have increased the wintertime turbidity, at least at some locations, by more than 10% on

days when the turbidity was greater than 50 NTU which, means that the Turbidity Basin Plan Standard is being violated.

(e) The sediment load that is passed through the on-stream reservoirs is carried as suspended sediment with a low enough settling velocity that it does not drop out of suspension while passing through the reservoir. Such fine material is often termed *wash load* and is a source of turbidity. An e-mail from Michael Napolitano dated August 8, 2006 states that:

> 2. With regard to estimating trap efficiency, please note we estimate that total sediment input to channels upstream of reservoirs = 122,374 metric tons per year. We also estimate that approximately 1/3 of the > 2 mm size class is discharged through the dams, or approximately 18,047 metric tons per year. Comparing these two values, I find that by our approach, 15% of the total sediment input is discharged through the dams, and therefore, reservoir trap efficiency is estimated at 85%.

Staff expects about 33% of the sediment less than 2 mm to be carried as suspended load that is fine enough to be classed as wash load. A spreadsheet (received from Michael Napolitano on August 7, 2006 by e-mail) giving the details of the information in Table 2 of the Basin Plan Amendment presents the total sediment load by size class, see Table 6 below. The total sediment load for the Napa River watershed, generated above Soda Creek, that is less than 2 mm, is 170,600 mt/year (45.7% of the total load). Staff estimates that the natural sediment load of the Napa River above Soda Creek contains about 54,600 mt/year of material that is less than 2 mm. This gives an estimate of the human caused sediment load, from the watershed above Soda Creek, that is less than 2 mm, of 116,000 mt/year. Using staff's estimate that 33.3% of the material less than 2 mm can be transported as wash load gives an annual human-caused wash load of 38,600 mt/year from the Napa River above Soda Creek. This is the roughly the same amount of sediment that is generated by channel incision. It is also about the same amount as the load generated by surface erosion associated with vineyards and livestock grazing. By not including turbidity, and hence the wash load, in the TMDL, as described in the proposed Basin Plan Amendment, an important human caused element of the sediment budget is being ignored.

The expected natural wash load contributed to the Napa River above Soda Creek is about 18,200 mt/year (= 33% x 54,600). The human-caused wash load is 38,600 mt/year (= 33% x 116,000 mt/yr) which is 212% of the natural wash load. If the overall annual human caused wash load is more than twice the natural wash load, it is reasonable to expect that the Basin Plan Standard for turbidity is being violated, at least in some locations, on a regular basis.

The above facts support the claim that turbidity levels are in violation of the Basin Plan on many days during the winter. Hence, the Napa River is turbidity impaired. Consequently, turbidity should be one of the Basin Plan Standards included in the TMDL and a numeric target should be set for turbidity.

The Basin Plan Amendment does not mention turbidity at all. Curiously, the TMDL Staff Report lists the turbidity Basin Plan Standard (Staff Report, page 6) but does not discuss it and does not explain why it was not included in the TMDL. Table 1 of the TMDL Staff Report claims that the Basin Plan Standard for turbidity is being attained, but no substantive proof is offered. Apparently, the small number of turbidity samples taken, during a relatively dry year, for the Limiting Factor Analysis were taken as definitive evidence that the Basin Plan Standard for turbidity is being met everywhere in the Napa River watershed, at all times.

However, to definitively demonstrate that the Basin Plan Standard for turbidity is being attained everywhere in the Napa River watershed would require quantitative evidence showing that the present

level of turbidity is no more than 10% above the background turbidity, everywhere in the watershed. The first problem with demonstrating this claim is the Basin Plan Standard for turbidity itself. What is *background turbidity*, in terms of the non-point source sediment problems that the TMDL is designed to address? How is *background turbidity* to be measured in the context of non-point source sediment impairment? Does the Regional Board Staff have a scientifically defensible method of determining background turbidity, in the case of non-point source sediment?

The Basin Plan Standard for turbidity can be applied to spills or point sediment discharges from say a failed culvert where turbidity above and below the point of discharge can be measured and compared. The Basin Plan Standard for turbidity is unworkable for non-point source sediment discharges because the background turbidity can not be determined at any given site.

The limited number of sampling locations and the limited frequency of sampling (only 6 storms) are insufficient to establish that the Basin Plan Standard for turbidity is being attained in all locations in the Napa River watershed.

The Limiting Factors Analysis performed original field work to investigate, "The duration of elevated turbidity following storms was measured at 18 sites in 16 tributaries following 4-to-5 storm events, and 6 mainstem sites following 5 storms." Turbidity was measured by a modified grab sample. Grab samples were taken on the day of the storm and then 1, 3 and 9 days after the storm peak. Details of the turbidity sampling are given in Appendix A of the Limiting Factors Analysis (Stillwater Sciences and Dietrich, 2002).

The Executive Summary of the Limiting Factors Report states:

> B. Sediment-related Factors
>
> *Turbidity*
>
> The impact of turbidity on salmonids and other aquatic species is a major concern in watersheds where land use activities have increased fine and/or total sediment supply to channels. Effects of increased turbidity on fish and other aquatic organisms, including reduced feeding efficiency and disrupted territorial behavior, can occur at relatively low turbidity levels. These changes have the potential to impact the population dynamics of affected species primarily by reducing growth rates.
>
> The Napa Valley is heavily developed for agricultural and residential land uses. Hillslope erosion has been identified as a clear concern of many stakeholders in the watershed. Based on initial information review and field reconnaissance surveys conducted in summer 2000, we hypothesized that feeding opportunities for juvenile steelhead during the rainy season (particularly in the late fall and early spring when temperatures are not too cold to inhibit feeding and growth) have been reduced by elevated turbidity levels. Reduced growth may affect subsequent survival (see juvenile summer growth study description below for discussion of possible mechanisms). If prolonged high turbidity occurred only after infrequent flood events (e.g., flood events with a recurrence interval of 5 years or greater), then high turbidity would probably not have a significant impact on steelhead production in the Napa River watershed. We hypothesized that to be deleterious, prolonged high turbidity would have to occur after relatively common storms. To assess whether turbidity levels at commonly occurring flows could be sufficiently elevated (i.e., at levels above a threshold of 20 NTUs [nephalometric turbidity units, a common measure of turbidity], a conservative estimate of the turbidity threshold at which prey capture efficiency by steelhead would become impacted), we measured turbidity under winter baseflow conditions immediately following four storms in 2001 and one larger storm in 2002, to see if these storms could

> increase turbidity enough to cause a chronic reduction in steelhead feeding efficiency. During water year 2001, we conducted turbidity monitoring at a total of 24 sites (Figure ES-4); 19 sites were sampled to fully characterize the recessional limb of 4 different storms, and the remaining 5 sites were sampled for fewer storms. Turbidity was re-measured at 22 of the 24 original sites in a limited sampling effort to capture conditions after a larger storm event during water year 2002, which was much wetter than 2001.
>
> Our results indicate that feeding opportunities were probably not lost for more than one or two days following even the largest storms (based on the 20 NTU estimate). Therefore, turbidity probably did not pose a significant limitation to feeding by steelhead during the period studied (Figure ES-5). No sediment source analysis was done, hence we do not know if potential significant sources of fine sediment and clays (dirt roads, freshly ploughed agricultural fields, etc.) were exposed during the period of measurement. Within the narrow time frame of this study, no turbidity effects were found, despite our examination of 17 tributaries and 7 sites on the mainstem Napa River. This suggests that there is not a permanently elevated chronic source of sediment causing deleterious turbidity levels. However, our results reflect conditions during only two water years and may not have captured the effects of episodic or rare phenomena such as periods with higher rates of land conversion or road construction or infrequently occurring natural events, such as landslides or extremely large storms.

The limited turbidity sampling program was judged to show no problem with chronic turbidity. However, the Limiting Factor Analysis report acknowledges that the most of the turbidity samples were taken during the 2001 water-year which was relatively dry. In fact, 77% of the 63 water-years with complete daily stream flow records at the Napa River near St Helena stream gauge had larger mean annual discharge than the 2001 water-year. An additional storm was sampled in January 2002 water-year.

In my opinion, the methodology used by Stillwater Sciences and Dietrich (2002) to investigate chronic turbidity was not sensitive enough to adequately address the issue of chronic turbidity. In addition, the turbidity sampling done for the Limiting Factors Analysis by Stillwater Sciences and Dietrich (2002) is inadequate to demonstrate that the Basin Plan Standard for turbidity is being attained in the Napa River watershed.

Klein (2003) presents a more robust method for investigating chronic turbidity. Klein gathered turbidity data from eight continuous turbidity (15-minute) and stage recording stations located on small streams in the northcoast region (Mendocino, Humboldt, and Del Norte counties). Klein performed a turbidity-duration analysis similar to a water-discharge duration-analysis.

Trush's method of identifying chronic turbidity by performing a turbidity-duration analysis was adopted by the Humboldt Watersheds Independent Scientific Review Panel (2003), commissioned by The North Coast Regional Water Quality Control Board. Trush recommended the following *chronic turbidity thresholds*.

> Trush (2002) has identified "chronic turbidity thresholds" for anadromous salmonid populations for each of the following flow conditions:
>
> - mean daily average streamflow (23%-24%): NTU < 10
> - winter base streamflow (10%): NTU < 25
> - receding winter peak streamflow (5%): NTU <70
> - winter peak streamflow (2.5%): NTU < 100.

> Identifying chronic turbidity thresholds for different portions of the annual hydrograph is an important step in developing TMDLs because it recognizes that the vulnerability of salmonids varies seasonally with position of the annual hydrograph. For example, the survival of salmonid embryos in gravel beds can be reduced by fine sediments entering streams during the critical species-specific incubation period (Everest et al. 1987). Also, chronically turbid water during the prime summer rearing period can reduce the density and growth of juvenile salmonids (Sigler et al. 1984), and cause a physiological stress response if turbidity occurs during periods when waters are normally clear (Redding et al. 1987). (Humboldt Watersheds Independent Scientific Review Panel Phase II Report, 2003)

The percentages in parentheses are water-discharge exceedence probabilities. For example, winter base streamflow is exceeded only 10% of the time during winter (October 1 through May 30). Trush's chronic turbidity standard for winter base flow says that the turbidity of the winter base flow should be less than 25 NTU. Since the winter base flow has a water-discharge exceedence probability of 10%, the turbidity of the base flow will have a turbidity-duration exceedence probability of 10%. In other words, if the 10% exceedence turbidity is greater than 25 NTU then the stream is in violation of Trush's winter base flow chronic-turbidity-standard.

Taking grab samples on the day of the storm peak and then 1, 3 and 9 days later does not provide enough information to define the turbidity exceedence probabilities used in Trush's chronic turbidity standards. Jackson (2005) investigated the time it took for turbidity values to drop from the maximum recorded value during a storm peak to 25 NTU for 6 storms measured during the 2004 water-year on the San Lorenzo River in Santa Cruz county. The City of Santa Cruz Water Department collected 15-minute turbidity data for 165 days from October 30, 2003 through April 15, 2004. The City placed its turbidity sensor in the San Lorenzo near their intake on Tait Street. The USGS San Lorenzo River at Santa Cruz stream gauge (No. 1116100, watershed area = 115 sq-mi) is located just a few feet away from the City's turbidity sensor. Figure 1 shows the San Lorenzo River turbidity and water discharge data collected in 2004. The City of Santa Cruz's 2004 turbidity data, for the San Lorenzo River, had the exceedence probabilities shown in Table 1.

Table 1. Turbidity exceedence values for the 2004 water year turbidity data collected by the City of Santa Cruz Water Department at their Tait Street diversion.

Turbidity Exceedence Probability	San Lorenzo River for 2004 Water Year	Trush's Chronic Turbidity Threshold
24% exceedence	14 NTU	< 10 NTU
10% exceedence	41.0 NTU	< 25 NTU
5% exceedence	72.1 NTU	< 70 NTU
2.5% exceedence	120 NTU	< 100 NTU

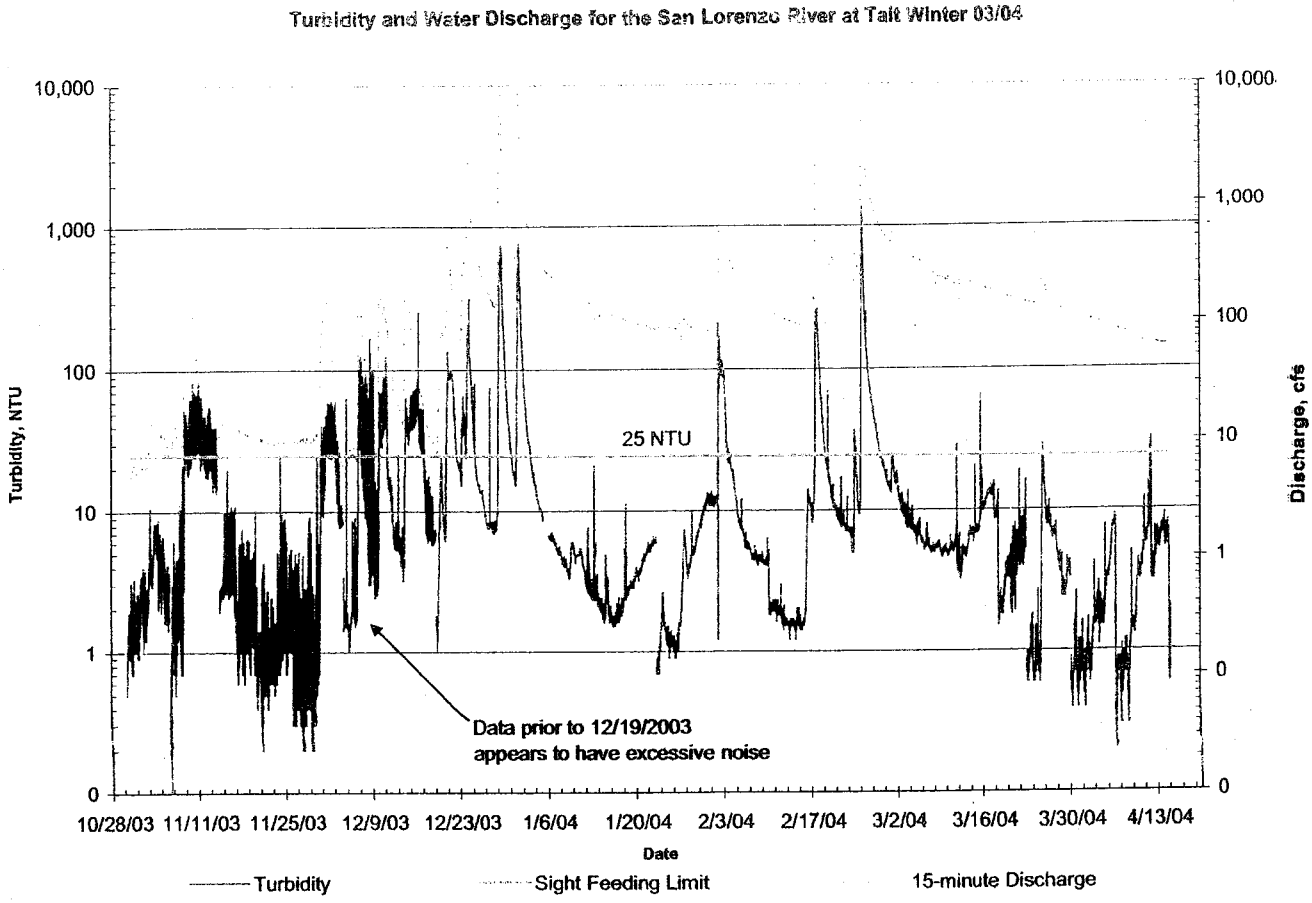

Figure 1. The City of Santa Cruz's 15-minute turbidity data for the 2004 water-year with the USGS 15-minute discharge data from the San Lorenzo River at Santa Cruz stream gauge. The excessive noise in the early part of the record was caused by a weak battery.

Table 2. The number of hours for the City of Santa Cruz's 2004 San Lorenzo River turbidity data to drop from the storm maximum to each of Trush's chronic turbidity levels.

Date	Ben Lomond (CDF) Daily Rainfall inches	Maximum Water Discharge cfs	Ratio of Discharge to 1.5-Yr Discharge	Return Period years	Maximum Turbidity NTU	Hours to 100 NTU	Hours to 70 NTU	Hours to 25 NTU
12/24/2003	2.48	2,250	53.57%	1.2	221	10.75	14.75	25.75
12/29/2003	4.91	10,100	240.48%	2.72	737	17.25	21	39.25
1/1/2004	3.51	10,900	259.52%	3.5	762	16.25	20.5	45.5
2/2/2004	1.44	827	19.69%		169	3.5		
2/18/2004	2.70	2,620	62.38%	1.25	263	12.75	17.5	35.49
2/25/2004	2.18	9,230	219.76%	2.5	1,355	22.75	31.75	70.99

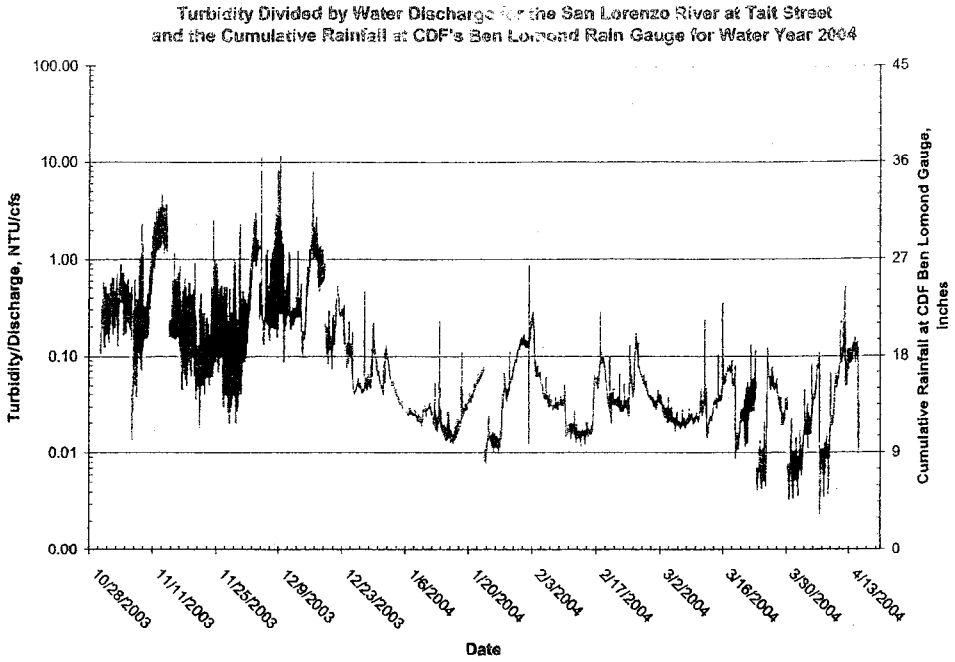

Figure 2. Turbidity divided by water discharge, for the San Lorenzo River near the City's intake at Tait Street, is a measure of the efficiency of fine sediment entering the channel network. Note the drop off in efficiency December 24, 2003, when the cumulative rainfall reaches about 15 inches. The early season turbidity-efficiency shows the need to monitor early storms. The pink solid lines that rises from the lower left to upper right is the cumulative rainfall.

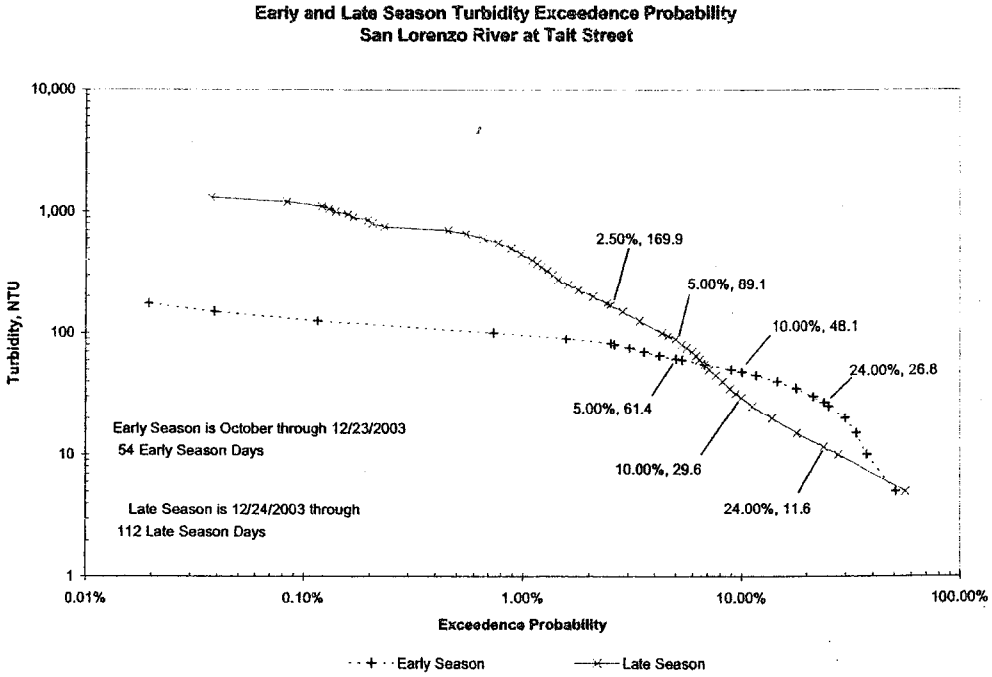

Figure 3. Turbidity exceedence curves for early season and late season. Early season is defined as October through 12/23/2003 and late season is 12/24/2003 through April.

The City's turbidity data exceeded each of Trush's chronic turbidity thresholds. This is not surprising since the San Lorenzo River is listed as impaired for sediment under section 303(d) of the Clean Water Act.

The time for the turbidity to drop from its maximum measured during a storm to each of Trush's chronic turbidity thresholds for the San Lorenzo River data should exceed the time it would take the turbidity to clear in an unimpaired watershed of equivalent size. Table 2 shows the time to reach each of Trush's chronic turbidity thresholds after the maximum turbidity, for six events from the 2004 water year

Table 2 shows that the maximum time to drop from a storm peak to 25 NTU was 71 hours or 2.96 days. The maximum turbidity for this event was 1,355 NTU and the return-period for the water discharge was 2.5 years (Log-Pearson Type-III) indicating that the peak was greater than bankfull. Thus, one would expect to find the turbidity to be below 25 NTU on the San Lorenzo River, a river with a chronic turbidity problem, if a sample was taken 3 days after a moderate storm peak. Therefore, sampling turbidity 3 and 9 days after a storm peaks that are less than bankfull would probably only detect severe cases of chronic turbidity. The San Lorenzo turbidity data suggests that the methodology used in the Limiting Factors Analysis is only sensitive enough to detect the most severe cases of chronic turbidity.

Another aspect of chronic turbidity not addressed by Stillwater Sciences and Dietrich (2002) is early season turbidity. They only sampled storms from January or later. Figure 1 shows that several days had turbidity greater than 25 NTU prior to January.

Figure 2 shows the turbidity divided by the water discharge for the 2004 San Lorenzo data collected by the City of Santa Cruz Water Department. The turbidity divided by water discharge is a measure of the efficiency of fine sediment entering and moving through the channel network. Prior to about 12/24/2003 the turbidity divided by the water discharge is generally higher than later in the year.

Figure 3 and Table 3 shows that chronic turbidity was a problem in the San Lorenzo River during the early season (prior to 12/24/2003). The early season turbidity is higher for the 24% and 10% exceedence levels than either the late season or for the entire winter period. The late season data is only slightly above the chronic thresholds for the 24% and 10% levels.

During the winter of 2004 (165 days), there were 26 days with turbidity greater than 25 NTU. A total of 13.5 of these days occurred during the 54 day period before 12/24/2003 and the remaining 12.5 days with elevated turbidity occurred after 12/24/2003 (112 days). So, correcting chronic turbidity during the early portion of the wet season appears to have a high return on investment. By not sampling during the fall, the Limiting Factor Analysis may have missed a significant portion of the chronic turbidity in the Napa River.

Table 3 shows that early season storms are an important source of chronic turbidity. While early season storms may not move bedload or a large percentage of the total sediment load for the year, they do carry elevated levels of suspended sediment relative to the water discharge. The elevated suspended sediment load, during the fall, adversely impacts salmonids juveniles. This further underscores the need to monitor early in the season.

Table 3. City of Santa Cruz's 2004 San Lorenzo River turbidity exceedence values for early season (prior to 12/24/2003) and late season (12/24/2003 and after).

Turbidity Exceedence Probability	San Lorenzo River Early Season Turbidity, NTU	San Lorenzo River Late Season Turbidity, NTU	Trush's Chronic Turbidity Threshold NTU
24% exceedence	26.8	11.6	< 10
10% exceedence	48.1	29.6	< 25
5% exceedence	61.4	72.1	< 70
2.5% exceedence	82.0	169.9	< 100

The Limiting Factors Analysis ignores an important possible confluence of adverse factors, namely the deleterious effects of low flow on juvenile salmonid growth rates during the summer followed by chronic turbidity reducing their ability to feed during the fall and early winter. Young fish that have had to expend a large amount of energy to obtain a meager amount of food through the late summer may not be able to locate food for many days during the fall, due t poor visibility from chronic turbidity, further limiting their growth.

Figures 1, 2 and 3, plus Table 3 demonstrate the "first-flush" effect of small early storms delivering a relatively large amount of fine sediment (turbidity) to the stream channel network. A reasonable hypothesis is that the majority of the fine sediment (turbidity) delivered to the channel in the fall and early winter is human caused and should therefore be regulated by the TMDL

Modern continuous recording turbidity meters make it possible to assess chronic turbidity. Prior to the availability of continuous turbidity meters it was impossible to set a adequately measure chronic turbidity in a river or to set a standard for it.

The existing Basin Plan Standard for turbidity does not adequately address the effects of chronic turbidity on federally listed salmonids. Therefore, not only should Trush's chronic-turbidity standards be used as numeric targets in the Sediment TMDL but, the Basin Plan should be amended to incorporate Trush's chronic-turbidity standards as the Basin Plan Standard for chronic turbidity. The existing turbidity standard should be retained as the turbidity Standard for acute point-source discharges.

Suspended sediment and turbidity may also adversely affect municipal and domestic drinking water supplies. The TMDL Staff Report notes that Water Supply (AGR - agricultural, MUN - municipal and domestic) is a Beneficial Use of the Napa River. However, the Staff Report does not include Water Supply (AGR or MUN) in the list of Beneficial Uses impaired by sediment.

The Napa River Pathogen TMDL Staff Report Problem Definition states that:

> Elevated levels of fecal coliform bacteria have been observed in the Napa River since the 1960s. These bacteria indicate the presence of fecal contamination and attendant health risk to recreational users of the river from water-borne pathogens. Fecal contamination is the primary mechanism for the spread of water-born illness (American Public Health Association, 1998; U.S. EPA, 2001, 2002).
>
> Recent monitoring programs (see Sections 3.3 and 3.4) confirm elevated fecal coliform and Escherichia coli (E. coli) levels in the river and its tributaries. The following sections discuss the use of

pathogen indicator bacteria in water quality monitoring and regulation, relevant water quality standards, historic bacterial monitoring in the watershed, and current bacterial water quality studies.

Turbidity is well known for its ability to shield bacteria and other pathogens from the disinfection process. The human caused wash load is about twice the natural wash load of the Napa River. The wash load is an important component of turbidity. Consequently, it is reasonable to expect that the cost of filtering water diverted from the Napa River or its tributaries for municipal or domestic water supplies must be greater than if only the natural wash load (turbidity) was present.

The Basin Plan description of the MUN Beneficial Use is:

MUNICIPAL AND DOMESTIC SUPPLY (MUN)

Uses of water for community, military, or individual water supply systems, including, but not limited to, drinking water supply.

The principal issues involving municipal water supply quality are (1) protection of public health; (2) aesthetic acceptability of the water; and (3) **the economic impacts associated with treatment- or quality-related damages.** (Emphasis Added)

The health aspects broadly relate to: direct disease transmission, such as the possibility of contracting typhoid fever or cholera from contaminated water; toxic effects, such as links between nitrate and methemoglobinemia (blue babies); and increased susceptibility to disease, such as links between halogenated organic compounds and cancer.

Aesthetic acceptance varies widely depending on the nature of the supply source to which people have become accustomed. However, the parameters of general concern are excessive hardness, unpleasant odor or taste, turbidity, and color. In each case, treatment can improve acceptability although its cost may not be economically justified when alternative water supply sources of suitable quality are available.

Published water quality objectives give limits for known health-related constituents and most properties affecting public acceptance. These objectives for drinking water include the U.S. Environmental Protection Agency Drinking Water Standards and the California State Department of Health Services criteria.

The Napa River Sediment TMDL Staff Report and Basin Plan Amendment are ignoring the economic costs associated with the elevated treatment levels required to filter domestic and municipal water supplies to remove the human caused wash load (turbidity).

Therefore, excluding the watershed area above the municipal water supply reservoirs from the Sediment TMDL ignores the adverse impacts of human caused sediment above the reservoirs on the MUN Beneficial Use, specifically the increased cost of treating drinking water. The coarse sediment deposited in the reservoirs also has the potential to decrease the economic life of the reservoirs by reducing their capacity to store water.

Excluding turbidity from the Sediment TMDL exposes domestic water diverters, in all parts of the Napa River watershed, to elevated levels of turbidity that results from the high levels of human caused wash load. The increased volume of human caused wash load (turbidity) increases the cost of filtering domestic water supplies to provide safe drinking water.

The Basin Plan Standard for toxicity is:

TOXICITY

All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms. Detrimental responses include, but are not limited to, decreased growth rate and decreased reproductive success of resident or indicator species. There shall be no acute toxicity in ambient waters. Acute toxicity is defined as a median of less than 90 percent survival, or less than 70 percent survival, 10 percent of the time, of test organisms in a 96-hour static or continuous flow test.

There shall be no chronic toxicity in ambient waters. Chronic toxicity is a detrimental biological effect on growth rate, reproduction, fertilization success, larval development, population abundance, community composition, or any other relevant measure of the health of an organism, population, or community.

Chronic toxicity generally results from exposures to pollutants exceeding 96 hours. However, chronic toxicity may also be detected through short-term exposure of critical life stages of organisms.

As a minimum, compliance will be evaluated using the bioassay requirements contained in Chapter 4.

The health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors.

The rationale for including the Toxicity Standard is that:

(a) the problems associated with the fine sediment in the bed of the Napa River, identified in the TMDL staff report and supporting documents, meets the definition of Toxicity given in the Basin Plan Standard

(b) the elevated sediment load and resulting elevated turbidity has probably produced a chronic turbidity problem.

Randy Klein monitored continuous turbidity data in eight north coast streams (A Report to the US Environmental Protection Agency (USEPA) Region IX, March 2003) to study "chronic turbidity', or the tendency for some streams to remain turbid for a relatively large proportion of the winter runoff period. The following quote from Klein (2003) demonstrates the biological importance of chronic turbidity and how to measure chronic turbidity.

In this study, I assembled turbidity data from eight continuous turbidity and stage recording stations located on small streams in the northcoast region. Data from individual streams spanning three water years (WY2000-2002) were processed to calculate lengths of time turbidity was higher than several thresholds. Turbidity exceedence analyses, similar to conventional flow exceedence analyses, were also performed, allowing comparison of turbidity levels at various exceedence probabilities. The lowest (and most frequently appearing in the literature on salmonid impacts) threshold was 25 NTU, though inconsistencies in the threshold of impacts to salmonids exist in the literature. To complement the turbidity data, GIS analyses of land and land use characteristics for basin areas upstream of each gaging station were performed. Both natural and human-affected characteristics were summarized.

Differences between the study streams in duration of turbidity at several levels (the lowest being 25 NTU) spanned up to two orders of magnitude in some cases. A broad range of turbidities at the 1% and 10% exceedence probabilities was also observed between the study streams. These differences are considered to be far too great to be explained solely by natural variability (geology, climate), thus

land use is concluded to be a dominant factor. Although limited by the number of sites assessed (eight), land use variables, particularly road density and annual rate of timber harvest, appeared to be the dominant controls on the gross differences in chronic turbidity observed among the study streams.

Biological Effects of Turbidity

A large body of scientific literature exists on effects of turbidity and suspended sediment on aquatic biota (see review by Henley and others, 2000). Relatively low turbidities (above about 20-25 NTU, according to most studies) and suspended sediment concentrations (above about 25 mg/l) reduce 'reactive distance' (the distance at which food can be sighted under varying levels of water clarity) for juvenile salmonids. Even relatively low turbidities may impair the ability of juvenile salmonids to forage for food and attain sizes needed for ocean survival (Newcombe and MacDonald, 1991; Newcombe and Jensen, 1996; Sigler and others, 1984), although a few studies suggest higher thresholds (e.g., 150 NTU in Gregory and Northcote, 1993). Large smolt outmigrant size has been shown to increase the chances of a fish returning as a spawning adult, so suppression of feeding and growth for a cohort can result in poor escapement numbers (returning spawners), even if smolt outmigration numbers are relatively high (Nicholas and Hankin, 1989). A host of other effects has been identified on salmonids, including behavioral effects (Berg and Northcote, 1984; Barrett and others, 1992) and mortality during egg incubation (Slaney and others, 1977). In addition to effects on juvenile fish feeding ability, turbid water diminishes the amount of sunlight reaching the streambed, which suppresses primary production (Henley and others, 2000).

The Toxicity Standard specifically states that there shall be no chronic toxicity. The Toxicity Standard also identifies, "...decreased growth rate and decreased reproductive success of resident or indicator species." as some of the possible indicators of toxicity. The quote from Klein (2003) shows that chronic turbidity can produce these types of toxic effects on steelhead, as defined in the Toxicity Standard. The TMDL staff report, proposed Basin Plan Amendment and supporting documents all show that the fine sediment in the bed of the Napa River meet the definition of the Toxicity Basin Plan Standard.

Question: Are the numeric targets in BP Amendment Table 1 reasonable?

Response:

Table 1 from the Basin Plan Amendment is reproduced below.

The spawning gravel permeability target appears reasonable if the following conditions are met,

(a) There is a well defined procedure for establishing the total number of sites where permeability will be measured;

(b) There is a well defined procedure for that defines the total number of permeability readings (or density of reading i.e. number of readings per sq-meter of spawning gravel) at each site.

(c) There is a well defined standard to judge if the permeability standard is met in the watershed. For example, the permeability target could be met when say, 95% of the measured sites each had 95% of measurements at the site meet the permeability criteria.

BP Amendment Table 1. TMDL sediment targets for the Napa River and its Tributaries

Spawning gravel permeability Median value	≥ 7000 cm/hr[a]
Streambed scour Mean depth of scour	≤ 15 cm[b]

[a] Target applies to all potential spawning sites for steelhead and salmon in the Napa River and its tributaries excluding those upstream of municipal water supply reservoirs.

[b] Target applies to the response of the streambed to peak flows less than the annual (one-year) flood at all potential spawning sites for salmon in gravel-bedded reaches of: 1) mainstem Napa River; and 2) alluvial reaches of tributaries where streambed slope is between 0.001 and 0.02. Potential spawning sites can be identified based on the following:1) dominant substrate size in the streambed surface layer is between 8 and 128 mm; 2) minimum surface area of gravel deposit is 0.2 square meters in tributaries and 1.0 square meter in mainstem Napa River; and 3) located within mainstem Napa River at a riffle head pool tail and/or pool margin or in tributary reaches where streambed slope < 0.03 or in tributary reaches where streambed slope > 0.03 in pool tails backwater pools and/or in gravel deposits associated with flow obstructions (e.g. woody debris boulders banks etc.).

The streambed scour target is **not** reasonable for the following reasons.

(a) The numeric target applies only to peaks less than the 1-year return period discharge. The "Return Period" is the expected average length of time required for an event of a given size to occur. The "return period" = 1/p, where p is the probability of the event occurring in any given year. For example, a flood that has a 1% probability of occurring in any given year has a Return Period of 100-years. This constraint is **not** reasonable because

(i) Technically, the 1.00-year return period can not be calculated. The closer the return-period gets to 1.00 the closer the discharge gets to zero. Table 4 demonstrates the problem, the 1.001-year return period discharge for the Napa River near St Helena is estimated to be 18 cfs. Clearly, discharge less than 18 cfs will not scour the channel of the mainstem at the Napa River near St Helena stream gauge.

(ii) The numeric criteria must be applied to discharges that can scour the bed. If the criteria is applied to discharges less than the critical discharge that just initiates bed load movement, there will be no scour and hence the numerical criteria will automatically be met. A rough rule of thumb is that bedload begins to move at discharges that are about 80% of bankfull. Therefore, a more realistic constraint would be to apply the numeric target to discharges between 80% of bankfull and bankfull. Table 4 shows that the return-period for a discharge of 80% of bankfull is about 1.36-years.

(b) Factors other than improvement in water quality could result in the target being met. The numeric target of keeping scour less than 15 cm for discharges near the critical discharge that just initiates bedload movement can be met if the slope of the stream bed is decreased; or the depth of the discharge is decreased; or the size of the bed material is increased. Only the last factor is a direct measurement of an improvement in water quality.

Table 4. Estimated discharge for selected Return-period events measured at the Napa River near St Helena stream gauge. Return-periods were estimated using the Log-Pearson Type-III distribution. Note that the 1.0-year discharge can not be calculated.

Return Period[2]	Instantaneous Peak Discharge[1]	Ratio of Peak Discharge to Bankfull	
10	12,026	278%	
5	10,431	241%	
2	6,387	148%	
1.5	4,323	100.0%	**Bankfull**
1.36	3,458	80.0%	
1.10	1,295	30.0%	
1.05	713	16.5%	
1.01	165	3.8%	
1.001	18.2	0.4%	

[1] Measured at the USGS St. Helena Gage (number 11456000).

[2] Based on the Log-Pearson Type-III applied the raw Annual flood series measured at the USGS St. Helena Gage (number 11456000) for water-years 1945-2004

(c) Part (2) of footnote (b) in BP Amendment Table 1 states that the numeric target will apply only to the alluvial reaches of tributaries with slopes between 0.001 and 0.02. Footnote (b) gives guidance on identifying potential spawning sites in tributaries with slopes up to 0.03. The numeric target for streambed scour does **not** apply to potential spawning sites in the tributaries where the slope is between 0.02 and 0.03. Is the portion of the channel network with slopes between 0.02 and 0.03 being intentionally excluded from the TMDL for a reason or is this an error? Footnote (b)(3) seems to imply that spawning sites have the potential to occur in streams with slopes between 0.02 and 0.03 but (b)(2) excludes these stream reaches.

(d) Operationally, the proposed numeric target for streambed scour will be hard to measure since it applies only to minor peaks. Measuring streambed scour must be done in the winter to avoid the confounding effect of measuring scour from larger events than the numeric target calls for.

(e) A well defined procedure for establishing the methodology that will be used to measure streambed scour must be developed. The protocol must define

(i) The method that will be used to determine scour at redds. For example, will scour-chains be used or will some other method be used?

(ii) the total number of sites on the mainstem and each tributary where scour will be measured.

(iii) A well defined procedure for that defines the total number of scour measurement (or density of measurements i.e. number of measurements per sq-meter of spawning gravel) at each site must be developed.

(iv) A well defined standard to judge if the streambed scour standard has been met in the watershed. For example, the streambed scour target could be met when say, 95% of the measured sites each had 95% of measurements at the site in compliance with the streambed scour criteria.

I recommend that Trush's chronic turbidity threshold standards be adopted as the numeric target for turbidity for the Napa River Sediment TMDL. I also recommend that Trush's chronic turbidity standards be adopted as the Basin Plan Standard for chronic turbidity.

Question: Table 4.1 in the BP Amendment does not apply to parcels above municipal reservoirs because they are allegedly adequately regulated by the County Conservation Regulations.

(a) Do you agree?

(b) Table 2 says human-actions on land areas upstream of dams contribute 11,000 mt/yr (4% of total or 6.3% of human caused sediment). Do we know what fraction of this 11,000 mt/yr is from parcels above municipal reservoirs and therefore unregulated?

Response:

I do not agree that the BP Amendment should exclude the area above the municipal reservoirs because:

(a) The Basin Plan standard for turbidity is being violated, as explained in my response to Question 2. BP Amendment Table 2 shows that 18,000 mt/yr of fine sediment is making it through all of the reservoirs combined. The fine sediment that makes it through the reservoirs must be silt and clay that is carried as wash load and so causes turbidity. Over 60% of the fine sediment that is carried through the reservoirs is assigned to human actions.

a. If the County Conservation Regulations are effective in controlling non-point source sediment above the municipal reservoirs they should be equally effect downstream of the municipal reservoirs.

b. I have reviewed projects to create new vineyards in Napa County. In my opinion, the hydrologic analysis done for these projects was inadequate to protect water quality. The importance of the subsurface water balance in hillslope processes is typically not considered in the vineyard Erosion Control Plan. Failure to account for changes to the subsurface water balance can lead to headward erosion of the stream channel or increases in peak flows. Both of these effects contribute sediment to the stream network.

(b) Table 5 shows the watershed area above the five largest municipal dams. The data was taken from the California Department of Water Resources, Bulletin 17 (digitized by the Berkeley Digital Library).

Table 5. Watershed area above the five large municipal reservoirs, as given in California Department of Water Resources, Bulletin 17 (digitized by the Berkeley Digital Library) which lists state regulated dams in California.

	Drainage Area, sq-mile	Drainage Area, sq-km
BELL CANYON	5.53	14.32
CONN CREEK	54	139.86
KIMBALL CREEK	3.44	8.91
MILLIKEN	9.3	24.09
RECTOR CREEK	10.7	27.71
Watershed Area above large Municipal Dams	82.97	214.89
Napa River Watershed area above Soda Creek	225.5	584
Area above Municipal Dams as Percentage of Area above Soda Creek		36.8%

Question: Staff Report, p 65 note 25 states:

"The sediment TMDL is 125 percent of natural background load, or that load that would have been discharged to mainstem Napa River absent dams or human caused erosion. Because about 30 percent of the watershed drains into dams, a significant fraction of natural load is deposited in tributary reservoirs, and therefore, only about 67 percent of natural sediment inputs to the channels are delivered to mainstem Napa River. As such, it's possible to allocate almost this amount (e.g., 59 percent of natural background) to land use sources, and still achieve the TMDL."

Earlier, the report said that these reservoirs capture all of the sand and gravel but fine sediments get through. We know from Table 2 that about 11,000 mt/yr of human caused *fine* sediment gets through. Since fine sediment is what we are concerned about, do the numbers in this footnote really add up. In other words, if most of the natural and human cause fine sediment from land above reservoirs is getting through, can you legitimately take credit for the gravel and sand that is not getting through to say 59% of the load can be allocated to human caused sediment.[1]

[1]Natural background = 99,000 mt/yr. If the numbers in this footnote are correct, 99,000 is 67% of total natural sedimentation, which puts total natural sedimentation at 147,760.

Response:

The argument presented in the footnote number 25 on page 65 is that the natural load captured by the dams can be used as a credit to offset the human caused sediment load. Staff only considers material between 11 mm down to fine sand (0.25 mm) to be a problem. Material smaller than the range they consider to be a problem is carried as wash load and not much of it settles into the bed, since wash load moves rapidly downstream. However, when the wash load is being transported it may cause chronic turbidity problems for salmonids. In my opinion, staff has underestimated the importance of the problem caused by chronic turbidity. When chronic turbidity is considered, the wash load delivered by the reservoirs becomes important. Staff also incorrectly concludes that the Basin Plan Standard for turbidity is being attained even though they have no evidence that supports their assumption. See my response to Question 2 for the reasons turbidity should be regulated by the TMDL.

The e-mail and spreadsheet from Michael Napolitano, cited in Question 2, reveal that Staff considers that only about 33.3% of the material that is smaller than 2 mm gets through the reservoirs (Sand is material from 2 mm to 0.062 mm, silt and clay are smaller than sand). Table 6 summarizes the calculation of the annual load that reaches the Napa River. The numbers in my Table 6 do not perfectly match the numbers in Table 2 of the BP Amendment. However, they are in fair agreement. Note that 10,000 mt/yr is about 6.8% of the watershed-wide natural load of 147,440 mt/yr which is probably less than the error in the sediment budget estimates.

The one-third of the material less than 2 mm that passes through the reservoirs (18,000 mt/yr) accounts for 15% of the sediment load delivered to the reservoirs. Staff estimates the total sediment load delivered to the reservoirs to be 122,374 mt/yr. The natural portion of the load delivered to the reservoirs is about 48,600 mt/yr and the human caused portion is about 74,000 mt/yr. The reservoirs capture 85% of the load delivered to them so there is 61,350 mt/yr of human caused sediment trapped by the reservoirs.

The human caused sediment captured by the reservoirs is about 54% of the 50% reduction of the total human caused sediment load of 225,833 mt/yr. Claiming a credit for the material captured by the reservoirs seems to be a form of circular reasoning. The current situation is that the Napa River is impaired by sediment. The reservoirs are part of the current picture. The sediment in the reservoirs is already captured. Making the argument that if the dams weren't there things would be better is the same as saying if the roads weren't there things would be better. Is not the goal to improve the current conditions?

Table 6. Calculation of the annual sediment load reaching the Napa River during the 1994 to 2004 period. Data supplied by a spreadsheet supplied by Michael Napolitano, SFBRWQCB.

	Total Sediment Supply (t/yr)	>64mm Sediment Supply (t/yr)	11.2-64 mm Sediment Supply (t/yr)	2-11.2 mm Sediment Supply (t/yr)	<2mm Sediment Supply (t/yr)
Load Generated Watershed-wide					
Natural Annual Load	147,440	10,970	34,440	47,410	54,620
Human Caused Annual Load	225,830	10,900	25,480	73,430	116,020
Total Annual Load	373,270	21,870	59,920	120,840	170,640
Sediment Load Delivered to Reservoirs					
Natural Load	48,340	3,600	11,290	15,540	17,910
Human Caused Load	74,030	3,570	8,350	24,070	38,040
Total Load	122,370	7,170	19,640	39,620	55,940
Load Captured by Reservoirs					
Natural Load	42,370	3,600	11,290	15,540	11,940
Human Caused Load	61,350	3,570	8,350	24,070	25,360
Total Load	103,720	7,170	19,640	39,620	37,290
Wash Load Passing Through Reservoirs					
Natural Load					5,970
Human Caused Load					12,680
Total Load					18,650
Load Reaching Napa River					
Natural Annual Load	105,070	7,370	23,150	31,870	42,680
Human Caused Annual Load	164,480	7,330	17,130	49,360	90,660
Total Annual Load	269,550	14,700	40,280	81,220	133,350

Question: Staff report at p 73-74 states:

> Hillside vineyard development at some sites, especially at those underlain by soft bedrock and/or where vineyards replace forest cover has also caused off-site channel enlargement (gully development) and associated shallow landslide failures31 (see source analysis this document; MIG, 2000). To avoid this problem when new hillside vineyards are proposed, the design review process should incorporate rigorous hydrological analysis (as appears to be the current practice by Napa County) to predict potential change in peak runoff rates, and the potential for off-site channel enlargement. Effective design features should then be incorporated to reduce off-site erosion risk to an acceptable level. A possible approach to this problem is outlined on pages 31-37 of the Phase II Final Report of the Napa River Watershed Task Force (MIG, 2000). Similarly, the Science Advisory Group to the Napa Green Certification Program has recommended that peak storm runoff

rates following hillside vineyard development (at all sites) should not increase by more than 10-to-15 percent above pre-project rates to reduce the risk of off-site channel enlargement to an acceptable level (Napa Green Certification Program, 2003). At all existing hillside vineyards, as part of a larger sediment source inventory and control plan, the potential for concentrated runoff from the vineyard or road network should be evaluated through site inspection and analysis by qualified registered professional scientists or engineers. The goal for management of existing vineyards should be to reduce peak storm runoff rates into actively eroding gullies or landslides or other potentially unstable areas, as needed to accelerate natural recovery. Vineyard sediment control performance standards described above could be achieved through expanding the total vineyard acreage enrolled and independently certified under the Napa Green Certification Program32, by application of existing state regulatory authorities (Waste Discharge Requirements or Waivers thereof), and/or by adoption of some of the revisions to the Conservation Regulations that were recommended by the Napa River Watershed Task Force (MIG, 2000).

Do you have any comments on this?

Response:

(a) In my experience, both as the Hydrologist for the Mendocino County Water Agency and in private practice, I have observed that the rigor of hydrologic analysis has more to do with the individuals or firms involved in doing the analysis than the specifics of any governmental requirement. There are only two ways to ensure that any hydrologic analysis required by Napa County will be of sufficient rigor to prevent additional sediment related impact to the Napa River from any type of permitted project. The first way would be for Napa County to hire an in-house Hydrologist, who is knowledgeable about hillslope processes and subsurface flow, to review projects and hydrologic reports prepared by consultants. The second way is for the public to actively scrutinize every project and hire experts to review projects. The second way is how things are currently done. The second way is inadequate to protect the environment because private individuals do not have the resources to monitor and review all projects submitted to the County. The second way also moves the responsibility for project review from the County to private individuals.

(b) The Off-site Hydrologic Impact procedure outlined in pages 30-37 of the Phase II Final Report of the Napa River Watershed Task Force focuses on limiting downstream increases in peak storm discharge from surface runoff. There is no provision to consider subsurface effects such as: the increased soil moisture that results from the conversion of forests to vineyards or increases in subsurface flow. Increased subsurface flow has the potential to increase peak storm discharge in some cases. Increased subsurface flow also has the potential to saturate a greater area around the head of a channel and may result in upslope expansion of the channel which would release sediment into the stream channel. In fact, some of the recommended measures such as water spreading may actually exacerbate erosion or flooding from subsurface flows.

The proposed Off-site Hydrologic Impact evaluation procedure presented in the Phase II Final Report of the Napa River Watershed Task Force needs to be modified to address increases in soil moisture and subsurface flow that result from timberland conversion or other projects that would change the soil moisture balance. The revised Off-site Hydrologic Impact evaluation procedure would also have to be incorporated into a regulatory framework.

(c) Bob Curry and I participated in the Science Advisory Group to the Napa Green Certification Program and we took part in the discussion that in recommending that peak flows not be increased by more than 10%-15% above pre-project rates.

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August 12, 2006

Mr. Thomas Lippe
329 Bryant Street, Suite 3D
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Re: Napa River Sediment TMDL and San Francisco Bay Regional Water Quality Control Board Basin Plan Amendment

Dear Mr. Lippe,

Below are my comments on the *Napa River Sediment Total Maximum Daily Load (TMDL) Staff Report* (Napolitano et al., 2006) and the San Francisco Bay Regional Water Quality Control Board's *Proposed Basin Plan Amendment: Napa River Sediment Reduction and Habitat Enhancement Plan* (SFBRWQCB, 2006), related to TMDL adoption and implementation. In addition there are several other relevant documents that I have read or thoroughly reviewed in preparation: Stillwater and Dietrich (2002) and its appendices, Leidy et al. (2003), Stillwater Sciences (2006), Napa County Ordinance 18.108, and other Napa River and San Francisco Bay Estuary science and policy documents. I would refer San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) staff to some key literature, which I think have bearing on the Napa TMDL and could help in revision including Collison et al. (2003), Dunne et al. (2001) and Klein (2003).

My Qualifications: For the past 18 years I have been a consulting fisheries biologist with an office in Arcata, California. My specialty is in Pacific salmon restoration and I have written fisheries elements of watershed restoration plans for the Klamath River (Kier Associates, 1991), South Fork Trinity River (Pacific Watershed Associates, 1994), Garcia River (Mendocino RCD, 1994) and San Mateo Creek and the Santa Margarita River (Higgins, 1993). I also was an author of *Factors Threatening Stocks with Extinction in Northwestern California* (Higgins et al., 1992) that characterized risk of Pacific salmon stock loss from the Russian River north to Oregon.

I am intimately conversant with TMDL development in northwestern California. Since 1994 I have assimilated information into watershed databases using custom software known as the Klamath Resource Information System (KRIS) (www.krisweb.com). Over a dozen river basins in northwestern California for which I helped build information systems had completed TMDL reports, which were captured in electronic form along with associated spatial and non-spatial data. Since January 2004, I have been working under contract with the Klamath Basin Tribal Water Quality Work Group, a consortium of leaders of environmental departments of Lower Klamath River Basin Indian Tribes, on TMDL review. I have provided comments on the Scott, Shasta, Salmon, Klamath and Upper and Lower Lost River TMDLs.

Overview of Napa River Sediment TMDL

The *Napa Sediment TMDL* has a sound technical basis in terms of assessing sediment sources and estimating the natural and human-caused components of the load, but quantifiable data on road densities and up-to-date information on vineyard development were lacking. The *TMDL* and *Proposed Basin Plan Amendment* both address over-arching limiting factors for chinook salmon and steelhead populations such as passage, flow, temperature and habitat complexity, but there are no specific actions required to achieve those objectives elsewhere in the document nor is there monitoring described that would allow trend monitoring. Consequently, likelihood of recovery of these fish species is low. A better way to approach the multi-faceted problems of the Napa River would have been to combine TMDL studies for nutrients and temperature with sediment. The *Napa River Sediment TMDL* tries to broach low flow issues without authority. Both nutrient and temperature impairment have direct relationships to the flow depletion and, therefore, would support SFBRWQCB and State Water Resources Control Board (SWRCB) Water Rights Division authority to increase flows to abate water quality problems, had they also been the subject of this TMDL.

Other specific shortcomings detailed at greater length below include:

- Lack of recognition of risk of extinction of chinook salmon and steelhead and need for immediate action
- Follows assumption that additional development can avoid sediment pollution if Best Management Practices (BMPs) are followed, ignoring problems with delivery resulting from cumulative watershed effects
- Not extending TMDL jurisdiction to watershed areas above reservoirs
- Insufficient detail in description of actions to abate pollution and all actions are voluntary
- Insufficient monitoring to quantify aquatic recovery in a meaningful time frame
- No scientifically valid, quantifiable upland monitoring called for before 2017, which needs to be more timely for Waste Discharge Permits and waivers
- Failure to deal with groundwater extraction as part of flow problems targeted for remediation under the TMDL Implementation Plan and Basin Plan Amendment
- Poor characterization of problems caused by temperature for salmonids and no monitoring required to show trends in thermal pollution

Steelhead and Chinook Salmon Populations at Risk of Extinction

The Napa River has long reaches with ideal gradient for Pacific salmon spawning and rearing, but flow depletion, sediment pollution and other side effects of agricultural and urban development have reduced carrying capacity to where some salmonid species are extinct and others are at remnant levels. Coho salmon (Oncorhynchus kisutch) were present historically, but were thought to have gone extinct by the late 1960's (Stillwater and Dietrich, 2002). Fall chinook salmon (O. tshawytscha) and steelhead trout (O. mykiss) still use the Napa River today, but both populations should be characterized as at high to extreme risk of extinction. Moyle et al. (1989) postulated that pink salmon (O. gorbuscha) and chum salmon (O. keta) inhabited low gradient tributaries to San Francisco Bay and the lower Sacramento River before disturbance associated with European colonization. Interestingly, Stillwater (2006)

captured 18 juvenile chum salmon in the lower Napa River and estuary in 2004, the first collection of chum salmon ever recorded in the river.

Coho salmon: While coho salmon have been lost from the native fish community of the Napa River, their life history requirements and their known behavior in terms of range relative to gradient provide a tool for understanding historical Napa River aquatic habitat conditions. Coho would have particularly favored Westside drainages where redwood forests contributed large wood to streams that scoured pool habitat favored by coho juveniles (Reeves et al., 1989). They would have inhabited all reaches with a gradient of less than <2% and suitable water temperature, with juveniles spending one year in freshwater. Map 6 from Stillwater and Dietrich (2002) has been modified as Figure 1 to illustrate where coho are likely to have ranged in the middle Napa River watershed. Coho require cold water with a maximum floating weekly average of 16.8^0 C (Welsh et al., 2001) and there must have been a substantial portion of available low gradient habitat meeting this criteria to support the estimated historical run of 2000-4000 Napa River adult coho (USFWS, 1968 as cited in Stillwater and Dietrich, 2002). The majority of low gradient mainstem and tributary reaches in 2001 were found to be dry (Figure 2) by Stillwater and Dietrich (2002) and none of the eight stream reaches measured had water temperatures sufficiently cool for coho or even within the optimal range of growth for steelhead (Sullivan et al., 2000).

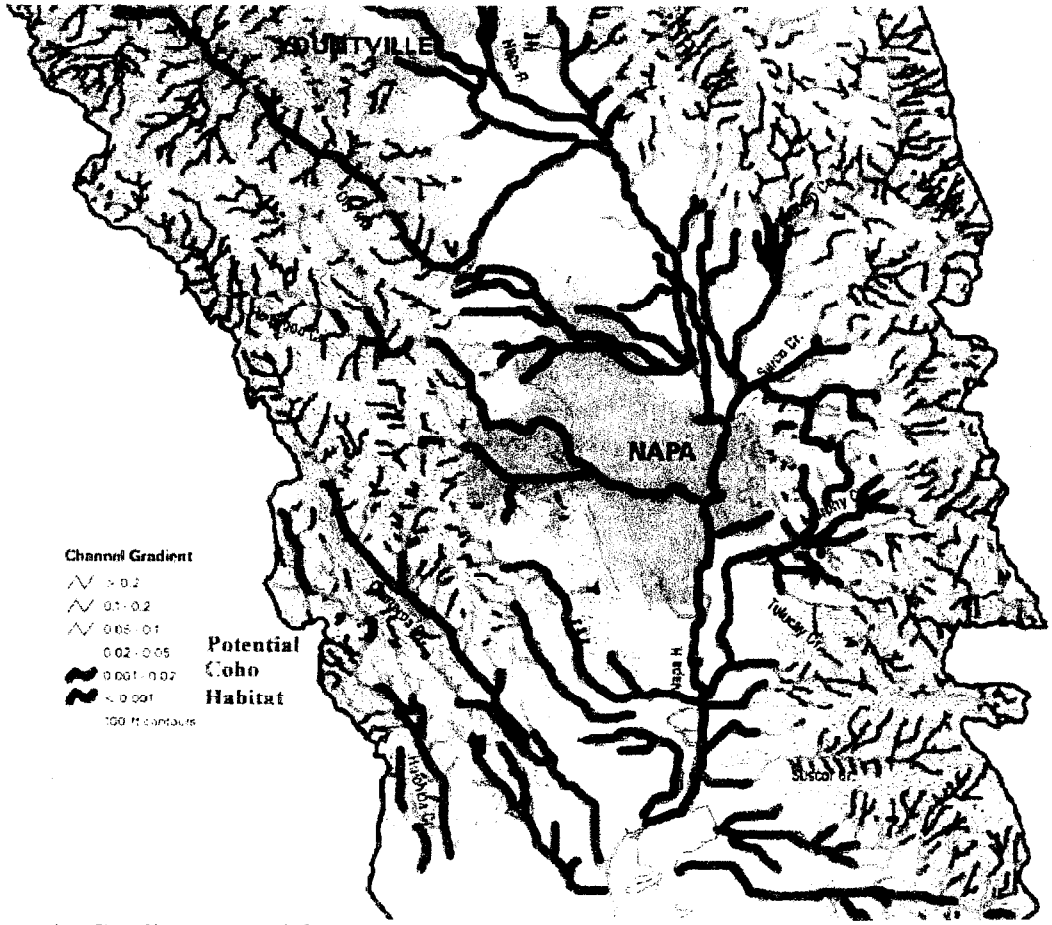


Figure 1. Gradient Map 6 from Stillwater and Dietrich (2002) with an overlay of dark green on all reaches with gradient less than 2% (0.02) to show likely range of coho salmon prior to human disturbance.

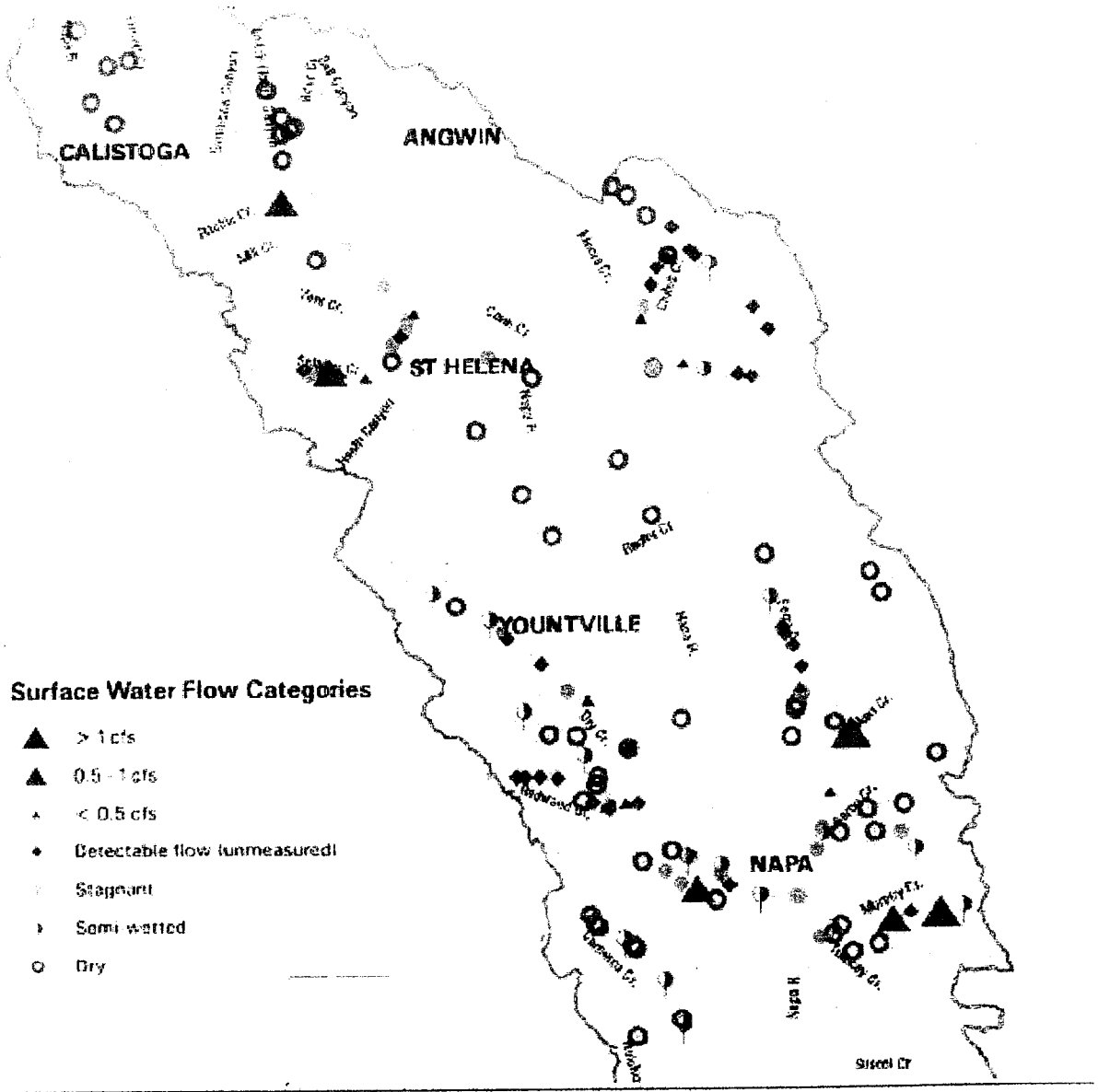


Figure 2. This map image is taken from Stillwater and Dietrich (2002) where it appears as Map 13 and is shown here to illustrate that reaches likely formerly inhabited by coho now lack surface flow.

Steelhead: The only estimate of the Napa River steelhead population was conducted in 1969 by the California Department of Fish and Game (CDFG) when the standing crop of juvenile steelhead was estimated at 87,300 to 144,600 fish and the adult steelhead population as 580 to 1,930, based on variable survival of smolts (Anderson, 1969 as cited in Leidy et al., 2003). More recently Nehlsen et al. (1991) characterized the Napa River steelhead population as at high risk of extinction. While there is no recent population survey, the shrinking habitat available to steelhead has undoubtedly led to diminished carrying capacity and population size over time. This widespread loss of habitat is known as a press disturbance (Collison et al., 2003) and there is no reach where steelhead are thriving or where conditions are optimal. With increased peak winter discharge due to land use and flow depletion related to agricultural and municipal water use, steelhead experience a continuous cycle of floods and droughts that are acutely stressful to populations (Rieman et al., 1993).

The pattern of habitat loss as dams were built and flows depleted can be traced by reviewing Leidy et al. (2002), which cites CDFG surveys conducted to document mortality as streams dried up. More recent surveys often find steelhead absent, such as in reaches of the Napa River, where earlier surveys found them present. For example, Anderson (1969 as cited in Leidy et al., 2003):

> "The report also found larger populations of smaller-sized juvenile steelhead in the upper reaches of tributary streams, while lower reaches of tributary streams and isolated sections of Napa River supported smaller populations of larger-sized juveniles (Anderson, 1969). Mean juvenile fork length was about 25 mm less in upper reaches of tributary streams (64 mm) than in the mainstem Napa River (89 mm)."

Although the mainstem Napa River habitat was already somewhat diminished as of 1969, steelhead were exhibiting a typical pattern where they spend their first year of life in smaller tributaries and migrate downstream to larger order stream to rear until they are of optimal size for migration to the ocean (Barnhart, 1986). Today the mainstem Napa River is more suitable for warm water native and exotic species (Stillwater and Dietrich, 2002). In addition, Stillwater and Dietrich (2002) found many reaches of streams where steelhead had been formerly been collected (Leidy et al., 2003) to be dry. Those that had surface flow were much warmer than optimal for steelhead growth and survival (Sullivan et al., 2001) and many steelhead juveniles were found rearing in isolated pools where food resources were limiting their growth. Nielsen et al. (1994) found that isolated pools in highly aggraded streams had cold water feeds from under adjacent upstream gravel bars that allowed steelhead survival in streams reaches that were otherwise dry. These isolated pools in the Napa River seem to represent a significant portion of what steelhead juvenile rearing habitat that remains, yet Stillwater and Dietrich (2002) found that fish actually lost weight during summer in these habitats due to lack of food delivery.

So steelhead have been blocked from access to 30% of the Napa River headwaters by dams, the mainstem has become uninhabitable in summer, and numerous low gradient reaches are now dry or over optimal temperatures for steelhead rearing. Rieman et al. (1993) in their paper *Consideration of Extinction Risks for Salmonids* characterize salmonid populations at extreme risk of extinction when: "Cumulative disruption of habitat has resulted in a clear declining trend in population size. Under current management habitat conditions will not improve within two generations (5 to 10 years)." This description fits Napa River steelhead.

Napa River steelhead may benefit from interchange with other San Francisco Bay steelhead populations in what as known as a metapopulation (Rieman et al., 1993); however, Leidy et al. (2003) call the Napa River one of the largest populations of steelhead in this region. Therefore, the Napa River population is likely not benefiting from large infusions of colonists from other populations and, if lost, would not likely be rapidly replenished from some other source populations. To prevent extinction of this species, flows need to be restored to accessible reaches during summer and fall low flow periods and sediment pollution abated.

Leidy et al. (2003) document many cases where CDFG noted Napa River steelhead trapped above dams continuing to reproduce, which is an adaptation also recognized in southern California steelhead (Titus, 1994) (see TMDL Above Reservoirs discussion below).

Chinook: Juvenile chinook salmon require less time rearing in freshwater than steelhead or coho salmon and can use estuarine habitat to grow to a sufficient size for survival in the ocean (Reimers, 1973). While the Napa River may never have been dominated by chinook salmon because of the steep nature of tributaries, the low gradient mainstem reach with the rich adjacent habitat of the San Francisco Bay estuary would have provided optimal habitat.

Although chinook salmon were thought to have been lost from the Napa River drainage, recent surveys have found more than 100 adults spawning in the mainstem upstream to Calistoga in the last few years (Stillwater and Dietrich, 2002). Hare et al. (1999) described the Pacific Decadal Oscillation (PDO) cycle that is driven by large scale ocean current deflections. Ocean upwelling that fuels productivity for salmon along the coast from British Columbia to California is favored for periods of approximately 25 years, then currents switch to favor northeast Pacific Ocean areas such as the Bering Sea. Wet on land periods in California are companion with the favorable ocean cycles. Collison et al. (2003) note that conditions favorable for California salmon prevailed from 1950 to 1975, switched to negative from 1975 to 1995, and are favorable since 1995.

The favorable ocean cycles and wet on-land conditions currently prevailing may be in part responsible for chinook salmon (and chum salmon) returning to the Napa River. The chinook salmon may be colonists from the larger Sacramento-San Joaquin metapopulation. If a self-sustaining population of chinook salmon is to be rebuilt in the Napa River, then habitat restoration of freshwater reaches suitable for the species need to be complete before the next PDO switch, which is estimated to be sometime between 2015 and 2025 (Collison et al., 2003)

Cumulative Watershed Effects

> Generally speaking, the larger the proportion of the land surface that is disturbed at any time, and the larger the proportion of the land that is sensitive to severe disturbance, the larger is the downstream impact. These land-surface and channel changes can: increase runoff, degrade water quality, and alter channel and riparian conditions to make them less favorable for a large number of species that are valued by society.
>
> Dunne et al., 2001

The Napa River TMDL fails to recognize cumulative watershed effects (CWE) with respect to 1) increased peak flow associated with land management and its relationship to channel incision and 2) the sediment effects of new hillside vineyards and roads despite mitigation measures proposed, erosion control and use of Best Management Practices (BMPs). The *Proposed Basin Plan Amendment* (SFRWQCB, 2006) fails to meet the requirements of the California Environmental Quality Act because it fails to properly describe and prevent cumulative watershed effects.

Peak Flow CWE: Increasing road densities extends stream drainage networks and increases peak stream flow (Montgomery and Buffington, 1993; Grant and Jones, 1996). The Napa River Watershed Task Force (MIG, 2002) recognizes that vineyard development can increase peak flows. Urbanization is widely recognized as increasing peak flow and May et al. (1996)

describe how such increased flows negatively effect biota and physical habitat for Pacific salmon. These factors are all acting together to increase peak flow, which in turn increases shear stress (Montgomery and Buffington, 1993), and contributes to downcutting. Allowing additional development that further exacerbates this problem, such as hillside development and road construction, is inconsistent with recovery of salmon and steelhead and restoration of channel processes that are the goals of the TMDL.

Sediment CWE: The *Napa River Sediment TMDL* does not limit further development of hillside vineyards or roads, but rather holds that use of Best Management Practices (BMPs) in their construction, in combination with erosion control measures, will allow watershed and water quality recovery. This is very similar to contentions by Pacific Lumber Company that erosion control in combination with timber harvests and road construction using BMPs would allow aquatic recovery in Humboldt Bay and Lower Eel River tributaries (Collison et al., 2003). The Independent Science Review Panel of Pacific Northwest watershed experts convened by the North Coast Regional Water Quality Control Board found that road related erosion control techniques, similar to that recommended by the *Napa River Sediment TMDL*, are still experimental and that there were no hard data to show that claims made with regard to sediment saved were in fact achieved. "Without effectiveness monitoring and periodic assessment, there is no way to know whether mitigation strategies are effective."

Similarly, Dunne et al. (2001) noted that: "While there are clear benefits of, say, removing unstable, eroding roads, the notion that such practices coupled with new land-use activities will avoid CWE is unsubstantiated." USFS (1996) studies in the Upper Columbia River Basin found profound effects of roads on aquatic diversity with the sensitive bull trout (*Salvelinus confluentus*) disappearing at road densities of over 1.7 miles per square mile (Figure 3). The *Napa River Sediment TMDL* does not give an estimate of road miles per square mile, which is necessary for proper cumulative watershed effects assessment. Estimates in the TMDL increased the sediment budget for roads by a factor of three to reflect the degree to which actual roads are under-represented on electronic maps used for planning.

Klein (2003), in a study of eight northwestern California tributaries affected by timber harvest found a relatively strong relationship between road density and turbidity (Figure 4). Non-point source sediment pollution and problems related to increased peak flows cannot be solved unless a limit is placed on new roads and an effort made to reduce existing road densities. Collison et al. (2003) recognize a "law of diminishing returns" for using mitigation of road erosion as road networks were expanded. The National Marine Fisheries Service (1995) set limits of 2 miles per square mile of roads in the Columbia River in response to scientific studies and offered similar provisional guidance (NMFS, 1996) for coastal watersheds (<2.5 mi./sq. mi. and no valley bottom roads for properly functioning aquatic conditions).

The same problems with sediment yield and cumulative effects extend to vineyard development. The TMDL used a 1992 Landsat image to represent vineyards, which is not useful for quantitative assessments because vineyards have expanded substantially since that time. All current vineyards should have been mapped for the TMDL and the overlap of vineyards and hillslopes of different classes should have been quantified and significance discussed to credibly deal with cumulative effects from this source.

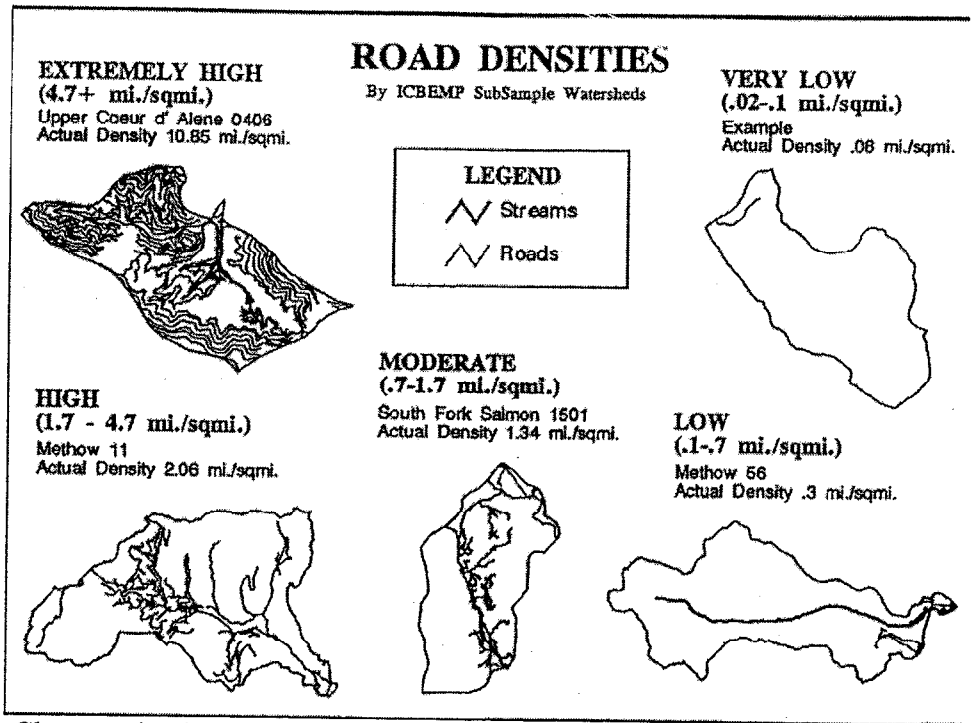


Figure 2. Characterization of road densities by category from USFS (1996) Upper Columbia River Basin studies.

Figure 13. Road densities and turbidity exceedences for WY2002 (site codes identify data points)

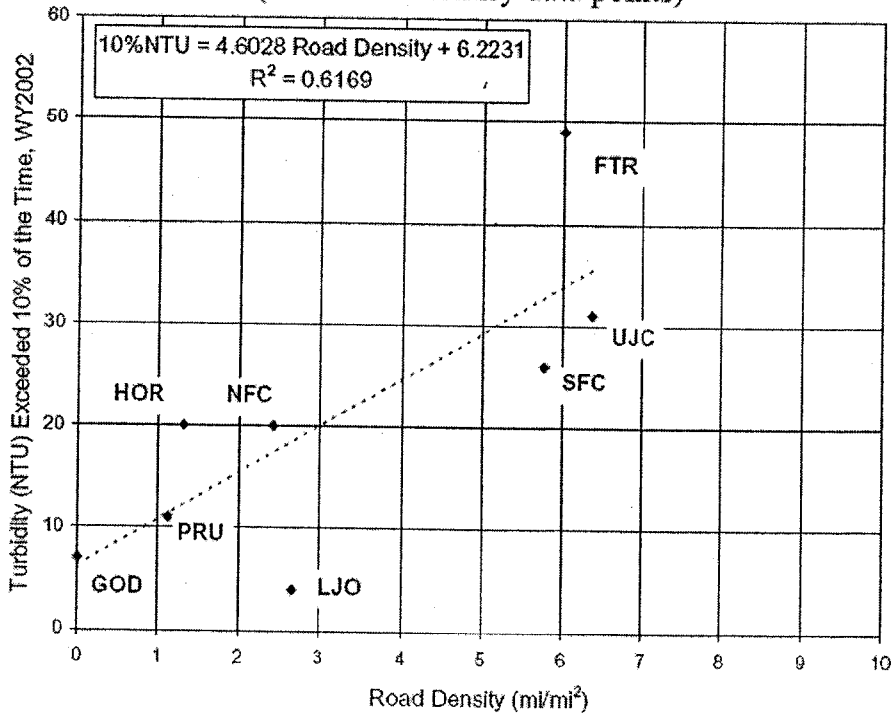


Figure 3. Relationship of road density to turbidity found by Klein (2003) in study of northwestern California watersheds.

TMDL Coverage Needs to Extend Above Reservoirs

The *Napa River Sediment TMDL* excludes watershed areas above reservoirs with the rationalization that sediment problems above reservoirs are abated because the reservoirs trap sediment in transport and that biological benefits of sediment reduction would have no value for fish. Both these arguments have flaws.

Suspended load, such as silt and clay that can have significant negative impact on salmonids, can pass through reservoirs in suspension and negatively affect spawning adults, egg and alevin survival and juvenile rearing of steelhead and chinook salmon in Napa River reaches and tributaries below. Measurements by Stillwater and Dietrich (2002) were not sufficient to eliminate concern about chronic turbidity problems (see Aquatic Monitoring). Decreasing turbidity and suspended sediment would certainly seem desirable for municipal water supplies as well.

Leidy et al. (2003) cited numerous California Department of Fish and Game memos that indicate that steelhead trout had taken up residence in reservoirs and were using stream reaches above them for spawning. This is similar to the findings of Titus (1994) regarding southern California steelhead, where populations trapped in reservoirs persisted and used tributaries above for spawning and could revert to an anadromous life history, if washed downstream. Consequently, reduction of sediment is likely desirable for meeting the needs of landlocked steelhead.

TMDL Proposed Actions Not Sufficiently Defined and All Voluntary

The *Napa River Sediment TMDL* proposes general actions to stabilize upland sediment sources, restore channel processes to prevent incision, improve instream flows, abate temperature problems and increase habitat complexity for salmon and steelhead. The road related erosion control discussion follows methods piloted regionally by Pacific Watershed Associates (2003 a; 2003b; 2003c), but other suggestions for actions are not clearly explained. Additionally, steps necessary to remediate existing problems are all voluntary under the proposed TMDL, which does not meet new SWRCB (2006) guidelines for abating non-point source pollution.

The Napa Sediment TMDL fails to provide an adequate "description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action" as required by Section 13242 of the CA Water Code. It is difficult to know whether steps to restore the Napa River flood plain, for example, will succeed in creating favorable habitat for chinook salmon when it is not clear exactly what action will be taken. The *Napa Sediment TMDL* should described what specific steps are likely necessary to restore channel processes, including obtaining easements or acquisitions to allow the channel to broaden, so that spawning gravels will accrete and energy from high flows can be dissipated across a wider flood plain.

Remediation of flow and water temperature problems also lack specificity in terms of a description of required actions. With regard to flow, the TMDL only recommends

"development of tools to aid land managers in protecting and/or enhancing dry season base flow and complying with water rights permit conditions" and "improved regulatory oversight to protect existing water rights and instream flows for fisheries, and to provide an opportunity for future growth." These are not tangible actions likely to remedy flow problems limiting steelhead trout and to restore beneficial uses as required by law.

Had the Napa River TMDL included water temperature and nutrient pollution, then the SFBRWQCB could directly exercise authority under the Supreme Court (City of Tacoma vs. WDOE, 1994) precedent that holds that Regional Boards have authority over flows when there is no other remedy to water quality problems:

> "The Regional Boards authority is clearly upheld by Petitioners also assert more generally that the Clean Water Act is only concerned with water "quality," and does not allow the regulation of water "quantity." This is an artificial distinction. In many cases, water quantity is closely related to water quality; a sufficient lowering of the water quantity in a body of water could destroy all of its designated uses, be it for drinking water, recreation, navigation or, as here, as a fishery. In any event, there is recognition in the Clean Water Act itself that reduced stream flow, i.e., diminishment of water quantity, can constitute water pollution. First, the Act's definition of pollution as "the man made or man induced alteration of the chemical, physical, biological, and radiological integrity of water" encompasses the effects of reduced water quantity. 33 U.S.C. § 1362(19). This broad conception of pollution – one which expressly evinces Congress' concern with the physical and biological integrity of water – refutes petitioners' assertion that the Act draws a sharp distinction between the regulation of water "quantity" and water "quality." Moreover, §304 of the Act expressly recognizes that water "pollution" may result from "changes in the movement, flow, or circulation of any navigable waters . . . including changes caused by the construction of dams." 33 U.S.C. § 1314(f). This concern with the flowage effects of dams and other diversions is also embodied in the EPA regulations, which expressly require existing dams to be operated to attain designated uses. 40 CFR § 131.10(g)(4)."

Water temperatures cannot be improved in Napa River tributaries without additional flow. Numerous locations found by Stillwater and Dietrich (2002) to be "stagnant" (Figure 2) would be subject to eutrophication and photosynthetic activity that generate nutrient pollution. The SFBRWQCB could, therefore, take action to restore flows.

The *Napa River Sediment TMDL* is necessary because beneficial uses are not being met and abatement of water quality problems is required under the Clean Water Act. The TMDL uses a strictly voluntary approach to correcting existing pollution problems, which is not likely to be sufficient and does not meet SWRCB (2006) guidelines for abatement of non-point source pollution. The SFBRWQCB must abate sediment pollution and other forms of water pollution through issuance of waste discharge requirements or waivers of waste discharge. In order for this program to be effective, specific actions must be required and associated monitoring must be clearly defined to gauge whether projects were carried out as planned and whether they were effective in helping restore beneficial uses (see Aquatic and Upland Monitoring below).

Aquatic and Upland Monitoring Insufficient

Both aquatic and upland monitoring recommended under the TMDL lack sufficient detail to govern adaptive management as recommended by the SWRCB's (2006) *Policy for Implementation and Enforcement of Non-point Source Pollution Control*. The monitoring recommended is insufficient to judge whether mitigations and actions will reduce sediment supply at the source and to judge whether water quality problems are being remediated in an appropriate time frame. The TMDL Implementation Plan calls for improvement of flows and resolution of temperature pollution, yet there is no monitoring defined to judge whether actions taken would be successful in improving water quality and meeting the objectives of the TMDL.

Aquatic Monitoring: Discussions below focus on sediment monitoring called for in the *Napa Sediment TMDL*, but also on flow, temperature and fisheries monitoring that would be attendant with goals in the Implementation Plan and included in the *Proposed Basin Plan Amendment*.

Sediment: Only the proposed monitoring of permeability is fully defined. Although reduced gravel permeability is known to cause reduced survival of salmonid eggs and alevin (McBain and Barnard, 1994), the relationship between the amount of fine sediment in bulk gravel samples and salmonid survival is better studied (McNeil and Ahnell, 1964; McHenry et al., 1994). Stillwater and Dietrich (2002) do not provide any extensive, modern literature to justify the 7000 cm/hour as a level of intragravel flow needed for any specific chinook or steelhead egg survival rate. They recognize the limitations of permeability and "recommend that the results be interpreted with caution and treated more as an index rather than a precise quantitative prediction of (salmonid) survival and mortality." If permeability is to be used as a primary index, then companion bulk gravel samples (McNeil and Ahnell, 1966) should be collected so that there is a basis for comparison. Most other TMDLs use bulk gravel standards such as less than 14% fines less than 0.85 mm or 1 mm and less than 30% sand and small gravel (6.4 mm) to prevent damage to salmonids.

The timing of permeability measurements is not defined, with the TMDL stating that every 2-3 years would be optimal, but that measurements will be taken at least every five years. Aquatic monitoring under the TMDL must be tied to Waste Discharge Permits (WDP) or waiver of waste discharge requirements, both of which are recognized by the SFBRWQCB for a period of five years. Monitoring needs to yield sufficient data within the first five years to evaluate permit compliance and whether permits or waivers should be continued. Sufficient budget should be provided so that permeability is monitored at least bi-annually.

There is no methodology defined for gauging bed mobility, such as use of scour chains (Nawa and Frissell, 1994) nor is a schedule offered on how often streambed scour and fill will be monitored. Nawa et al. (1992) found that scour and fill on an aggraded southern Oregon stream exceeded one meter during the equivalent of a two year storm event and that there was virtually no survival of chinook eggs deposited proximate to the study site. The criteria of 15 cm as a maximum for scour or fill is acceptable based on the literature provided, however, the application to flows with only a one year recurrence interval is inappropriate.

If bedload mobility of greater than 15 cm is allowed on a two year storm event, then it is likely that eggs laid in stream reaches with less than a 3% gradient would experience mortality on the average of every other year or the equivalent of 50% likelihood of mortality. Loss of production every other year would obviously not lead to recovery of steelhead nor the restoration of a self-sustaining fall chinook salmon population. Scour chains are an appropriate tool for monitoring redd stability, but sampling stations should be located in a number of different reaches, not just in the mainstem, because shifting bedload may affect spawning steelhead in tributary as well as mainstem reaches. Scour chains are recommended and should be deployed annually.

The turbidity sampling described by Stillwater and Dietrich (2002) was insufficient to definitively prove that turbidity is not limiting salmon and steelhead in the Napa River. Samples were collected during one of the driest years in the last decade (2001) and in one storm the year after. Samples from some Napa River tributaries exhibited spikes in turbidity exceeding 50 nephlometric turbidity units (ntu), even on minor rises in the hydrograph in 2001 (Figure 4). This suggests that there are pulses of sediment associated with land use that may cause a 10% exceedence not caught by the Stillwater and Dietrich (2002). Since spikes above 50 ntu are noted, findings of an exceedence of more than 10% would indicate current SFBRWQCB *Basin Plan* standards are being exceeded. Sigler et al. (1984) found that steelhead juveniles had retarded growth when turbidity exceeded 20 ntu and the SFBRWQCB should consider revising its standard to allow recovery of steelhead in the San Francisco Bay watershed.

Continuous recording turbidity meters should be placed at least six locations throughout the Napa River watershed to measure trends in fine sediment supply and to gauge success of TMDL Implementation Plan measures geared toward water quality protection and restoration. Trush (2003) points out that turbidity has the quickest response to increased sediment supply or to successful sediment reduction and is, therefore ideal for trend monitoring and adaptive management. The suggestion that the TMDL can't afford the cost for installation of turbidity monitoring stations seems specious when it anticipates over $70 million for restoration and implementation. SWRCB (2006) specifically states that monitoring costs can be recouped from dischargers as part of monitoring costs under WDP or waiver of waste discharge requirements.

Temperature: The *Napa River Sediment TMDL* Implementation Plan identifies abatement of temperature pollution in reaches used for steelhead rearing as a goal. They say that riparian restoration will provide more shade under the cooperative "Napa Green Certification Program" and facilitate water temperature reduction and that increased flows called for under the TMDL will also have a similar effect. However, there is no scientific plan to strategically place automated temperature sensors to measure whether these benefits will actually be accrued. Discussion of water temperature problems in the Napa River both in the TMDL and in Stillwater and Dietrich (2002) fail to recognize normal standards for judging aquatic health for Pacific salmon with regard to temperature (U.S. EPA, 2003).

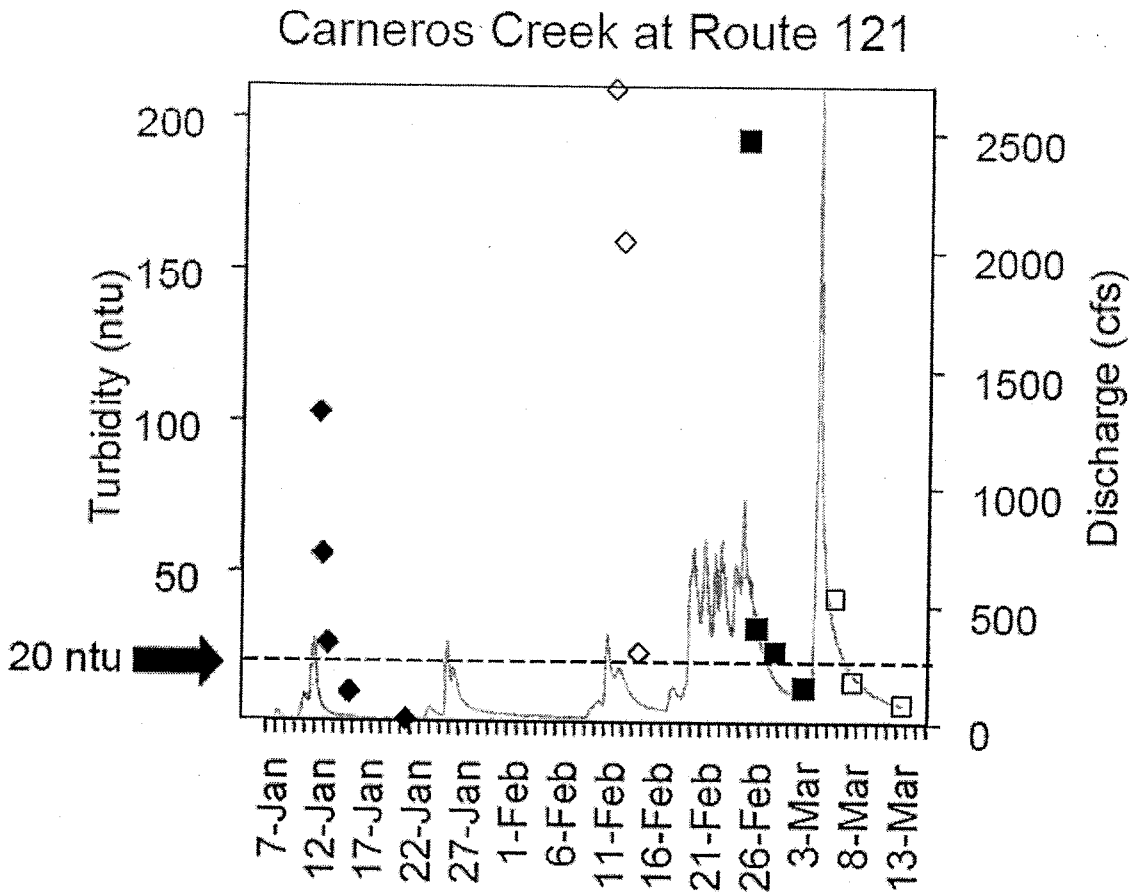


Figure 4. Scatter plot of results from Stillwater and Dietrich (2002) showing turbidity in Carneros Creek showing spikes over 50 ntu on minor storm events, suggesting chronic pulses of turbidity associated with land use.

Flows: The *Napa Sediment TMDL* calls for "protection of critical base flow to provide suitable conditions for juvenile steelhead growth and migration of steelhead smolts to the Napa River estuary." Stillwater and Dietrich (2002) present evidence that many reaches of the Napa River and its tributaries currently lose surface flow during summer. The accounts of historic California Department of Fish and Game fish sampling surveys captured by Leidy et al. (2003) indicate that many reaches found to be dry in 2001 were formerly perennial and supported juvenile steelhead trout. The State Water Resources Control Board Water Rights Division has the authority to install stream gages where ever necessary to insure protection of public trust, water quality and water rights. The TMDL should make explicit reference to reaches affected by low flows and called on the SWRCB to take appropriate monitoring and enforcement actions.

For the Napa Sediment TMDL to credibly deal with flow issues, it should have more explicitly acknowledged the likely relationship between ground water extraction and lack of surface flow and specifically called for groundwater monitoring. Stillwater and Dietrich (2002) note that CDFG staff in the Napa River basin believe that increasing use of groundwater is depleting surface flows and reducing steelhead passage and rearing habitat. Withdrawal of water from the aquifer can lower the groundwater levels and decrease water available to riparian trees. The TMDL objective of restoring native riparian zones to help

prevent channel incision could be confounded, if groundwater pumping retards riparian restoration.

Fisheries: The *Napa River Sediment TMDL* and Stillwater and Dietrich (2002) both recommend additional monitoring of chinook salmon and steelhead populations, but no specifics are offered on study designs or on the periodicity of data collection. Furthermore, results of on-going studies of chinook salmon spawning in the mainstem Napa River are not shared fully in the TMDL, which makes understanding of the potential for chinook salmon restoration more difficult. Chinook salmon spawning surveys should be continued with specific requirements data collected be shared in a timely fashion.

The final *Napa River Sediment TMDL* should specify that steelhead and chinook juveniles should be sampled using a downstream migrant trap, which provides a much better picture of the fish community structure and a usable index for trends than electrofishing samples. No additional studies are needed to understand the flow requirements of steelhead or their ability to grow in adverse temperatures in the Napa River because these relationships are already recognized (McCullough, 1999; Spence et al., 1996; Sullivan et al., 2000). Instead, data from the literature on flow and temperature needs should be used as criteria to restore Napa River and tributary flows to a level required to stabilize steelhead populations and to provide appropriate habitat into the future. Biological response to restoration actions may takes several life cycles, while physical stream habitat may respond more quickly (Spence et al., 1996).

Upland Monitoring: There is no detail given for upland monitoring other than for performance of voluntary erosion control measures suggested in the *Napa River Sediment TMDL*. The narrative that envisions cooperative agreements through "third party" implementation describes how the Napa County Resource Conservation District and/or the Natural Resources Conservation Service might monitor whether erosion control measures were implemented; however, there is no description of data collection that quantitatively assesses soil loss or retention. Collison et al. (2003) point out that estimates of sediment saved by erosion control surveys are speculative and that the treatment may in some cases be a sediment source. The *Proposed Basin Plan Amendment* states that the next quantitative upland assessment by SFRWQCB staff will in 2017, which is too far in the future to be useful for adaptive management under the TMDL.

The Napa Sediment TMDL cites the Napa County Code 18.108 as sufficiently stringent to prevent soil discharge from hillside vineyards yet the focus of the codes seems to be on remediation of catastrophic sediment yields, and does not require quantitative monitoring similar to that needed for TMDL trend monitoring.

If restoration and abatement of pollution are to rely on third parties that will organize dischargers for the purpose of Waste Discharge Permits or waivers, then the SFBRWQCB staff need data on which to judge compliance. Waivers or permits are issued for five year periods; therefore, implementation and aquatic response need to be able to be judged within that time period. Optimally, WDPs or waivers and their conditions should be part of the TMDL to assure that actions are carried out and that trend monitoring is available to track restoration success.

Conclusion

While the *Napa River Sediment Total Maximum Daily Load (TMDL) Staff Report* and *Proposed Basin Plan Amendment: Napa River Sediment Reduction and Habitat Enhancement Plan* express lofty goals with regard to restoring chinook salmon and steelhead, they lack the specificity necessary in describing actions and attendant monitoring to succeed and to meet the requirements of the law. These documents rely wholly on voluntary actions to remediate sediment, which is not workable and not consistent with guidelines for abating non-point source pollution adopted by the SWRCB (2006).

The *Napa River Sediment TMDL* and Stillwater and Dietrich (2002) use the chinook salmon as an indicator of mainstem Napa River aquatic health. Restoring a self-sustaining population of chinook salmon is also expressed as a goal in the *Proposed Basin Plan Amendment*: "Enhance channel habitat as needed to support self-sustaining run of Chinook salmon and enhance the overall health of the native fish community." On a closer look, however, the TMDL actually says that no chinook salmon recovery will take place unless stakeholders, who are in some cases dischargers, approve:

> "Enhancement of Chinook salmon production in the Napa River appears to be of interest to a number of local stakeholders. However, due to the expected high social and economic costs of potential mainstem restoration activities such as riparian and levee setbacks, and gravel augmentation, no immediate actions can be recommended for chinook salmon restoration without substantial further exploration and discussion regarding what is feasible and desirable to stakeholders. The possibility of creating a chinook restoration reach in the lower mainstem, including preliminary development of several alternative strategies, should be considered if there is sufficient stakeholder interest."

This policy contradiction is at the heart of a larger problem for the TMDL. Is the SFBRWQCB and SWRCB Water Rights Division only ready to uphold California Water Law and protect public trust if the local community, including dischargers, allow?

The TMDL claims a margin of safety for sediment abatement because flows will be increased and temperature problems abated as part of the Implementation Plan. The *Proposed Basin Plan Amendment* states that it will "protect and enhance base flows in tributaries and the mainstem Napa River." After clearly identifying problems for meeting beneficial use for supporting steelhead with regard to flow, there are no specific recommendations or actions for meeting specific flow levels to attain beneficial use:

> "The Water Board may consider adopting specific water quality objectives for flow or other habitat attributes, or using alternative authorities to achieve habitat, fish passage, temperature, and flow enhancement objectives" (SFRWQCB, 2006).

The TMDL calls for more "coordination and collaboration between local, state, and federal government agencies to jointly resolve water supply reliability and fisheries conservation concerns" but also describes 1000 reservoirs within the Napa River basin "a significant number of which may not have water right permits." The SWRCB Water Rights Division is also currently considering 57 additional permit requests (Napolitano et al., 2006).

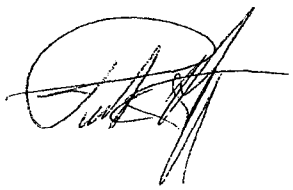
A closer reading of the TMDL also turns up some troubling conflicts where extraction of additional water supply from the Napa River for cities is favorable discussed. Ironically, improved water infrastructure supplied with grants envisioned would only "enhance flows for fish downstream of municipal reservoirs normal and above normal runoff years." A clear statement should be made to that effect in the TMDL and *Proposed Basin Plan Amendment* with recommendations to recognize the Napa River as already over-appropriated. A similar explicit statement is needed to get the SWRCB to begin a study of groundwater use in the Napa Valley so as to set limits that allow restoration of surface flows to support steelhead trout. As with sediment abatement, the TMDL relies too heavily on voluntary measures: "The Napa County RCD or local staff of the NRCS could play an important role in the development of voluntary guidelines to protect flow for fish."

No action is likely to restore flow under the current Napa River Sediment TMDL; therefore, claiming it as a margin of safety factor is unjustified. Without re-establishment of flows, water temperature problems will not be abated and should also not be considered as part of the margin of safety.

In order to successfully stem the flow of sediment pollution into the Napa River, land use such as conversion of forest and chaparral to vineyards must be limited. The Napa River Sediment TMDL assumption that BMP's applied to new development in combination with restoration measures can achieve water quality restoration is false because of problems associated with cumulative effects as described by Collison et al. (2003). Land use management plans that successfully prevent non-point source pollution set limits to for road densities, road crossings and disturbance of unstable soil types (Armentrout et al., 1999; Elder et al., 2002, Bradbury et al., 1996). The SFBRWQCB staff needs to recognize that undisturbed wildlands and their hydrologic function are an integral part of the Napa River ecosystem and start real discussions of prudent limits for watershed disturbance.

The *Napa River Sediment TMDL* and *Proposed Basin Plan Amendment* are internally inconsistent, do not meet the requirements of the law and are not likely to succeed in abating water pollution in the Napa River or in restoring its salmon and steelhead runs. The window for preventing long term stock loss lies between now and 2015 to 2025, when unfavorable ocean and dry on-land conditions are likely to return.

Sincerely,



Patrick Higgins

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Napa County Farm Bureau

Fax

To:	Mike Napolitano, SF RWQCB	**From:**	Sandy Elles
Fax:	1-510-622-2460	**Pages:**	4
Phone:	1-510-622-2397	**Date:**	8/11/2006
Re:	Napa River Watershed TMDL Basin Plan Amendment Comments	**CC:**	

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

Hi Mike,
Here's our comment letter. Thanks for all your hard work on this important project!
Best,
Sandy

NAPA COUNTY FARM BUREAU

August 11, 2006

Mr. Mike Napolitano
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Re: Comments on proposed Basin Plan amendment to establish a TMDL for sediment in the Napa River

Dear Mr. Napolitano,

Thank you for the opportunity to comment on the proposed amendment to the Water Quality Control Plan for the San Francisco Bay Basin. The amendment will establish a total maximum daily load (TMDL) for sediment in the Napa River and an implementation plan to achieve the TMDL targets.

Over the last six years, Napa County Farm Bureau has participated in the process to study the watershed's sediment impairment and to understand the complex contributing factors. We support the goal of improving the health of the Napa River watershed and commit to working with the Regional Board and our community to achieve those improvements.

We very much appreciate the community outreach and acknowledge your excellent work in keeping us well informed about the research projects and the TMDL public process.

We offer the following comments on the proposed TMDL Basin Plan Amendment:

1. We agree with the stated goals listed on page one. But the Basin Plan Amendment should also recognize the multiple beneficial uses within the watershed, and we ask for an additional goal that clearly recognizes those multiple beneficial uses and the need to balance those uses. The current goals cite habitat, aesthetic and recreational uses. We suggest adding another bullet point that states, *"Balance the needs of all of the beneficial uses, including agricultural and municipal water supplies."*

2. We incorporate by reference the comments submitted by Napa County and ask for clearer definitions within the document so that landowners will clearly understand when they are responsible for specific implementation actions and what those actions entail.

3. Tables 4.1 and 4.2 outline the implementation measures for vineyards and grazing lands. We believe the recommended actions are unnecessary and unwarranted at this time, as Water Code section 13369 expressly allows for the Regional Board to include non-regulatory

implementation of best management practices. However, this TMDL proposes implementation to occur with the most stringent regulatory tool, which is a Tier 3 action. Nothing in the record supports this need and in fact, it is contrary to the state's articulated principal of progressive enforcement. There may be some circumstances where starting with Tier 1 implementation of management practices is not suitable. In those circumstances there should be supporting documentation detailing the reasons an alternative regulatory tool is preferred.

Please amend Table 4.1 and Table 4.2 with the following substitute language for the recommended actions:

- *Consistent with the authority granted to the RWQCB in the California Water Code, persons who have discharged, are discharging, or who propose to discharge waste that could affect the quality of waters of the state shall furnish information necessary for the RWQCB to evaluate implementation of this TMDL. This information may include, but is not limited to: description of the agricultural lands, identification of site specific erosion control measures, and a schedule for implementation of identified management measures as needed to achieve performance milestones listed below in Table 6. Any request by the RWQCB shall include a written explanation with regard to the need for the reports, and shall identify the evidence that supports the request for the information.*
- *As necessary, implement management practices that will reduce or prevent sediment in the Napa River.*

4. Tables 5.1 – 5.4 should be removed from this TMDL because they are outside the scope of this project and many of the proposed actions and objectives are wholly outside the purview of the RWQCB. For instance, Table 5.2 suggests that there is some implicit obligation on the RWQCB to incorporate flow standards and/or water rights provisions into this TMDL. We are unaware of any such mandate in state or federal law and therefore request it be deleted. Also, to our knowledge there is no actual flow objectives established for the Napa River. How can there be impairment of a water quality standard that does not exist?

   Furthermore, the water quality standard at issue is sediment. To the extent the RWQCB wants to modify its Clean Water Act § 303(d) listing for the Napa River to address flow, they need to follow the applicable state and federal laws and not use this TMDL as a proxy.

   The prescriptive nature of the proposed actions and management objectives is also concerning; e.g., the TMDL requires the State to "adopt reservoir bypass flows as needed to protect salmonids downstream of municipal water supply reservoirs." It also requires local public agencies and more concerning, landowners, to "enhance conditions for adult and juvenile salmon and juvenile steelhead passage at Zinfandel Lane." These action specific mandates are outside the authority the legislature granted to the RWQCB. See Water Code section 13242(a) that limits implementation plans to providing "description[s] of the nature of actions." What the RWQCB has provided is far more than a description of suggested actions; rather, it is a checklist for implementation.

Tables 5.1-5.4 deal with important habitat issues, but they are already being addressed by other governmental agencies (Department of Water Resources, Department of Fish & Game and National Oceanic and Atmospheric Administration).

We have learned a great deal over the last several years about the biology, hydrology and geomorphology of the Napa River watershed and have used that growing knowledge base to educate ourselves and implement better land management practices. Diverse and multiple efforts have been undertaken to find sustainable solutions to improve the watershed. These efforts include development and implementation of the comprehensive Napa Green Fish Friendly Farming Program and a wide range of workshops and short course and ongoing information sharing in the industry through projects such as the Napa Sustainable Winegrowing Group and the Code of Sustainable Winegrowing project. We are pleased that the proposed Basin Plan Amendment acknowledges the work that we're doing in the county and we invite you to learn more about our current conservation practices and programs.

This TMDL process can and should lead the community to adopt a process that is pragmatic and fair to all parties in remedying the sediment impairment in the watershed. We urge you to consider our comments as constructive input to help us devise a TMDL implementation plan that reflects the 3 E's of sustainability and is environmentally sound, economically viable and socially equitable. We look forward to working collaboratively on the TMDL goals and we thank you for considering our comments.

Sincerely,

Al Wagner
President

cc: NCFB Board of Directors
John Hewitt, California Farm Bureau Federation

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
Napa Field Office
1303 Jefferson Street, Suite 500B
Napa, CA 94559-2472

Telephone (707) 252-4189 ext. 101
Fax (707) 252-4219

phillip.blake@ca.usda.gov

August 15, 2006

Mike Napolitano, Environmental Scientist
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Re: Napa River Sediment TMDL & ProposedWater Quality Control Basin Plan Amendment

Mike:

I appreciate the opportunity to comment on the Napa River TMDL and proposed basin plan amendment. Your efforts to stay in touch with local agencies such as NRCS and the RCD are appreciated. You have also made a sincere effort to provide information and outreach to Napa River stakeholders, and that has certainly been a good gesture on behalf of the board.

Vineyards

The water board's recognition of Napa County's ongoing programs, such as the Napa County Conservation Regulations are appreciated. As you know, the county and its various agencies and partners have worked hard for many years to craft practical, effective local regulations and incentives to address water quality protection and fisheries enhancement needs. I am though, frankly puzzled that the water board would suggest that the county or vineyard owner/ operator would be expected to submit individual reports on vineyard operations, (Table 4.1), for surface erosion associated with vineyards. The county's conservation regulations are widely regarded as one of the most intensive and comprehensive water quality protection programs instituted in the nation, and to require this kind of governmental reporting overlap seems onerous, and quite frankly, unnecessary. Given the fact that both vineyard development and re-planting projects are subject to the very stringent standards of the local regulations, it is conceivable that over the next 10 to 15 years, a very high percentage of hillside vineyard lands will have participated in the regulations program. Indeed, some vineyards that submitted erosion control plans under the regulations are already in a cycle to submit plans for replants. Table 4.1 does make mention of WDR waiver options, and the county's own public records could link the conservation regulations program as group WDR waiver, in and of itself.

Roads and other legacy erosion issues noted in table 4.1 can be very effectively addressed by watershed stewardship actions on a sub-basin level. Indeed, these kinds of comprehensive, multi-landowner scale efforts are far more likely to yield effective water quality compliance when they are carried out through a stewardship effort that brings to bear both public funding and public technical assistance, as well as group accountability dynamics. The water board has partnered

with agencies such as RCD and the NRCS, and of course taken note of the effectiveness of these approaches.

You also recognize the Napa Green Certification Program as a vehicle to help address all of the various sources on parcels with vineyards. This is a wonderful and very popular program that is drawing quite a bit of interest amongst landowners. The document should also note that conservation farm plans developed by the NRCS are also addressing whole-farm conservation planning. For those not choosing to pursue green certification, vehicles such as NRCS conservation plans provide an important alternative. NRCS is partnering closely with the Green Certification program, but clearly, wider options for landowner compliance vehicles should be recognized by the board if large scale, comprehensive results are to be expected.

Grazing

Table 4.2 in the proposed basin plan amendment displays a template of sources and proposed actions that is very similar to the 4.1 vineyards table. The NRCS and the University of CA Cooperative Extension have been working closely with regional board staff and Napa County ranchers to better understand and respond to proposed WDR's for grazing lands in Napa and Sonoma counties. I am attaching a copy of a March 20, 2006 NRCS/ UCCE letter submitted to Carmen Fewless, regional board responding to meetings we attended earlier this year on this issue.

We continue to contend that surface erosion associated with livestock grazing is not a significant concern in the Napa River watershed. The NRCS and UCCE have a long-standing relationship of working with ranchers on soil conservation issues, and our field data as well as many years of field observations do not support the board's contention that grazing is a current source of surface erosion. Indeed, field observations by regional board staff during intense rainfall events in the 90's failed to demonstrate evidence of such erosion.

Legacy erosion and road erosion sources are extremely difficult to address at any scale, and without tremendous infusions of public funds, a ranching enterprise simply can't pay the bills on correcting these types of erosion. As an example, recent work by NRCS on a local ranch with gully and landslide erosion problems yielded an estimate in excess of $100,000 to construct basic repairs.

As noted in our above-referenced letter, grazing in the Napa River watershed is a diminishing use of the land. The Napa County Conservation Development and Planning Department recently mapped grazing lands in the watershed. The map graphically portrays that grazing lands are spread around the watershed in relatively small ranching or grazing land units, (totaling just over 12,000 acres). Stocking rates are also typically quite low on these lands, further diminishing potential non-point source problems.

We urge the board to revisit the information we have already presented, and to coordinate closely with the working group, which includes Napa County ranchers, Napa County Farm Bureau, UCCE, and NRCS, to draft a practical and effective approach to assisting county ranch land owners and lessees with a group WDR waiver program.

Grazing represents an important of the land that also buffers the watershed from more intensive uses and potential impacts. The rather marginal economic returns of grazing also point to the critical nature of developing a reasonable response to conservation needs that avoids onerous requirements that discourage and perhaps even preclude grazing. It is certainly conceivable that owners of ranch lands would continue to lease these lands for grazing, should the required actions and compliance/ reporting accountability fall on their shoulders.

The Napa County Ranch Commodity Group has prepared a draft program to address pathogen TMDL concerns in the Napa River watershed. A similar approach that emphasizes education and group compliance through locally-prepared guidelines would be far more effective in addressing sediment TMDL measures than the standard, prescriptive approach that is advocated in the proposed basin plan amendment.

Roads

Measures intended to track, address, and monitor erosion and sediment contribution from rural roads, (farm and ranch included), are among some of the most difficult TMDL sources to address. This source spans all land uses, and may be one of the most difficult to treat and monitor. Many roads in hillside lands have been constructed in geologically unstable areas or steep terrains that require constant maintenance. Rural road maintenance and non-point source control represent a constantly moving target, and could not realistically be assigned an end date for completion of best management practices, or a sustainable goal for sediment reduction.

Adequate development standards for new roads, education, and incentives programs could go a long way in helping the county and landowners reduce non-point sources, but the goals as currently stated simply don't provide realistic and trackable progress. A far better approach would establish a series of best management practices and road maintenance guidelines, tracking progress through statistical sampling.

Stream Habitat and Fish Passage

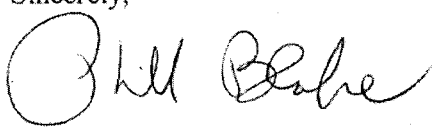
A lot of progress has been made in recognizing the need for restoration of degraded riparian habitats in the Napa River system, and addressing solutions. There is much work to be done, but many landowners and partners are now engaged in this work. For special projects such as the Rutherford Dust restoration effort, and several land stewardship projects, the regional board has had a significant hand in helping to spur on the good work with grants and accelerated assistance.

However, for the vast number of other projects needing attention, (small and large), the regional board needs to commit itself to providing more that simple financing or cheerleading support. One of the most important incentives the board has not committed itself to is to help expedite permits for small restoration projects, (which make up a significant amount of the work to be done). Since 1997, the CIG, (Napa County Conservation Information Group), made up of several local, state, and federal agencies, has attempted to establish a coordinated permitting system. This concept was designed to provide incentives for property owners to select restoration

alternatives for riparian areas, in return for expedited processing of permits. The Napa County Watershed Information Center, (WICC) has also endorsed this approach, along with participating agencies, but the regional board regulatory staff have never committed to move this approach forward. I find it ironic that the regional board is willing to set high standards and expected actions, and yet refuse to come to the table to partner in this very necessary element of support. I should note that we have appreciated your personal endorsement of this concept, but clearly, the regional board should be leading the way to remove red tape and redundant environmental review requirements.

As a final comment, I would like to note that many of the sediment source performance standards and required actions can best be handled on a sub-watershed basis in the Napa River system. Attainment of load allocation targets for most of the listed sources are daunting on a basin level, but become much more approachable within reaches of the river, or river tributary level where groups of landowners have agreed to attempt to do their part to protect and restore water quality. I strongly suggest that the board offer a major incentive for these groups to manage and restore soil and water resources by providing a mechanism to certify achievement of TMDL goals for sub-basins.

Sincerely,



Phillip Blake
District Conservationist
Certified Professional Soil Erosion and Sediment Control Specialist

ATTACH: UCCE/ NRCS 3-20-06 memo (1)

Cc: Napa County RCD Board of Directors
Morgan Doran, UC Coop Ext.
Patrick Lowe, Napa Co. Conservation Development and Planning Dept.
Watershed Information Center and Conservancy Board of Napa County
Sandy Elles, Napa County Farm Bureau
Bill Dodd, Chair, Napa County Board of Supervisors
Leigh Sharp, Napa County RCD
David Graves
Chris Howell
Greg Martinelli, CA Dept of Fish and Game
Don Richardson, CA Dept of Fish and Game
Rick Thomasser, Napa County Flood Control District

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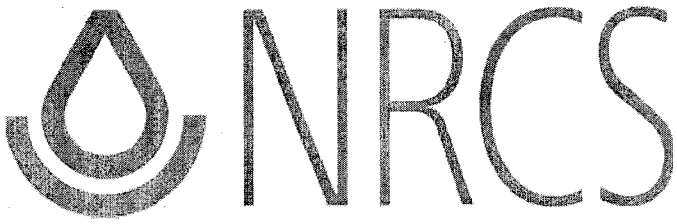
Agriculture & Natural Resources



March 20, 2006

Carmen Fewless
SFBRWQCB - Watershed Division
1515 Clay Street, Suite 1400
Oakland, CA 94612

Dear Carmen:

This letter is a collective response from Phillip Blake, Natural Resources Conservation Service, and Morgan Doran, University of California Cooperative Extension, to the draft document Conditions for Waiver Discharge Requirements for Dischargers from Grazing Lands distributed at the January 17, 2006 meeting in Point Reyes Station.

While we appreciate the effort to put forward a draft plan, we feel that the general framework for the program unnecessarily over-burdens individual producers. Specifically, the proposed requirements in sections III (Inventory and Plan), IV (Implementation), V (Compliance Reporting), and VI (Water Quality Monitoring) require such precise records and reporting that the program becomes more like a point-source-pollution control program rather than a non-point-source-pollution program. Many ranches operate at a very large scale (thousands of acres) over terrain with diverse topography, hydrology, and vegetation. Operating at this scale and satisfying the proposed compliance recording and reporting requirements is unrealistic and will bring about the likely effect that ranchers would either opt not to participate in the program or cease operations. We therefore strongly encourage a more moderate structure to the program that encourages participation through watershed groups as well as through individual participation, and encourages engagement in addressing ranch water quality issues. A rigid program with excessive requirements will only discourage participation and weaken efforts to improve water quality.

With respect to section II (Compliance with Training Requirements), we agree that engaging ranchers in a non-threatening education program is the best method to introduce them to the water quality regulatory environment, ranch water quality issues, ranch water quality plans, and practices that enhance water quality. UCCE and NRCS have more than a ten year history of providing this type of education program to ranchers and intend to continue this program. However, making the UCCE/NRCS training program mandatory for compliance will give the perception that UCCE, NRCS and the SFBRWQCB are acting as one regulatory unit when the education and regulatory roles should be clearly distinct. We would prefer that an education program be optional and that other Board- approved training programs are allowed to be substituted, as stated in the draft document.

While the practices of creating a ranch water quality plan, identifying and correcting impairments and monitoring progress are constructive and should be encouraged, we feel that the specificity and volume of records and reporting criteria that are described in sections III-VI will discourage participation. We suggest that more general criteria be developed and designed to address the diffuse nature of livestock operations on rangelands. Micromanaging a landscape will most likely not achieve the desired effects, but instead will force ranchers to focus attention on specific problems while losing the bigger picture of managing the overall livestock operation to minimize water quality impairment. An example of micromanagement can be found in the long list of required ingredients for a ranch water quality plan and that the plan be developed at the pasture level. Rather than requiring specific ingredients, ranchers should be encouraged to develop a plan that is designed to achieve water quality objectives. Specificity will stifle creativity and will burden the Regional Board staff with technical details that require a trained specialist to critique. Ranchers should be judged on the criteria that they have a plan with objectives, they are implementing the plan and they are making progress towards achieving their objectives. If ranchers encounter problems developing an adequate plan, then they can follow a template provided in the education programs.

Another improvement would be structuring the program for individual dischargers and coalitions of dischargers. The wide distribution and low concentration of grazing activities coupled with the small number of livestock operations in the Napa River watershed warrant a coalition approach in addressing a conditional waiver for grazing activities.

In the Napa River watershed, grazing is a land use that has greatly diminished over time. Wine grape vineyards are the dominant use of the land at a commercial agricultural scale. There are a few owner/operators still running cattle, but by and large most lands are grazed on a lease basis. The attached map shows that grazing lands are diffusely scattered around the watershed. Prepared recently by the Napa County Conservation Development and Planning Department, the mapping found just over 12,000 acres of lands used for livestock grazing, (about 4.5% of the total watershed lands). Most grazing lands are located in the northern Carneros area, Jamieson Canyon, and in scattered hillside locations east of the Napa Valley. Herd size is typically small, (generally less than 100 head per ranch), livestock are extensively grazed (not intensively), and most herds are held on the land during the winter/ spring grazing season.

It has been the experience of UCCE and the NRCS that overall numbers of grazing animals on the land is relatively small. Other than commercial equestrian facilities and stables, (which number about 10 in the watershed), we estimate that there are about 30 grazing operations of a size greater than 5 acres in the watershed. In part, because grazing pressures are generally low and sometime transient, overgrazing and associated soil erosion are uncommon. This opinion is also shared by Mike Napolitano, SF RWQCB, who made similar observations while conducting field work for the Napa River TMDL study. Mike generally agrees that non-point sources of fine sediment are not strongly associated with grazing activities.

Grazing in and around riparian areas is noted by Peter Krotje as a likely source of E-coli pathogens. Peter made this observation in the Suscol Creek area during water quality monitoring for the TMDL. It is our opinion that overall grazing impacts in these areas are not common problems, and can be relatively easily addressed with various management treatments.

We appreciate the opportunity to be engaged in the process of developing guidelines for TMDL compliance on grazing lands and we hope that the Regional Board will seriously consider our comments. We also have several ideas about the framework of an implementation plan we would like to share with you, perhaps in a meeting or another letter. Please contact us with any questions.

Sincerely,

Morgan Doran
Livestock & Natural Resource Advisor
University of California Cooperative Extension
501 Texas Street, Fairfield, CA 94533

Phillip Blake
District Conservationist
USDA-NRCS Napa County
1303 Jefferson St. Suite 500B, Napa, CA 94559

cc. Sandy Elles, Napa County Farm Bureau

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Ave., Room 325
Santa Rosa, CA 95404-6528

August 18, 2006

In response refer to:
SWR/F/SWR3:JJD

Mike Napolitano
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, California 94612

Dear Mr. Napolitano:

NOAA's National Marine Fisheries Service (NMFS) would like to thank you for the opportunity to comment on the Napa River Sediment Total Maximum Daily Load (TMDL) and Habitat Enhancement Plan. NMFS has followed this process since the limiting factors analysis report in 2002 identified excessive sedimentation as a factor in the depressed populations of Central California Coast (CCC) steelhead. CCC steelhead were listed as a threatened species under the Federal Endangered Species Act (ESA) in 1996 (62 FR 43937). An updated status review of West Coast steelhead was completed in 2004 and this distinct population segment (DPS) of steelhead was reaffirmed as threatened on January 5, 2006 (71 FR 834). Portions of the Napa River and several of its tributaries are designated critical habitat (70 FR 52488).

NMFS would like to express its support for the TMDL and Habitat Enhancement Plan. The staff report, in combination with the limiting factors analysis, presents information indicating that sedimentation is adversely affecting the habitat of the CCC steelhead and fall-run Chinook salmon. Fall-run Chinook are managed under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA). NMFS believes that the implementation actions called for in the TMDL will aid in the recovery of CCC steelhead in the watershed and benefit the Chinook salmon population.

The implementation plan calls upon NMFS to participate in forums related to: 1) addressing low flow/water supply and fisheries conservation concerns, 2) considering reservoir bypass flow requirements to protect salmonids, 3) to aid in planning a water rights compliance survey to be conducted by the County of Napa and the State Water Board Division of Water Rights, and 4) to help identify and remedy significant structural impediments to salmonid migration in ten tributaries. NMFS will participate in these forums as well as continuing our participation in other projects related to the implementation plan such as the Upper York Creek dam removal, the Napa Green Certification Program, and the Watershed Information Center and Conservancy technical advisory committee. We will also intersect with portions of the TMDL implementation plan in our ESA and MSFCMA consultation capacities such as the Rutherford DUST project, remediation of the

Zinfandel Lane crossing fish passage problem and any other projects with a federal nexus through the Army Corps of Engineers or the Natural Resource Conservation Service. NMFS has staff resources that you may request including expertise in fish biology, engineering, fluvial geomorphology, and water quality.

NMFS would also like to express support for other actions and/or concepts presented in the staff report such as sediment source-control cooperatives to maximize treatment efficacy while controlling costs, a census of steelhead and salmon populations, expansion of stewardship groups to achieve large-scale enhancements of stream and riparian conditions, the recognition of the Napa Green Certification Program as a TMDL compliance option for vineyards, the development of residual dry matter targets on grazed land through cooperation with the University of California Cooperative Extension, the installation of dial-up stream flow gages for planning irrigation on at least ten tributaries, protection of ecologically significant large woody debris by public works and parks agency staff, and the adoption of ecologically superior design alternatives for channel restoration projects.

In closing, NMFS would like to thank you for the coordination opportunities you have provided as this TMDL was being developed. The ability to provide input was appreciated and NMFS is pleased to see many of our suggestions incorporated in this proposed plan. As the implementation goes forward, it is certain that new questions, concerns or approaches will emerge as information is gathered and discussions take place among the stakeholders. We offer our continued participation as the Regional Board addresses these situations through adaptive management processes. NMFS supports the proposed TMDL and believes it will aid in the recovery of the ESA listed CCC steelhead trout and benefit the fall-run Chinook salmon population in the system. Please call Joe Dillon of my staff at (707) 575-6093 with any questions.

Sincerely,

Steven A. Edmondson
Northern California Habitat Supervisor

cc: Dick Butler, NMFS, Santa Rosa, California
Gary Stern, NMFS, Santa Rosa, California
Charlotte Ambrose, NMFS, Santa Rosa, California
Sandia Potter, San Francisco Bay RWQCB, Oakland, California
Dyan Whyte, San Francisco Bay RWQCB, Oakland, California

From: "Davie Pina" <davie@pinavineyards.com>
To: "Michael B. Napolitano" <MNapolitano@waterboards.ca.gov>
Date: 8/15/2006 4:40:25 PM
Subject: FW: Basin Plan support from RDRT

Mike Napolitano

Dear Mike,

John Williams and I want to lend our support for your Basin Plan Amendment. Your plan for dealing with sediment on the main stem of the Napa River dovetails into our research and plans to improve the Napa River. We think voluntary compliance is the only way to assure that restoration is comprehensive and continues into the future. You can demand someone to set back, but can't have them buy in to the future maintenance and health of the river. As a grassroots organization we have educated our river owners to want to be part of the answer. They have a great desire to see the river restored. They want the river as an enhancement of their property not something that is off limits to them.

We hope to work hand in hand with you to bring both our plans to fruition.

Co-Chairs of the Rutherford Dust Restoration Team;

John Williams
Frogs Leap Winery

Davie Pina
Pina Vineyard Management

From: "Shirleen Hall." <vichyspring@sbcglobal.net>
To: Mike Napolitano <MNapolitano@waterboards.ca.gov>, <ywon@waterboards.ca.gov>, Wil Bruhns <wbruhns@waterboards.ca.gov>, Lawrence Kolb <lkolb@waterboards.ca.gov>, Rich Thomasser <rthomasser@co.napa.ca.us>
Date: 8/3/2006 2:11:13 PM
Subject: Public Comment on TMDL Staff Report, Basin Plan Amendment, Napa River Watershed

Dear Mike Napolitano- Its sad that nowhere in 150 pages of material do you propose any methods for rectifying or balancing the fundamental disequilibria of the primary limiting factors which have long been identified, and acknowledged. The bedload contributions from the best habitat on the primary tributaries is trapped behind dams. This imbalance is a simple one to rectify, yet nowhere do your documents identify methods or intent to achieve a dynamic equilibrium.

Rather you seek to regulate and curtail human behavior in a semi-urban environment for the next 20 years, with an aim to further reduce sediment contributions, and futher unbalance what equilibrium now exists. Not one authoritative source is cited to persuade us that reducing sediment contributions, will slow the downcutting rate, which you claim requires us to further limit sediment loads. Quite the opposite is suggested by Water, Rivers and Creeks, Luna Leopold, C 1997 University Science Books. Try page 158, paragraph 3, on the subject of dams and reservoirs: " ..storage of sediment, depriving the channel downstream of the usual (bed)load, will have immediate and far-reaching consequences. When clear water is released into a channel that was formed and maintained by water heavily loaded with sediment, the channel will react, usually by downcutting." Who says your sediment reduction plan won't worsen the downcutting problem by further limiting potential aggradation?

The downcutting, or incision rate, is closely influenced by particle retention behind the dams; these bedloads ordinarily help the channel aggrade and degrade in equilibrium. The solution to accelerated downcutting below dams, is not, according to Dr. Leopold, to further withhold channel-forming sediments, but to re-introduce gravels and cobbles to achieve a natural and dynamic equilibrium. The larger particles settle the fine ones, making clear water and nice fish habitat. This is simultaneously feasible, logical and effective, unlike your proposed regulations of upper watershed dirt tracks and Berryessa grazing lands.

With respect to the Staff Report, 6.6.2, the vague allusion to possible unidentified fish barriers is a contemptible lie. For years I have tried to get your interest in a well-identified fish barrier on Sarco Creek. You fail to respond to letters, you fail to answer emails, or pay a visit, such as now on August 3, 2006, to count the steelhead carcasses in the swillish puddle. You are ignorant of the actual circumstances only by sustained effort to remain so. This entire paragraph should be rewritten to truthfully indicate the number of times you have personally declined to come investigate the situation, and deal with the easy-to-fix mechanical fish barriers first, then see if some vast regulatory scheme is needed to achieve additional fish populations.

Finally I would like to add a number of other mechanical, easy-to-fix, situations, previously identified in SWRCB/OCC File A-1744 which belie the gauzy gloss of regulatory effectiveness your Report paints. The RWQCB hasn't been able to team up yet with Napa County to fix these assorted water quality and pollution issues, despite having a head start and a hand in creating the regulations that were supposed to prevent these mechanical defects. Maybe you believe in a magic regulatory wand-swish, but I see no evidence of compliance or attempted compliance in my neighborhood by either the RWQCB or Napa County Public Works. Why don't you focus on making existing regulations function, before proposing another grandiose scheme which could actually harm our watershed, by unbalancing it further, if the scheme works as envisioned.

Ed Schulz, 3177 Vichy Ave, Napa Ca 94558 707-477-2305, 707-224-3089

CC: "boardonly@landstewards.org" <boardonly@landstewards.org>, Shirley Emmons <emmons12@juno.com>, "George Bachich@landstewards.org" <bachich@landstewards.org>, Mike Rodrigues <MRNAPA@aol.com>, <stmig@comcast.net>, Mike Ewing-home <mikee47@sbcglobal.net>, Julissa McKinnon <jmckinnon@napanews.com>, Kevin Courtney <kcourtney@napanews.com>, Ed Schulz <ed@wineoak.com>, "Ms. Kathi Moore" <moore.kathi@epa.gov>

SIERRA CLUB
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NAPA GROUP
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Napa, CA 94559
www.redwood.sierraclub.org/napa

August 10, 2006

Mike Napolitano
Dyan Whyte
Basin Planning and TMDL Program Manager
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, 14th Floor
Oakland, CA 94612

Re: Proposed Sediment TMDL Basin Plan Amendment

Dear Mr. Napilitano and Ms. Whyte:

On behalf of the Executive Committee of the Napa Group of the Redwood Chapter of the Sierra Club I would like to extend our sincere appreciation to the Water Board for the thorough presentation on the Napa River Proposed Sediment TMDL Basin Plan Amendment. I attended the presentation at the Yountville Community Hall and other members of the Ex Com were present at WICC.

The Napa County Sierra Club looks forward to continuing to work with the Board as you move forward with an action plan to reduce sediment supply and enhance habitat conditions in the Napa River and tributaries. This is an extremely significant project for all the regulatory agencies and stakeholders, and we applaud the implementation measures you have proposed.

Sincerely,

Elisabeth Frater
Chair

cc: Supervisors Wagenknecht, Dillon, Luce and Moscowite, Chairman Dodd

WINE INSTITUTE
THE VOICE FOR CALIFORNIA WINE

August 4, 2006

Mr. Mike Napolitano
Environmental Scientist
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, suite 1400
Oakland, CA 94612

Dear Mr. Napolitano:

On behalf of the California Sustainable Winegrowing Alliance (CSWA), I am writing this letter to request an addition to the proposed Basin Plan Amendment for the Napa River Sediment Total Maximum Daily Load (TMDL) Plan.

CSWA is a nonprofit jointly partnered by the Wine Institute (WI) and California Association of Winegrape Growers (CAWG) envisioning the long-term sustainability of the California wine community. Three principles – environmentally sound, economically feasible, and socially equitable – provide a framework to pursue sustainability.

During the Town Hall Forum on July 26th, board staff volunteered that the draft Plan anticipated TMDL "reports being submitted individually or jointly through a recognized third party"; i.e. referenced as the 4th footnote in Table 4.1 on page 9. CSWA, WI, and CAWG would like to pursue a meeting with Board staff the potential for CSWA to be a recognized third party to submit an aggregate report for multiple vineyard owners.

Sincerely,

Ann Thrupp

Cc: Karen Ross, California Association of Winegrape Growers
Mike Falasco, Wine Institute

WINE INSTITUTE
THE VOICE FOR CALIFORNIA WINE

August 14, 2006

Mr. Mike Napolitano
Environmental Scientist
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Dear Mr. Napolitano:

On behalf of the California Sustainable Winegrowing Alliance (CSWA), we are writing this letter to request an addition to the proposed Basin Plan Amendment for the Napa River Sediment Total Maximum Daily Load (TMDL) Plan. Please view this letter to expand upon an August 4th draft.

California Sustainable Winegrowing Alliance is a nonprofit jointly partnered by the Wine Institute (WI) and California Association of Winegrape Growers (CAWG) envisioning the long-term sustainability of the California wine community. Three principles – environmentally sound, economically feasible, and socially equitable – provide a framework to pursue sustainability. A key component of the Code of Sustainable Winegrowing Practices is to establish voluntary high standards of sustainable practices to be followed and maintained by the entire wine community. This is accomplished by a voluntary self-assessment of the sustainability of one's vineyards and/or winery. The self-assessment is divided up into numerous chapters, including of particular interest "Vineyard Water Management," "Ecosystem Management," and "Winery Water Conservation and Water Quality".

During the Town Hall Forum on July 26th, board staff volunteered that the draft anticipated TMDL Plan "reports being submitted individually or jointly through a recognized third party"; i.e. referenced as the 4th footnote in Table 4.1 on page 9. WI and CAWG would like to pursue a meeting with Board staff and CSWA to explore the potential for CSWA to be a recognized third party, which would allow CSWA to submit an aggregate report for multiple vineyard owners.

Sincerely,

Karen Ross

Karen Ross, President
California Association of Winegrape Growers

Mike Falasco

Mike Falasco, Legislative Representative
Wine Institute

Cc: Ann Thrupp, California Sustainable Winegrowing Alliance

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

August 8, 2006

Mr. Bruce Wolfe
Executive Officer
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Dear Mr. Wolfe:

Thank you for the opportunity to comment on the proposed sediment TMDL for Napa River. The analysis supporting the TMDL includes very robust and innovative work and we commend your staff for their hard work on the project. In particular, the numeric target analysis and source analysis represent solid technical analysis. This letter provides U.S. Environmental Protection Agency's comments on the proposed TMDL.

We met with your staff on May 17th to discuss several issues concerning the TMDL and are pleased that several of our comments were addressed in the draft basin plan amendment and supporting staff report. However, several other concerns we expressed were not addressed. While the basic approach taken to calculate the TMDL is workable, we are concerned that the method by which the specific TMDL and allocations are expressed does not meet federal regulatory requirements. This letter explains these concerns and suggests workable approaches for modifying the proposed action. We believe the necessary changes are workable based on information already available to staff and need not result in delays in TMDL adoption. We would be happy to meet with your staff to explore these approaches and discuss our comments.

TMDL Expression As a Function of Natural Background

EPA has established several TMDLs in northern California that set the allowable sediment loads at 125% of estimated natural background loading levels. The revised rationale in the Napa River staff report supporting the decision to base the Napa River TMDL on the "125% of natural" approach is sound. However, staff proposes to express the TMDL solely as a percentage of natural background loading without clearly stating the background loading levels against which the allowable percentage would be compared. As a result, the proposed action does not set a clear numeric TMDL as required by federal regulations (see 40 CFR 130.2(i) and Guidance for Developing TMDLs in California, EPA Region 9, 2000). Information is provided about the estimated background loads during the 1994-2004 period; however, staff specifically declines to set the TMDL as an allowable mass load based on this estimate due to its concern that a mass load approach may not adequately capture the potential future range of interannual variability in background loads that will occur in the watershed. The proposed TMDL is expressed as a percentage of natural loading levels to be determined following adoption of the TMDL through an unspecified process. This does not represent an "appropriate

measure" for a TMDL as authorized in 40 CFR 130.2(i) because it does not clearly identify the allowable loading amount in a predictable and measurable way. To ensure the TMDL is approvable under federal regulations, the TMDL needs to be revised to more specifically identify the estimated natural loading levels, or range of loading levels, against which the "125% of natural background load" is to be compared.

The TMDLs previously established by EPA (Noyo River and Redwood Creek) that are cited as examples of this approach each express the TMDLs as average annual allowable loading levels calculated based on average natural loading estimates and the "125% of natural" allowable loading percentage. The Deep Creek, Montana TMDL cited in the staff report is a relatively early TMDL example that does not clearly distinguish numeric targets from the calculations of sediment loading capacity, TMDL, and allocations. For the indicators that are expressed as functions of baseline values, the Deep Creek TMDL specifically identifies the baseline conditions against which the allowable deviations are to be compared. Therefore, the cited examples do not support staff's proposal to set the Napa River TMDL based soley upon the allowable percentage of natural background.

The Napa River TMDL is supported by a very sound loading analysis, including a strong assessment of natural background loading levels; therefore, we believe the information needed to revise the TMDL to address this concern is readily available. Options for revising the TMDL include:

- calculating the average annual allowable loads based on the based on 125% of the 1994-2004 average annual natural background sediment delivery estimates provided in Table 2 of the amendment,
- calculating a range of allowable loads based on the range of estimated natural background loading levels identified through the sediment delivery analysis for the 1994-2004 period (this range could be expressed in tabular form).
- calculating a range of allowable loads based on the potential range of natural background loading levels that could occur (this range could be expressed in tabular form).

The Regional Board may wish to review TMDLs previously established by EPA and other Regional Boards that express TMDLs and allocations in terms of a range of allowable loads as a function of receiving water flow or seasonal precipitation. Examples to review include San Diego Creek/Newport Bay selenium, San Joaquin River selenium, and Pajaro River sediment. We believe it is feasible to retain the basic approach articulated in the draft Napa River TMDL while providing a clearer expression of the actual total allowable loads and allocations among different sources.

When making the needed revisions to the TMDL and allocations, it will also be important to clarify the averaging periods applicable to the TMDL and allocations. As drafted, it is unclear how implementation of the allocations would be measured.

The TMDL is set to apply in the Napa River at Soda Creek. The supporting staff report does not provide a sufficient rationale to support a finding that meeting the TMDL at Soda Creek, near the bottom of the watershed, would be sufficient to result in attainment of the water quality standards and associated numeric targets at important locations upstream in the Napa River and its tributaries. Please provide a more robust analysis to support the selection of this one compliance point and explain how allocations that apply at locations far upstream from that location would be applied.

Expression of Waste Load Allocations

The wasteload allocations (WLAs) in the proposed TMDL are not sufficiently detailed to meet federal regulatory requirements or to provide clear guidance as to how NPDES permits should address these WLAs. The basin plan amendment includes only a grouped "urban stormwater" WLA. No WLAs are set for water reclamation facilities or other NPDES-permitted discharges to the Napa River or its tributaries. Federal regulations require specification of WLAs for each NPDES-permitted discharger to the subject water body (see 40 CFR 130.2(h)). As the implementation section of the amendment lists several NPDES permitted dischargers intended for coverage under the TMDL, it is necessary to subdivide the WLA among the individual permitted dischargers. There are several workable approaches to preparing individual WLAs. Your staff may wish to review the metals TMDLs for Ballona Creek, CA, in which the stormwater WLAs were allocated in proportion to the area covered by the applicable NPDES permits. The WLA section of the TMDL must identify the specific WLA that applies to each NPDES-permitted discharge covered by the TMDL. As we understand the point source discharges of sediment are less significant overall than the nonpoint source discharges of concern in this TMDL, we believe it is unnecessary to expend substantial effort subdividing the proposed WLA.

Implementation Recommendations

We commend the Regional Board for proposing an implementation approach that addresses each of the key stressors in addition to sediment loads that contribute to Napa River impairment. In particular, we support the implementation provisions in Table 5.2 designed to enhance baseflow. We believe the TMDL analysis properly focuses upon flow improvements necessary to accomplish its restoration goals and note that federal regulations require that TMDL determinations take into account critical conditions for stream flow and other water quality parameters (40 CFR 130.7(c)(1)).

We recommend revisions in some of the tables outlining implementation measures to improve the clarity of the implementation expectations or timeliness of implementation. We recommend revision of the completion date for submitting reports of waste discharge to no later than 1-3 years following the effective date of the basin plan amendment, consistent with the compliance schedules set in the Imperial Valley Drains and Garcia River sediment TMDLs adopted elsewhere in California. With respect to Table 5.3 addressing fish passage restoration, it would be desirable to identify each of the 10 key tributaries to be addressed under this plan in the basin plan amendment itself.

We appreciate the opportunity to comment on the proposed TMDL basin plan amendment and would be happy to discuss our comments at your convenience. Please contact me at (415) 972-3416 or Diane Fleck at (415) 972-3480.

Sincerely,

David Smith
TMDL Team Leader (WTR-2)

cc: Ken Harris, SWRCB
Tom Mumley, RWQCB