Daniel Myers
P.O. Box 178-Philo.CA 95466 Phone 707 462-5996 Fax 707 462-5896 Internet dmyers@pacific.net
11 June 2000

David Leland
North Coast Regional Water Quality Control Board
5550 Skylane Blvd. Suite A
Santa Rosa, CA 95403

Re: Navarro River TMDL for Temperature

Dear Mr. Leland:

I believe that appropriation rights granted for diversion of water during the summer months is a major factor that results in the Navarro being listed as impaired for temperature. In support of this view I offer information from the historical records of the Mendocino Water Agency. These records document the Navarro's daily average minimum summer flows and daily average maximum flows from the years 1951 to 1997. I have superimposed on the summer minimum flow chart a cumulative history of summer appropriations approved by the State Water Resources Control Board over this same period.

What is immediately apparent is the correlation between the progressively increasing summer appropriations and the progressively decreasing minimum average flows. New summer appropriations were curtailed in the mid seventies because of their cummulative impact on summer flows. From the mid seventies to 1997 the effect of summer water appropriations became more significant as these larger appropriations were developed and fully utilized. In the first four years of this reporting period, 1951 to 1954, the daily minimum average (before any significant appropriations) 10.1 cfs. From 1951 to 1974 the average had dropped to 7.6 cfs. From 1974 to 1997 where the appropriations were highest, the daily average dropped to 4.1 cfs. In the last ten years, the average flow was less than 1.5 cfs in six of those years.

The flow data referred to above is from the USGS gauge measuring main stem flow, the sum Anderson Creek, Rancheria Creek, Indian Creek and all the other watershed tributaries above the gauge. It is an actual measurement of how much water remains in the main stem of the river for the "public trust" uses after the appropriations. The chart graphs *average daily* flows. Day time pumping and normal diurnal variation will result in instantaneous flows substantially above and below these averages. A stream that is totally dry for twelve hours during the day and has a flow of three cfs at night will have an

average daily flow of 1.5 cfs. Tributaries and the main stem have in fact been pumped dry which is documented in the Navarro Watershed study at page xxv. (Copy attached)

The conditions on the graphs can not be attributed to drought year phenomena. The Mendocino Water Agency's USGS chart for maximum flow covering the same span of time does not show any similar steady decline. 1995 was the second highest maximum flow year, yet the dairy minimum flow was *only 1.4 cfs* one of the lowest readings. In 1972 and 1976 which were severe draught years, the minimum flows were substantially higher than we get now in wet years.

Many of the summer appropriations permits contain no bypass flow restrictions required for any new winter appropriation. Some permitees have ignored bypass restrictions and been cited for violation of permit terms. All permits are subject to the continuing oversight of the Water Resources Control Board. Appropriation of water during periods of low flow is clearly a factor that needs to be addressed in the TMDL.

The relationship of flow to temperature is well documented in TMDLs from the northwest. In the Water Quality Management Plan for the Rogue River's Illinois Sub Basin at page 21 it states:

> **The temperature change produced by a given amount of heat is inversely proportional to the volume of water heated or, in other words, the discharge of the stream (Brown 1984). A stream with less flow will heat up faster than a stream with more flow...**

And in the Simpson Northwest Timberlands TMDL at page 20;

> **A mechanistic model is essentially a bookkeeping of heat transfer to determine potential water temperature changes. ...These include stream flow, channel width, upstream water temperature...Higher stream flows, for example, result in higher allowable solar radiation loads...**

On the Navarro River watershed the reduced flow is a well documented and controllable factor in the cause of high water temperatures. It cannot be ignored because of its contentious nature. If it is not properly evaluated in the TMDL it will, have the effect of placing the responsibility for remediation solely on riparian land owners for improved canopy closure. Water appropriators, who typically do not have riparian rights, would be relieved of their responsibility for remediation. The TMDL must have achievable goals. Reliance on canopy closure alone will preclude the possibility of ever satisfying this TMDL. Improved canopy is obviously necessary to reduce the heat load. That remediation

will be at least a twenty year effort before any measurable improvement. The establishment of minimum bypass terms on appropriation permits or instream standards for restriction on appropriated water would result in immediate improvement in water temperatures.

Very truly yours,

Daniel Myers

Encls:

CC: Steve Hall Friends of the Navarro Watershed
Bryan McFadin NCRWQCB
David S. Evans NCRWQCB
William Hearn NMFS
Robert W. Floerke DF&G
Alan Levine Coast Action Group

on the lower reaches of Anderson and Rancheria Creeks, also contributes to high water temperatures on these streams.

Stream Flow

Stream flow monitoring by the Mendocino County Water Agency and the State Water Resources Control Board in 1995,1996, and 1997, and by volunteer monitors in 1995 and 1996, provide detail for the understanding of low flows during the dry summer months (Appendix E). These studies indicate that summer flows in the lower reaches of Anderson, Rancheria, and Indian Creek are at times significantly reduced by agricultural pumping. In aggraded stream reaches, summer flow may be entirely subsurface. Several monitored streams dried up completely, or had only isolated pools during the late summer months, while others persisted through the dry season.

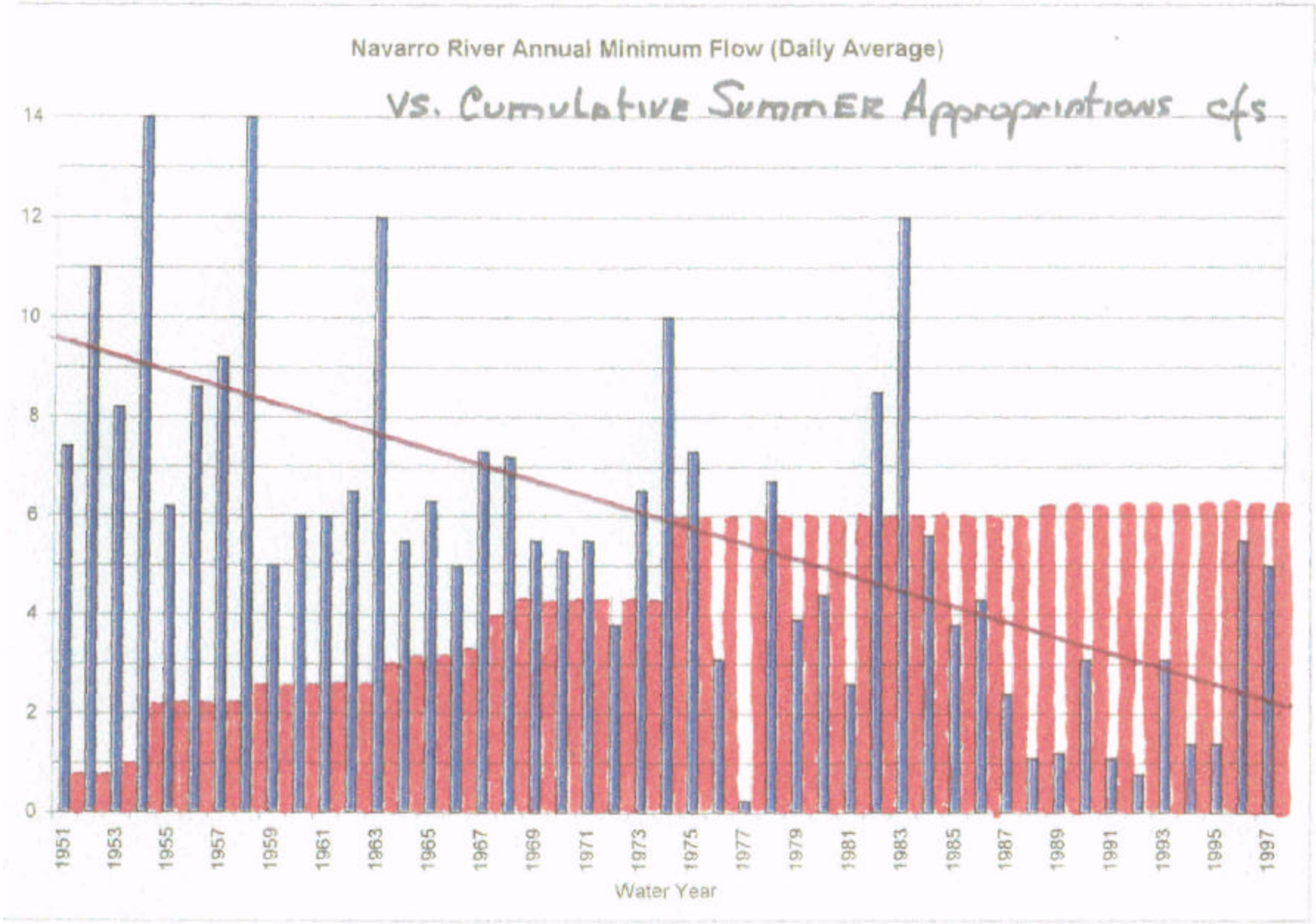
No coho, and few steelhead, were observed in the lower reaches of the main trunk streams that are most affected by agricultural pumping. This is likely due to the high water temperatures in these streams. The long-term restoration of these large streams must therefore include efforts to reduce summer stream temperatures, to improve summer flows, and to improve pool habitat.

Sediment

The sediment budget identifies sediment sources and sediment-related impacts to channels and fish habitat in the Navarro watershed (see Section 3,0 and Appendix A). Because the primary goals of the Plan are to restore and enhance the Navarro's anadromous fishery and to improve water quality, the focus of this study was on those landscape features and geomorphic processes which deliver sediment to stream channels. The sediment budget is used to identify the major erosion processes that contribute sediment to stream channels, in order to focus planning efforts for erosion prevention and control; and to discern the long-term trends in sedimentation and stream channel responses to it. The major findings of the sediment budget are as follows:

1. The Navarro Watershed includes highly erodible soils derived from rocks associated with the melange unit of the Franciscan Assemblage, found in much of the Anderson Creek basin, middle and upper Rancheria Creek basin, and a portion of the Indian Creek basin. Soils associated with the Coastal Belt of the Franciscan Assemblage, found in much of the rest of the watershed, are more stable and resistant to erosion. Alluvial fill, found in the Anderson Valley and in low-lying reaches of the major tributaries, is also highly erodible.

2. Sediment production rates in the 1980's and 1990's are lower than they were during the recent historical period from the 19SO's to the 1970's. This change is likely due to improved timber harvest practices and regulations, as well as to generally improved road construction and maintenance practices for active logging roads. However, present-day rates of sediment production remain undesirably



e Mandocino County Water Agency data from the USGS & SWRCB Data