commentletters - Comment Letter-Suction Dredging

From: "John Oates" <jro@shasta.com@shasta.com>
To: <commentletters@waterboards.ca.gov>
Date: 6/21/2007 1:19:57 PM
Subject: Comment Letter-Suction Dredging

Distinguished Board Members,

I have studied the workshop records from many sources concerning dredging effects on water quality. I am extremely perplexed by the boards stance on a minimus impact issue as catorgized by the EPA, CDFG,Forest Service, and many other prestigeous institutions.

I am led to believe that the Board has not filed for a Army Corp discharge permit in 7 years and the board views all permits issued hence illegal? The Army has published their own study,in the early 90's that finds suction dredging recreationally has a de minimus impact on water quality. They mitigated requirements back in 1992 as being a moot point in the licence process.

The California CDFG EIR in 1994 states specifically that suction dredging is an important tool in the fight to loosen up impacted gravels and substrates to facilitate spawning. In committee in 1993 the CDFG biologists wanted dredgers to assist on numerous projects to remobilize the streambeds for sucessful spawning.

The Forest Service Study on Yardage Movement in Siskiyou County proves that the miners have a impact,of less than 1 year, in a worse possible scenario ,of less than 0.007%.

Mercury hysteria seemed to be the prevelent gripe against the miners dredging. This is based on a secret unnamed so called biological study that was NEVER disclosed. ABSURD is the only word to describe this ascertation.
The EPA statement attached is proof of that ascertation being absurd. Also included are the Oregon DEQ on mercury collection by miners, 150 lbs in 2 years. Washington state also has collected over 75 pounds of mercury in February of this year.

I am a chemical engineer licenced in the past by many states and federal agencies for the regulatory purposes of handling, storing, removal and treatment of hazardous materials. This mercury must be removed and recycled to delete it from the biological chain of contamination.

Mercury removal is imperative as annual scour redistributes the chemical haphazardly and reintroduces it into the living chain of animals. Invertabrates,mollusks, and fish all injest the newly distributed mercury and in the food chain are in turn eaten by larger creatures. The chemical is not excreated but builds up in the larger animals and are eaten by man or larger land animals. Dredging is the absolutely ONLY way to successfully remove this contaniment.

We dredgers are the smallest user group by far and are targeted for extinction by the rich lobbyist special interest groups. I have served on MANY dozens of standing committees within the CDFG,BLM,Forest Service, Cantara Spill, Trinity River Restoration and on for weeks in over 40 years. Every committe has a faction that wants to elimate another users groups right to use our public lands.

Give us our permits and let the CDFG do there job.

Respectfully,
John R.Oates
424 Red Cedar Drive
Redding, Ca., 96003

klamathbasincrisis.org

California Environmental Analysis of Suction Dredging

11/11/06

The State of California explained in its environmental analysis of suction dredging:

"In streams carrying heavy sediment loads, the substrate often becomes compacted. The result is a highly-embedded and nearly 'cement-hard' substrate which provides poor fish spawning and rearing conditions. Suction dredging in such stream areas may break up compacted substrate and mobilize the fines . . .". (See MER40.)

This study corroborated the findings of numerous prior cumulative impact studies. (*See, e.g.*, MER24 ("The only attempt to measure cumulative effects of dredging on fish and invertebrates (Harvey 1986) suggested that a moderate density of dredges does not generate detectable cumulative effects"); MER30 (thirty-five years of personal observations); MER32 (six 6" dredges on 2 km stream and 40 dredges on 11 km stretch "had no additive effects"); MER33 (no cumulative effects from twenty-four 3" to 6" dredges along 15 km stretch); MER34-35(California state EIS finds no significant effects); MER36 (U.S. Army Corps of Engineers study provides "official recognition of what suction dredgers have long claimed: that below a certain size [4 inches], the effects of suction dredging are so small and so short-term as to not warrant the regulations being imposed in many cases", finds *de minimus* impact on aquatic resources).

EPA

Mercury Recovery from Recreational Gold Miners

The Challenge:

Looking for gold in California streams and rivers is a recreational activity for thousands of state residents. Many gold enthusiasts simply pan gravels and sediments. More serious recreational miners may have small sluice boxes or suction dredges to recover gold bearing sediments. As these miners remove sediments, sands, and gravel from streams and former mine sites to separate out the gold, they are also removing mercury.

This mercury is the remnant of millions of pounds of pure mercury that was added to sluice boxes used by historic mining operations between 1850 and 1890. Mercury is a toxic, persistent, and bioaccumulative pollutant that affects the nervous system and has long been known to be toxic to humans, fish, and wildlife.

The Solution:
Taking mercury out of streams benefits the environment. Efforts to collect mercury from recreational gold miners in the past however, have been stymied due to perceived regulatory barriers. Disposal of mercury is normally subject to all regulations applicable to hazardous waste.

In 2000, EPA and California's Division of Toxic Substance Control worked in concert with other State and local agencies to find the regulatory flexibility needed to collect mercury in a simple and effective manner. One approach was to add mercury to the list of materials that are collected at regularly scheduled or periodic household hazardous waste collection events sponsored by local county agencies.

Another mercury collection approach was to set up collection stations in areas where mercury is being found by recreational miners.

The Results:
In August and September, 2000 the first mercury "milk runs" collected 230 pounds of mercury. Not only was mercury received from recreational gold miners, but others such as retired dentists. The total amount of mercury collected was equivalent to the mercury load in 47 years worth of wastewater discharge from the city of Sacramento's sewage treatment plant or the mercury in a million mercury thermometers. This successful pilot program demonstrates how recreational gold miners and government agencies can work together to protect the environment.

Land Quality

Mercury Information

- Waste Prevention and Reduction
- Waste Recovery and Compost
- Safe Disposal
- SW Snippets
- Resources
- Education

Free Mercury Collection Program

To reduce harmful exposure to mercury, DEQ and local household hazardous waste programs collect mercury and mercury-containing devices from Oregon residents free of charge. Here's how the program works:

From your home

- **Participating collection programs**
  If you have elemental mercury or mercury-containing devices at home, you can take them free of charge to a household hazardous waste (HHW) facility or collection event. Statewide HHW programs are listed here:
  - Locally Sponsored Household Hazardous Waste Services, By County
- **Free home pick-up**
  If there is no household hazardous waste disposal program available in your county or nearby counties, call the DEQ solid waste technical assistance staff member in the nearest DEQ regional office regarding free pick-up of mercury from your home by a DEQ hazardous waste contractor. To be eligible for free pick-up of mercury, you must meet the following criteria:
  1. Mercury must be in the elemental (liquid) form.
  2. There must be at least 3 pounds of mercury to be picked up (about ½ cup). If you have less than 3 pounds, DEQ may be able to pick it up in special circumstances (call DEQ regional office to check on this).
  3. You must be willing to hold on to the mercury and store it safely until the DEQ contractor is available to pick it up.

From a business or other non-household source (CEGs, including schools)

A conditionally exempt generator (CEG) creates less than 220 pounds of hazardous waste and 2.2 pounds of acutely hazardous waste per calendar month and does not accumulate more than 2,200 pounds of hazardous waste (2.2 pounds of acutely hazardous waste) at one time.

Forest Service Yardage Estimate

United States Department of Agriculture
Forest Service
Siskiyou National Forest
200 NE Greenfield Road
Grants Pass, OR 97526-0242

Reply to: 2800
Date: October 16, 1995

Subject: A comparison of stream materials moved by mining suction dredge operations to the natural sediment yield rates

To: The Record

A question that has frequently been asked is how much material is moved by annual mining suction dredge activities on the Siskiyou National Forest and how does this figure compare with the natural movement of such materials by surface erosion and mass movement? At the conclusion of the 1995 summer suction dredge season, the responsible minerals personnel on each Ranger District of the Siskiyou National Forest were asked to make a quantitative estimate of the number of cubic yards of material that was moved over the season by suction dredge operations. The estimates were based on on-the-ground observations carried out over the summer. Quantities of moved material ranged from 23 to 1920 cubic yards per district with a Forest total of 2413 cubic yards for the season.

Three documents were examined to determine a reasonable estimate of natural sediment yield rates. A published 1985 study by Michael P. Ainaranthus et al entitled "Logging and Forest Roads Related to Increased Debris Slides in Southwestern Oregon" found that natural erosion rates for debris slides in the Klamath Mountains of southwest Oregon averaged about 0.5 cubic yards per acre per year. This same study found that erosion rates on roads and landings were 100 times those on undisturbed areas, while erosion on harvested areas was seven times that of undisturbed areas. In another study (unpublished) done in 1988 by Jon Vanderheyden et al entitled "Siskiyou National Forest Silver Fire Recovery Process Paper", surface and channel erosion rates were estimated and then an estimate of total natural erosion rates was made by summing a debris slide rate with surface and channel rates. The debris slide rate was developed for the Siskiyou National Forest from an inventory that examined landslide activity between 1956 - 1976 on 137,000 acres of the Forest. This 1985 study estimated that baseline sediment yield (total natural erosion rate) in the Silver Creek basin averaged about 14.2 tons per acre per decade. For the Indigo Creek basin sediment

yield averaged 8.0 tons per acre per decade. Putting these figures on an annual basis and using a generally accepted average of 1.5 tons per cubic yard of material would produce sediment yields of 0.95 and 0.53 cubic yards per acre per year for Silver and Indigo Creeks respectively. The Siskiyou National Forest Land and Resource Management Plan of 1989 estimated that the average natural sediment yield rate for the Forest from both mass movement and surface erosion was 0.5 tons per acre per year. This figure equals about 0.33 cubic yards per acre per year and is the most conservative of the natural sediment yield figures found in the literature readily available.

There are 1,092,302 acres on the Siskiyou Natural Forest. Using a factor of 0.33 cubic yards per acre per year times 1,092,302 acres will produce a very conservative estimate that 331,000 cubic yards of material move each year from natural causes compared to the 2413 cubic yards that was moved by suction dredge mining operations in 1995 on the Siskiyou. This would be a movement rate by suction dredge mining that equals about 0.7% of natural rates.

/s/ Michael F. Cooley
MICHAEL F. COOLEY
Recreation, Lands and Minerals Staff Officer, Siskiyou National Forest

VII. EFFECT ON SPAWNING GROUNDS

A. By: Dr. Henry Baldwin Ward

"Normally the fish cover the eggs by a layer of sand or fine gravel; the fresh water carrying oxygen easily penetrates this cover and the young wriggle out after the eggs hatch. A thin, broken layer such as I have already described would not interfere with the permeation of fresh water with oxygen and the development of such eggs as might be present. But I am clear that this is not a true spawning area. As Mr. Joseph Wharton said in an admirable paper on the salmon of the Rogue River, "It is the ambition of all these species of anadromous fish to ascend the river to the highest point attainable before making their spawning beds, seeking the waters that are purest and coldest." This statement is absolutely correct; In difficult streams or when held behind man-made barriers, these fish struggle to the end to make their way upstream and will sacrifice life rather than accept spawning areas in the lower reaches of the river. The urge which drives them on is the basis for the safety of the race. For the straggler or the weakling who may find the achievement of headwaters impossible, an enforced spawning in the lower river is of no significance; the river level varies too widely and its current at full flood is too fierce. Eggs deposited at high water will be exposed and die when the water falls; or if the spawning occurs at a lower water level, the next flood waters will bury the eggs or sweep them away. The suddenness, the violence and the irregularity of the changes in water level of the Rogue are conspicuous in the records of every year."

B. By: Thomas J. Hassler, William L. Somer, Gary R. Stern

"Dredge tailings are often referred to as good salmonid spawning substrate. In the Trinity River, chinook salmon have been observed spawning in the tailing piles of suction dredges (E. Miller pers. comm.). Steelhead in Idaho streams have been reported to spawn in gravels recently disturbed by human activities (Orcutt et al. 1968). In the American River , Prokopovich and Nitzberg (1982) have shown salmon

spawning gravels have mostly originated from old placer mining operations."

"Anadramous salmonids held and spawned in Canyon Creek in close proximity to suction dredge activity.
During the 1984-1985 spawning season, fall-run chinook salmon, coho salmon and steelhead spawned in
areas actively dredged during the 1984 dredge season (fig.). In August 1985, spring-run chinook salmon
and summer-run steelhead were holding near areas where suction dredges were being operated (fig. 23).
During the 1985 spawning season, fall and spring-run chinook salmon spawned in areas actively dredged
during the 1985 dredge season (fig. 24)."

C. By: Gary R. Stern - 1988

"Suction dredge mining did not appear to influence the locations of adult anadramous salmonid
summer-holding areas. One spring-run chinook salmon was observed 50 m below an operating dredge and a
summer-run steelhead was seen at the upper end of a 30 m-long pool while a dredge was operating at the
lower end. Seven other adult salmonids were observed within 250 m of an active dredge operation and
none appeared to be disturbed by mining activities. During a 1980 diving survey by Freese (1980), an adult
spring-run chinook salmon was observed holding at the bottom of an abandoned dredge hole in Canyon
Creek and other adult salmonids were found in close proximity to active dredges. No relation between
holding areas of spring/summer-run fish and suction dredge mining operations was apparent during this
study or in 1980 (L. Freese pers. comm.)."

VIII. CHANGES IN THE STREAM BED

A. By : Dr. Henry Baldwin Ward

"To be sure no one can think rightly of the stream itself as a constant environment. On the contrary it is
undergoing continual change. The amount and location of winter's snowfall, the volume and time of
seasonal rains, the duration and precise period of regional droughts, and other climatic variations produce

variations in water level, in bank erosion, in growth of grasses, underbrush and trees in the drainage basin;
thus sudden and often extreme changes in contours of the banks and surrounding country add sediments of
different types to its waters and modify the conditions under which the fish it harbors are forced to live."
Number one on the list of things that change the shape of the stream bed are DAMS!"

B. By: Thomas J. Hassler, William L. Somer, Gary R. Stern - 1986

"However during the suction dredge mining process, a new pool area is created by the cone shaped dredge
hole. Dace, suckers and juvenile steelhead were observed feeding and resting in Canyon Creek dredge
holes. Freese (1980) observed a small spring-run chinook salmon holding in a dredge-created pool on
Canyon Creek".

"The majority of suction dredge operators in canyon creek did not work long periods or disturb large areas
of the streamed. Dredging impacts upon the channel geomorphology were confined to the area dredged and
the area immediately down stream."

"Winter and spring flushing flows filled in dredge holes and dispersed tailing piles." "Coho salmon and
steelhead juveniles appeared to rear normally in the creek and were observed using dredge holes in the
summer. Steelhead juveniles received the greatest exposure to dredging activity as they rear in Canyon
Creek up to three years, but their feeding, growth and production did not seem to be impacted at the
current level of dredge activity."

C. By: Somer and Hassler - 1992

"The effects of the two dredges on aquatic insects varied with taxa and were site specific. Dredging
dislodged insects, and we observed young coho salmon and steelhead feeding on them. The stream
underwent major but localized changes. Dredge hole were excavated to a depth of 2 m, and substrate was
altered to bedrock and large cobbles-probably a poor habitat for colonization. However, the effects of

dredging (at the operating level during the study) on insects and habitat were minor compared with those of bed-load movement due to large stream flows during storms and from snowmelt."

D. By: Gary R. Stern - 1988

"Lewis (1962) was the first to investigate the effects of the portable suction gold dredge on the aquatic habitat of fish and benthic invertebrates. He operated a 12.7 cm aperture dredge in Clear Creek, Shasta County, California and found that dredging could improve the intergravel environment for both fish eggs and benthos if the stream was mined in a uniform manner."

"If dredge mining regulations were expounded upon and miners were made aware of the instream habitat needs of salmonids, the most serious impacts of suction dredge mining could be reduced. Suction dredgers may even be able to enhance certain areas of the channel for rearing and spawning fish, if some of the limiting factors of a reach of stream are identified (ie. cover, woody debris, low velocity refuges, clean gravels). In Canyon Creek, current CDFG suction dredge regulations eliminate conflicts with salmonid spawning, incubation, and fry emergence by restricting mining to summer months. The 15.24 cm maximum aperture size for dredges is appropriate since stream substrate is large, but larger apertures may be too disruptive in the small channel."

E. By: Robert Lewis, Pollution Bioanalyst III

Results of Gold Suction Dredge Investigation;

"Table 1 lists stand pipe results. The site average indicates an improvement from dredging of 1 p.p.m. in DO and a threefold improvement in permeability and velocity. As indicated above, dredged sand settled within 12 feet of the sluice outflow. This occurrence tends to somewhat nullify removal of sediment, but dredged areas are definitely relieved of compaction. As a gross measure, the standpipe was much easier to drive in the dredged area. As evidenced by photographs the gravel appears much cleaner after dredging. Weighing

all factors, dredging can improve the gravel environment for both fish eggs and aquatic insects, especially if
the operator mined uniformly in one direction as opposed to a pocket and pile method."

F. By: Phillip A. North - 1993

"The four studies that I reviewed from journals subject to peer review consistently found that when certain
limitations are placed on suction dredge activity the impacts on the stream ecosystem are local and of
short duration."

G. By: Bret C. Harvey - 1986

"Fish and invertebrates displayed considerable adaptability to dredging, probably because the streams
naturally have substantial seasonal and annual fluctuations (Moyle et al. 1982). These fluctuations, in the
form of flushing winter flows, can greatly reduce the long term impact of dredging. Even during the
relatively mild winter of 1980/81, high flows still filled the hole created by dredging on NFAR with a sand and
gravel mixture and eliminated all sand from the main streamed. After the high flows in winter and spring of
1981/82, no substrate changes caused by dredging in the previous summer were evident on Butte Creek.
Saunders and Smith (1965) observed a quick recovery in the trout population after scouring of a heavily
silted stream, which, along with the quick temporal recovery of stream insects seen in this study, implies
that suction dredging effects could be short-lived on streams where high seasonal flows occur."

IX. TEMPERATURE

A. By:Thomas J. Hassler, William L. Somer, Gary R. Stern - 1986

"and dredge mining had little, if any, impact on water temperature."

X. TURBIDITY

A. By: Dr. L. E. Giiffin

"When the test ended on Dec. 30, it was found that a much larger proportion of the fish

Water quality was impacted only during the actual operation of a suction 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.

B. By: Gary R. Stern - 1988

"Turbidity plumes below suction dredges are often markedly visible due to extremely low ambient turbidity levels in mountain streams. The extent of the plume depends on the grain size and volume of the material passing through the dredge. Horizons of silt-laden substrate were disturbed at all dredge sites in Canyon Creek and created highly visible turbidity plumes."

"Although distinct to even the most casual observer, dredge plumes in Canyon Creek were probably of little direct consequence to fish and invertebrates. Suspended sediment concentrations of 20,000 to 100,000 mg/l which impact fish feeding and respiration (Cordone and Kelly 1961) greatly exceed the highest level of 274 mg/l measured in Canyon Creek. In general, dredge turbidity plumes were highly localized and occurred during midday which is not a peak feeding period for steelhead (Moyle 1976). Laboratory studies by Sigler et al. (1984) found that steelhead and coho salmon preferred to stay in channels with clear water, and turbidities as little as 25 NTU's caused a reduction in fish growth. In contrast to Sigler's results, young steelhead in Canyon Creek appeared to seek out dredge turbidity plumes to feed upon dislodged invertebrates even though clear flowing water was available nearby."

C. By: Phillip A. North - 1993

"Most water quality studies of the effects of suction gold dredges on streams have focused on turbidity and suspended sediments. These studies have, with some exceptions, largely found that water quality is impacted for a distance downstream of the dredge ranging from a few meters to 30 meters."

"However, Huber and Blanchet (1992) found no evidence of cumulative impacts of

mining on water quality
in streams of the Chugach National Forest in Alaska. They monitored streams in the Forest over a period of
three years and found no noticeable impact to water quality associated with suction dredges. All of the
studies that I surveyed came to the same conclusion: suction gold dredging had localized and short term
impacts. Caveats must be taken into account when coming to this conclusion:

All of these studies, except one involved small dredges, 6 inches or less. The one study that involved a
larger dredge reported only a small amount of data. Five water samples were taken 500 feet below a six
inch dredge and one sample was taken 500 feet below an 11 inch dredge."

D. By: The U.S. Environmental Protection Agency - 2001

"In the 1997 permit, EPA defined a small suction dredge as those with nozzles less thar or equal to four
inches. EPA is proposing to redefine the small suction dredge range as less than or equal to six inches.
Information provided in EPA's suction dredge study and the United States Geological Survey (USGS) study
support the conclusion that there are local but short term effects on both water quality and
macroinvertebrate communities in the mining areas. On the Fortymile River, dredges larger than those
proposed under this GP showed that turbidity was reduced to background levels within 250 feet. It is
expected that small dredges would have even less impact on the downstream receiving water quality."

XII. REFERENCES

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