

WHEREAS, Joseph C. Greene, a retired Research Biologist from the United States Environmental Protection Agency stated in a letter dated June 6, 2007, to the California State Water Resource Control Board that suction dredging moves a miniscule amount of in-stream material such as sand, gravel and silt compared to any high water event in a given year and has little if any negative effects on our rivers and streams; and

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Subject: SUCTION DREDGE MINING

Dear Board Members,

Thank you for allowing me this opportunity to comment on the water quality aspects of small-scale suction dredge mining.

As I have searched the scientific literature for studies on the effects of small-scale suction dredge mining on the environment I have learned that the preponderance of the published research studies have been directed towards assessment of its effect on the biology of the streams and rivers. In nearly every instance the results have concluded that the effects were less than significant.

In water quality terms some studies have discussed turbidity, water temperature, and suspension of heavy metals into the overlying water. I will focus my water quality comments on these three areas. But first I would like to put this issue in to perspective.

GEOGRAPHICAL SCALE OF SMALL-SCALE SUCTION DREDGING

It has been observed that environmentalists opposing suction dredging use data gleaned from reports that studied effects of environmental perturbations that are occurring on a system-wide basis. For example, they would characterize the affects of turbidity from a suction dredge as if it would impact downstream organisms in a manner that system-wide high water flow events might. This approach is entirely inconsistent with the way in which suction dredges operate or generally impact their downstream environment.

The California Department of Fish and Game (1997) described typical dredging activities as follows' "An individual suction dredge operation **affects a relatively small portion of a stream or river.** A recreational suction dredger (representing 90-percent of all dredgers) may spend a total of four to eight hours per day in the water dredging an area of 1 to 10 square meters. The average number of hours is 5.6 hours per day. The remaining time is spent working on equipment and processing dredged material. The area or length of river or streambed worked by a single suction dredger, as compared to total river length, is relatively small compared to the total available area."

In the Oregon Siskiyou National Forest Dredge Study, Chapter 4, Environmental Consequences, some perspective is given to small-scale mining. "The average claim size is 20 acres. The total acreage of all analyzed claims related to the total acres of watershed is about **0.2 percent**. The average stream width reflected in the analysis is about 20 feet or

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less and the average mining claim is 1320 feet in length. The percentage of land area within riparian zones on the Siskiyou National Forest occupied by mining claims is estimated to be only *0.1 percent*." The report goes on to say, "Over the past 10 years, approximately 200 suction dredge operators per season operate on the Siskiyou National Forest" (SNF, 2001).

A report from the U.S. Forest Service, Siskiyou National Forest (Cooley, 1995) answered the frequently asked question, "How much material is moved by annual mining suction dredge activities and how much does this figure compare with the natural movement of such materials by surface erosion and mass movement?" The answer was that suction dredges moved a total of 2,413 cubic yards for the season. Cooley (1995) used the most conservative values and estimated that the Siskiyou National Forest would move 331,000 cubic yards of material each year from natural causes. Compared to the 2413 (in-stream) cubic yards re-located by suction mining operations the **movement rate by suction dredge mining would equal about 0.7% of natural rates**.

It has been suggested that a single operating suction dredge may not pose a problem but the operation of multiple dredges would produce a cumulative effect that could cause harm to aquatic organisms. However, "No additive effects were detected on the Yuba River from 40 active dredges on a 6.8 mile (11 km) stretch. The area most impacted was from the dredge to about 98 feet (30 meters) downstream, for most turbidity and settleable solids (Harvey, B.C., K. McCleneghan, J.D. Linn, and C.L. Langley, 1982). In another study, "Six small dredges (<6 inch dredge nozzle) on a 1.2 mile (2 km) stretch had no additive effect (Harvey, B.C., 1986). *Water quality was typically temporally and spatially restricted to the time and immediate vicinity of the dredge* (North, P.A., 1993).

A report on the water quality cumulative effects of placer mining on the Chugach National Forest, Alaska found that, "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).

The California Department of Fish and Game stated in its Draft Environmental Impact Report that "Department regulations do not currently limit dredger densities but the activity itself is somewhat self-regulating. Suction dredge operators must space themselves apart from each other to avoid working in the turbidity plume of the next operator working upstream. *Suction Dredging requires relatively clear water to successfully harvest gold*" (CDFG, 1997).

Management of the Fortymile River region (a beautiful, wild and scenic river in the remote part of east-central Alaska) and its resources is complex due to the many diverse land-use options. Small-scale, family-owned gold mining has been active on the Fortymile since the "gold rush" days of the late 1880's. However, in 1980, the Fortymile River and many of its tributaries received Wild and Scenic River status. Because of this status, mining along the river must compete with recreational usage such as rafting, canoeing, and fishing.

A press release from the U. S. Geological Survey stated, in part, the following, "The water quality of the Fortymile River-a beautiful, ...has not been adversely impacted by gold placer mining operations according to an integrated study underway by the U.S. Geological Survey and the Alaska Department of Natural Resources.

Violation of mining discharge regulations would close down the small-scale mining operations. No data existed before this study to establish if the mining was degrading the water quality. However, even with the absence of data, environmental groups were active to close down mining on the river citing unsubstantiated possible discharge violations.

This study has found no violations to date to substantiate closure of the small-scale mining operations. The result is a continuance of a way of life on the last American frontier." (U.S. Geological Survey October 27, 1998). I have no doubt that this is the real issue currently facing small-scale gold suction dredgers in California.

Suction dredges do not add pollution to the aquatic environment. They merely re-suspend and re-locate the bottom materials (overburden) within the river or stream.

I hope this scientific research information I have provided will be helpful in your efforts regarding suction dredge mining and water quality. I thank you for this opportunity to submit this data.

Respectfully Yours,

Joseph C. Greene
Research Biologist, U.S. EPA Retired

LITERATURE CITED

- CDFG, 1997. draft Environmental Impact Report: Adoption of Amended Regulations for Suction Dredge Mining. State of California, The Resource Agency, Department of Fish and Game
- Cooley, M.F. 1995. Forest Service yardage Estimate. U.S. Department of Agriculture, U.S. Forest Service, Siskiyou National Forest, Grants Pass, Oregon.