6/12/07 Workshop
Suction Dredge
Deadline: 6/22/07 Noon

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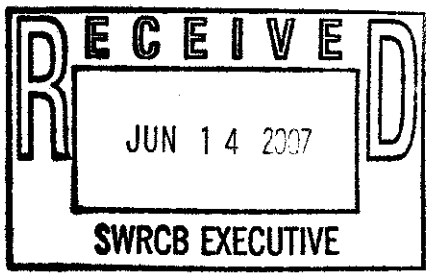
To: <commentletters@waterboards.ca.gov>
Date: Thu, Jun 14, 2007 7:49 PM
Subject: Comment Letter - Suction Dredge Mining



State Water Resources Control Board
Division of Water Quality
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Fax: 916-341-5620 email: commentletters@waterboards.ca.gov

Dear Sirs:

My name is Dabney Eastham. I have dredged for gold and other values, such as diamonds, since 1990, in California and Brazil. I have observed (but not participated in) gold dredging projects in Alaska and New Zealand. I am also a member of the State Bar of California and currently serve as a member of the Executive Committee of the Intellectual Property Law Section of the State Bar of California.

I have been able to observe the impact upon water quality from the effects of suction dredging. My personal observation has been when any visual impact can be seen at all, the impact is small and localized. This observation has been similarly reflected by numerous studies and published reports on this subject. For example, a report on the water quality cumulative effects of placer mining on the Chugach National Forest, Alaska found:

"The results from water quality sampling do not indicate any strong cumulative effects from multiple placer mining operations within the sampled drainages." "Several suction dredges probably operated simultaneously on the same drainage, but did not affect water quality as evidenced by above and below water sample results. In the recreational mining area of Resurrection Creek, five and six dredges would be operating and not produce any water quality changes (Huber and Blanchet, 1992).

This was also the result of my own observations of dredging operations in the Chugash National Forest.

When a suction dredge is operating, water will be drawn from the river or stream (currently, suction dredging in lakes is not permitted by DFG) into a centrifugal pump and ejected into a jet pump. The water from the centrifugal pump, plus any water entrained from the nozzle of the hose attached to the jet pump, will then pass through the values recovery system (this usually includes a sluicebox) and back into the river or stream. The net effect of this part of the process is to aereate the water a little and to move it a short distance. These are negligible effects.

When an operator advances the nozzle of an operating suction dredge to the vicinity of streambed material that is small enough to fit through the nozzle, this material, unless it is very dense and heavy, such as a large gold nugget, will be drawn into the water passing into the nozzle. It will then pass through the jet pump and then the recovery system. Some of the material will remain in the recovery system, namely, most of the values as well as dense materials such as naturally present iron mineral grains. The remainder passes through and returns to the river or stream.

The material returned to the river or stream sinks back to the streambed at a rate that depends on the size of the individual components of the material. Rocks sink immediately behind the output from the recovery system of the dredge. Pebbles sink more slowly and further away (due to the movement of the pebbles by the flow of the river or stream), then sand grains, and so forth. The small silty particles stay suspended the longest before sinking.

The addition of streambed materials to the water of the stream or river is the only noticeable change to the water "quality," however that term may be defined. It is a very localized phenomenon. It is also a transitory phenomenon. Once the dredge stops operating, the material is no longer added to the water and the previously added material quickly disperses and sinks. One should remember, when shown pictures of operating dredges puting streabed material back into the river or stream, that the dredge is

operating only a small part of the twenty-four hour period. Every picture of an operating dredge should be shown with at least four or five pictures of a shut-down dredge in order to make this point.

The material from the streambed is usually natural material, such as rocks, pebbles, sand, and silt. Man made objects such as nails, beer cans, fishing weights and the like are sometimes recovered. Organic matter may be encountered, such as bugs and weeds, and these sometimes attract hungry fish.

I can recall frequently shooing trout away from the nozzle when dredging in Sierra and Siskiyou Counties. These fish appeared to be attracted by bugs stirred up from the streambed. The trout would also hover in schools behind the dredge in case a bug passed through the recovery system. I never observed any bad effects caused to the trout by dredging; rather the reverse. The trout appeared to appreciate any temporary holes made in the riverbed because it provided them with a place to hover out of the current. In addition, the water was noticeably cooler in the holes because of seepage of cooler water out of the disturbed streambed material. During the summer the trout seem to seek places with cooler water.

The water quality is so little affected by dredging that I have frequently taken drinking water and washing water for my camp from the dredging site. My only concern was for the possible presence of giardia cysts in the water and thus the water might have to be treated for that reason. However, dredging did not put any giardia cysts in the water, because that is caused by the fecal deposits of animals such as cows.

My personal observations concerning the effect of dredging on water quality are consistent with other published information on this subject:

Thomas (1985), using a dredge with a 2.5-inch diameter nozzle on Gold Creek, Montana, found that suspended sediment levels returned to ambient levels 100 feet below the dredge. Gold Creek is a relatively undisturbed third order stream with flows of 14 cubic feet per second. A turbidity tail from a 5-inch (12.7 cm) dredge on Clear Creek, California was observable for only 200 feet downstream. Water velocity at the site was about 1 foot per second (Lewis, 1962).

Turbidity below a 2.5 inch suction dredge in two Idaho streams was nearly undetectable even though fine sediment, less than 0.5 mm in diameter, made up 13 to 18 percent, by weight, of substrate in the two streams (Griffith and Andrews, 1981).

Hassler (1986) noted "...during dredging, suspended sediment and turbidity were high immediately below the dredge, but diminished rapidly within distance downstream." He measured 20.5 NTU 4 meters below a 5-inch dredge that dropped off to 3.4 NTU 49 meters below the dredge. Turbidity from a 4-inch dredge dropped from 5.6 NTU 4 meters below to 2.9 NTU 49 meters below with 0.9 NTU above. He further noted "...water quality was impacted only during the actual operation of the dredge...since a full day of mining by most Canyon Creek operators included only 2 to 4 hours of dredge running time, water quality was impacted for a short time." Also "...the water quality of Canyon Creek was very good and only affected by suction dredging near the dredge when it was operated."

I have observed that environmental activists and similar interests have been trying to eliminate suction dredging from California's waterways for a long time. During recent years, they have suggested that the localized increased turbidity behind some suction dredges may contribute to raising water temperatures in the overall waterway. I know that the New 49'ers, a mining organization, hired fishery biologists (both retired from the EPA) two years ago to perform water temperature testing upstream and downstream of active dredging operations along the Klamath River. They tested in numerous locations, and were not able to find any measurable increase in water temperature behind operating dredges. Although, in some cases, they did discover cooler water within the dredge holes, and cooler water within the discharges from the dredges which were sucking up the cooler water (probably ground water) from the dredge holes. Similar results were acknowledged by published material on
this subject:

Dredge mining had little, if any, impact on water temperature (Hassler, T.J., W.L. Somer and G.R. Stern, 1986). In addition, the Oregon Siskiyou Dredge Study (SNF, 2001) states, "There is no evidence that suction dredging affects stream temperature."

I have studied the Environmental Impact Statement (EIS) published by the California Department of Fish and Game in connection with the California Environmental Quality Act (CEQA) process during the 1990's, when existing state-wide suction dredge regulations were adopted by California. The State Water Resources Control Board enacted a state-wide exemption at that time for persons operating suction dredges in conformance with Section 5653 suction dredge regulations.This exemption was issued to simplify the permitting process for suction dredgers (many who visit from out of state and only suction dredge during a small part of the year), and also to not burden the State Water Resources Control Board or its Regional offices with applications from thousands of (very) small-scale gold miners who have a negligible impact, if any, upon water quality. This was reflected in the EIS:

Suction dredging causes less than significant effects to water quality. (CDFG, 1997).

"Suction dredges, powered by internal combustion engines of various sizes, operate while floating on the surface of streams and rivers. As such, oil and gas may leak or spill onto the water's surface. There have not been any observed or reported cases of harm to plant or wildlife as a result of oil or gas spills associated with suction dredging" (CDFG, 1997).

The impact of turbidities on water quality caused by suction dredging can vary considerably depending on many factors. Factors which appear to influence the degree and impact of turbidity include the amount and type of fines (fine sediment) in the substrate, the size and number of suction dredges relative to stream flow and reach of stream, and background turbidities (CDFG, 1997).

"Effects from elevated levels of turbidity and suspended sediment normally associated with suction dredging as regulated in the past in California appear to be less than significant with regard to impacts to fish and other river resources because of the level of turbidity created and the short distance downstream of a suction dredge where turbidity levels return to normal" (CDFG, 1997).

As far as I know, the most comprehensive study to date concerning how water quality is affected by suction dredging was contracted by the EPA to analyze of the effects on mining in the Fortymile River in Alaska. The report stated:

"This report describes the results of our research during 1997 and 1998 into the effects of commercial suction dredging on the water quality, habitat, and biota of the Fortymile River. The focus of our work on the Fortymile in 1997 was on an 8-inch suction dredge (Site 1), located on the mainstem At Site 1, dredge operation had no discernable effect on alkalinity, hardness, or specific conductance of water in the Fortymile. Of the factors we measured, the primary effects of suction dredging on water chemistry of the Fortymile River were increased turbidity, total filterable solids, and copper and zinc concentrations downstream of the dredge. These variables returned to upstream levels within 80-160 m downstream of the dredge. The results from this sampling revealed a relatively intense, but localized, decline in water clarity during the time the dredge was operating" (Prussian, A.M., T.V. Royer and G.W. Minshall, 1999).

"The data collected for this study help establish regional background geochemical values for the waters in the Fortymile River system. As seen in the chemical and turbidity data any variations in water quality due to the suction dredging activity fall within the natural variations in water quality" (A.M. Prussian, T.V. Royer, and G.W. Minshall, 1999).

There is no evidence of which I am aware of that even suggests that dredging has harmed harmed a single fish or other aquatic species.

The burdensome and expensive requirement for suction dredgers to acquire a water quality permit would all but eliminate the activity in the State of California. DFG is already charging out-of-state visitors $167.25 for an annual suction dredge permit. Adding a burdensome water quality permit to the process will discourage both the out-of-staters, who already have to pay the higher fee as well as most Californians who presently conduct suction dredging operations.

Gold prospecting has been a productive activity in California since before it joined the Union in 1850. Clearly some earlier practices were harmful to the environment, most notably the very large scale hydraulicking operations that took place in the last half of the nineteenth century. See, e.g., Powell Greenland, Hydraulic Mining in California: A Tarnished Legacy, Arthur H. Clark Co. (2001). Suction

dredging today is carefully regulated by DFG and other agencies to ensure that the overall impacts do not create any measurable negative impact.

I suggest that gold dredging should not be regulated out of existence based on speculations without documented and substantial proof of actual harm. Instead, it should be preserved by a state that owes so much of its history to mining that a miner is pictured on the Great Seal of California.

With these factors in mind, I encourage you to please weigh the negatives against the positives when you make a decision concerning a renewal of your state-wide exemption for suction dredgers. Good leadership and responsibility to Californians require State agencies to take an honest look at the costs and benefits of the various policies which are being considered.

In this case, if you choose to not renew the state-wide water quality exemption for suction dredgers, you will eliminate an entire industry in this State; an industry which does a great deal to help support many rural communities; an industry that generates millions upon millions of dollars in income for California -- and would continue to do so for the foreseeable future. I hope you will carefully consider what will be gained before you destroy an industry.

Very truly yours,

R. Dabney Eastham

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