



California Regional Water Quality Control Board

Santa Ana Region



Linda S. Adams
Acting Secretary for
Environmental Protection

3737 Main Street, Suite 500, Riverside, California 92501-3348
Phone (951) 782-4130 • FAX (951) 781-6288
www.waterboards.ca.gov/santaana

Edmund G. Brown Jr.
Governor

May 10, 2011

Mark Stopher
Suction Dredge Program Draft SEIR Comments
California Department of Fish and Game
601 Locust Street
Redding, CA 96001

DRAFT SUBSEQUENT ENVIRONMENTAL IMPACT REPORT FOR CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REVIEW, SUCTION DREDGE PERMITTING PROGRAM - CALIFORNIA DEPARTMENT OF FISH AND GAME, REDDING OFFICE

Dear Mr. Stopher:

Staff of the Regional Water Quality Control Board, Santa Ana Region (Regional Board) have reviewed the Draft Subsequent Environmental Impact Report (DSEIR) for the proposed "Suction Dredge Permitting Program" (Project) that is to be implemented statewide by the California Department of Fish and Game (CDFG). The DSEIR is a court-ordered environmental review assessing potential impacts of suction dredge mining operations within streams and lakes, as well as proposed amendments to related CDFG regulations. The current moratorium on suction dredge mining and on CDFG-issued permits, established in 2009 by Senate Bill 670, will remain in effect until the DSEIR review and any updates to the regulations have been completed.

The Regional Board has permitted large scale suction dredge operations in lakes, bays, estuaries, and nearshore coastal waters for projects to mine aggregate, maintain navigation, and conduct environmental restoration. We understand that projects of this type would not be prohibited by the moratorium or addressed by this DSEIR. However, Board staff recognizes that suction dredge mining operations could occur in streams and lakes in the San Gabriel and San Bernardino Mountains that are partly within the Regional Board's jurisdiction.

Regional Board staff concur with the DSEIR (Executive Summary ES-17) that the CEQA Environmentally Superior Alternative (and our preferred alternative) is the "No Program Alternative," which would continue the moratorium on suction dredge mining for an indefinite period. This in-stream method of mining (defined in ES-4 and 5) causes gross and indiscriminate disturbance to the stream or lake bottom available to the suction dredge operator, summarily upsetting, removing, and/or destroying the benthic habitat and ecology of the stream segment or area of lake being worked.

Board staff recognizes that suction dredge mining mobilizes fine sediment and causes it to become dispersed in the receiving water. Unless controlled, fine sediment dispersed in this manner causes undesirable sedimentation adjacent to and/or downstream of the area being worked, to the detriment of the benthic environment beyond the dredge site. Excessive sediment and turbidity, and in areas of historic mining, elevated levels of suspended metals,

elemental mercury and methylmercury formation, are reported downstream of suction dredge mining operations, and are cited by the DSEIR (ES-11, -12, -14) as being significant and unavoidable impacts. At suction dredging sites, dams and other diversions are commonly created by the operators to float dredges and otherwise facilitate their operations, contributing to the discharge of these pollutants.

The conditions described above will cause or contribute to violations of the water quality standards (water quality objectives and beneficial uses) specified for the waters affected by suction dredging activity. Beneficial uses recognized in the Water Quality Control Plan for the Santa Ana River Basin, 1995, as amended (Basin Plan) that are likely to be adversely impacted by suction dredge mining include:

- COLD (cold fresh water habitat);
- WARM (warm fresh water habitat);
- SPWN (waters that support high quality aquatic habitat for reproduction and early development of fish and wildlife);
- RARE (waters that support habitat necessary for the survival and maintenance of plants or animal species designated as rare, threatened or endangered);
- WILD (waters that support wildlife habitats);
- REC1 (water contact recreation); and
- REC2 (non-contact water recreation).

Basin Plan water quality objectives that may be violated as a result of suction dredge mining in the Santa Ana Region include:

Excessive algal growth	Coliform Bacteria
Color	Floatables
Dissolved Oxygen	Suspended and Settleable Solids
Sulfides	Turbidity
Metals	Nutrients
Toxic substances	

Both the California Porter-Cologne Water Quality Control Act and the Federal Clean Water Act strive to protect water quality standards. If suction dredge mining cannot be carried out in a manner that assures no significant impacts to water quality standards, Regional Board staff opposes it. Furthermore, Staff believes that if suction dredge mining is allowed, it should be regulated appropriately, including water quality permitting. However, unless the Regional Board is provided with sufficient resources to comprehensively administer and enforce a suction dredge mining permit program to protect water quality, our preference is a Program alternative that does not allow suction dredge mining.

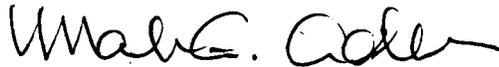
We believe the "No Program Alternative" is superior to the DSEIR's three other Programmatic Alternatives:

- "1994 Regulations Alternative," which returns the situation to pre-moratorium regulations;
- "Water Quality Alternative," which closes dredging in water bodies that are listed under CWA Section 303(d) as impaired for sediment and mercury; and
- "Reduced Intensity Alternative," which would restrict both permits issued and certain methods of operations.

However, ES-17 states that with the "No Program Alternative" selected as the Environmentally Superior Alternative, another action alternative still must be selected (or created) for DSEIR consideration. The Regional Board listing process, pursuant to CWA Section 303(d), will not be able to evaluate all Region 8 water bodies subject to the potential dredging permit program prior to action on the DSEIR. Only two water bodies in the mountainous parts of the Santa Ana Region where suction dredge mining is most likely to occur are currently 303(d)-listed for either mercury or sediment. Therefore, of the action alternatives presented, we prefer the Reduced Intensity Alternative among those alternatives presented, because it offers uniform operational control measures for all water bodies, and as such, the lowest potential to cause or contribute to violations of water quality standards.

If you have any questions, please contact Glenn Robertson of my staff at (951) 782-3259, or grobertson@waterboards.ca.gov, or me at (951) 782-3234, madelson@waterboards.ca.gov

Sincerely,



Mark G. Adelson, Chief
Regional Planning Programs Section

Cc: State Clearinghouse
U.S. Army Corps of Engineers, Los Angeles – Jason Lambert
State Water Resources Control Board – Rick Humphreys
RWQCB-6, Victorville – Patrice Copeland
California Dept. of Fish and Game, Redding Office – dfgsuctiondredge@dfg.ca.gov
California Dept. of Fish and Game, Inland Deserts Office Ontario – Jeff Brandt

X:Groberts on Magnolia/Data/CEQA/CEQA Responses/ SEIR – California Dept. of Fish and Game – Suction Dredge Program-MGA2.doc

SUCTION DREDGE PERMITTING PROGRAM
Draft Subsequent Environmental Impact Report (DSEIR)
Comment Form

Name:	James D. Shieve
Mailing Address:	12294 Larch Rd
	Tracy CA 95304
Telephone No. (optional):	209 835 1357
Email (optional):	Squid J @ SBC Global.net

Comments/Issues:

I disagree with the Dredging Permit Program that is now under discussion.

As a nurse, I'm also a fisherman and I have had to dredge during the spawning of these snail runs!

No dredging in Calif is costing me income!

James D. Shieve

Please use additional sheets if necessary.

SUBMIT WRITTEN COMMENTS (POSTMARKED BY 05/10/11) TO:

Mail: Mark Stopher
 California Department of Fish and Game
 601 Locust Street
 Redding, CA 96001

Email: dfgsuctiondredge@dfg.ca.gov

Fax: (530) 225-2391



May 10, 2011

Mark Stopher
 Department of Fish and Game
 601 Locust St.
 Redding, CA 96001

Re: The Sierra Fund Comments on the draft Supplemental
 Environmental Impact Report for Suction Dredge Mining

432 Broad Street
 Nevada City, CA 95959
 P: 530.265.8454
 F: 530.265.8176
 E: info@sierrafund.org
www.sierrafund.org

Dear Mr. Stopher:

Thank you for this opportunity to comment on the draft Supplemental Environmental Impact Report (DSEIR, or the Document) on suction dredge mining and the draft proposed regulations for suction dredge mining. As you know, we served as members of the Public Advisory Committee and have provided comments to your agency regarding the scope of this review in the past.

This letter includes observations and recommendations from Dr. Carrie Monohan who earned a Ph.D. in Forest Engineering and Hydrology in 2004 from the University of Washington, Seattle. Dr. Monohan is The Sierra Fund's Mining Project Science Director and has worked with city, state and federal agencies as a consulting scientist with special expertise in the impacts of legacy mercury in Sierra watersheds. My credentials include serving on the Nevada County Planning Commission for two terms and one term on the Nevada County Board of Supervisors. In this capacity I have analyzed and voted on the adequacy of both project and program environmental impact reports.

The Sierra Fund agrees in whole with the collaborative letter submitted by the Karuk Tribe. In addition, we are providing these comments reflecting our expertise with mercury and legacy mining issues.

Our comments focus on several issues where we believe the document is not adequate for decision making and provide numerous suggestions on how to improve the quality of the document in order to increase protection for California's natural resources. For convenience we have numbered our comments, as follow:

Comment #1: The Document does not explain why the Proposed Program is chosen as the preferred alternative over the Environmentally Superior Alternative. This is the document's most significant flaw because it fails to meet the requirements of the California Environmental Quality Act (CEQA) for a sufficient Environmental Impact Report. The DSEIR does present alternatives for review, however, it chooses as its Proposed Program an entirely different alternative. The Proposed Program is presented as a list of regulations. A more common presentation is for all alternatives to be presented, described and evaluated and then a choice among those proposed programs is made, and a reason for that choice is carefully described.

Instead, the DSEIR provides a summary evaluation of the four named alternatives (No Project, 1994 Regulations Alternative, Water Quality Alternative and Reduced Intensity Alternative) for their feasibility to achieve the program objectives while avoiding or minimizing impacts identified in the Proposed Program. The DSEIR evaluates these four alternatives and determines that the environmentally superior alternative is the "Reduced Intensity Alternative." The DSEIR identifies this alternative as viable and able to significantly reduce impacts of the Proposed Program – and then is silent on why this alternative is rejected in favor of the Proposed Program regulations with its many known and significant unmitigable impacts.

Without a careful discussion of why the viable and environmentally superior alternative program was not chosen, this document does not meet the test of sufficiency under CEQA.

Recommended Action: The document needs to be rewritten to make the alternatives discussion more coherent, with more qualitative and quantitative data on the comparison between the alternatives. The document needs to select the most environmentally protective alternative if it is found to be viable.

Comment #2: The document relies on a definition of "deleterious to fish" that is not consistent with California law or legislative intent in directing funds for development of the DSEIR. The DFG asserts that its authority to regulate suction dredging is limited entirely to its mandate under Fish and Game Code Section 5653 and that DFG must allow the activity if it determines that suction dredging is not "deleterious to fish," even if it causes significant and unmitigable impacts to vital California resources other than fish.

DFG defines an impact deleterious to Fish, for purposes of section 5653, as "one which manifests at the community or population level and persists for longer than one reproductive or migration cycle." This assertion is in direct contradiction to both the common dictionary use of the word "deleterious" and the legal definitions used by the legislature in 1961 when the first California statute regulating suction dredge mining, Fish and Game Code Section 5653, AB 1459 (Arnold) was enacted.

In his letter to the governor requesting a signature on the bill, Assemblyman Arnold stated that dredging should be done so to cause only "minimal damage" to fish, from which he specifically excluded disturbing eggs, disturbing fish food organisms and stirring up silt to cause an "aesthetic problem" and cover eggs. The Legislative Analyst's Office analysis of AB 1459 in 1961 noted "the department must then determine whether the operation will be safe for fish life and if so it will issue a permit to the applicant." In a letter to the Governor requesting his signature on AB 1459 DFG stated, "The department shall issue a permit if it is judged that no damage will occur to *fish, aquatic life, and the aquatic environment.*" So in information on which the Governor based his decision to sign AB 1459 into law, "not deleterious to fish" meant "no damage" to "fish, aquatic life and the aquatic environment." In the handful of bills since 1961 affecting this section, no legislation

has ever used a term other than "deleterious to fish" nor offered any other interpretation of its meaning.

Further, the definition used throughout the DSEIR of "deleterious" is in direct conflict with the requirement of the DSEIR laid out in the Executive Summary, which states the document's purpose is "to fulfill the CDFG's mission of managing California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public." This contradictory objective makes the definition of "deleterious" even more inappropriate.

The document fails to meet clearly stated legislative intent to protect fish and other natural resources as part of the suction dredge mining program by using a definition of "deleterious" that is inappropriate, inconsistent and unlawful. This renders the document insufficient as a decision-making tool under CEQA.

Recommended Action: The document needs to be re-drafted using a common sense and legislatively consistent definition for "deleterious."

Comment #3: The proposed program fails to ensure that California's laws relating to water quality, historical and cultural sites, aquatic creatures and toxics are obeyed, claiming that the department does not have the jurisdictional authority in these areas. Instead, the program proposes to provide miners with a pamphlet outlining "Best Management Practices" for suction dredgers that are voluntary, even though obeying California water, health and toxic laws is not voluntary – it is required.

Most state and local government agencies that approve projects or programs must include conditions in their DSEIR's to mitigate project impacts that are outside the jurisdiction of the lead agency. In these cases the lead agency routinely requires that as part of the project implementation, the project proponent must apply for and receive whatever permits are required by the responsible agency prior to proceeding. For example, before approving a shopping mall a county can require a developer to obtain permits such as road encroachment permits from CalTrans, Army Corps permits for culverts or streambed alteration permits from CA Department of Fish and Game.

This DSEIR documents numerous, significant and unmitigable impacts of the proposed program, but fails to require either the individual miner or the Department to obtain necessary permits for the Proposed Program. For example, 56% of the miners surveyed reported that they encounter legacy mercury as a routine part of their mining operation. Mercury is a highly regulated toxic material that generally requires specialized equipment and training prior to use, handling, storing or transporting. It is not clear how a pamphlet outlining voluntary "Best Management Practices" is in any way mitigation for routinely handling such a dangerous material. It is not even clear that mercury handling protocols would be included in the proposed "Best Management Practices" pamphlet.

And, these “Best Management Practices” pamphlets are supposed to mitigate to below significance a whole host of potential impacts: from wildfires to toxic materials to human waste to endangered species to state and federal park rules. This “pamphlet” will likely be both large and unread.

The Proposed Program and DSEIR is not a sufficient document because it fails to require the Proposed Program to adopt viable measures to obey California and local laws regarding water quality, environmental health, protection of historic and cultural resources and other laws. Requiring distribution of a pamphlet on “Best Management Practices” to be adopted voluntarily is not a sufficient mitigation measure. This alone should render the Proposed Program and DSEIR an insufficient document.

Recommended Action: The regulatory program needs to require that all rules and regulations to protect water quality, ecosystems and historical and cultural sites are obeyed. A brochure suggesting voluntary actions to protect California’s resources cannot be used as a mitigation measure. Instead, the Department needs to specifically outline all the protocols and regulations that suction dredge miners must obey as part of the rule-making process. These regulations must be clearly defined and the consequences for breaking the rules must be defined as well. This includes new regulations addressing:

- Safe handling, storage, transport and disposal of mercury encountered while suction dredge mining as directed by Prop 65 and consistent with CA Department of Toxic Substances Control and State Water Resources Control Board regulations;
- Appropriate precautions to protect cultural and historical sites, including the requirements of the Native American Heritage Commission for identifying and reporting cultural sites and activities; and
- Requirements of the Clean Water Act that mandate no degradation of water quality or contamination of the state’s water.

Comment #4: This document proposes a program with significant and unavoidable impacts to water quality, specifically from mercury (*Impact WQ-4*).

The Fish and Game DSEIR chapter on Water Quality and Toxicology (Chapter 4.2) describing why there are significant and unavoidable impacts to water quality from suction dredging is one of the best summaries of data on the subject and we commend these efforts. However, the document falls down after carefully describing the impacts of mercury by ignoring these significant impacts and adopting a program that does nothing to mitigate these impacts.

The proposed program allows suction dredge mining in areas known or likely to be contaminated with mercury: Millions of pounds of mercury were released into Sierra Nevada rivers and streams during Gold Rush mining activities, one of the most environmentally destructive periods in California’s history. Today, dozens of streams and rivers in the state are listed as impaired for mercury by the

SWRCB and are included on the 303d list, many of which would have active suction dredging mining allowed on them under the proposed program. Miners admit to encountering liquid mercury in the course of suction dredge mining.

Table A included at the end of this document lists the mercury-impaired streams and rivers in the Sierra Nevada and the proposed use classification under Fish and Games Recreational Suction Dredge Mining program.

Mercury from historic mining activities likely presents a hazard in more streams than are currently 303(d) listed. Because the 303(d) listing process is data driven, it should be noted that the 303(d) listing process (described on page 4.2-11, lines 37-44) does not necessarily completely represent the actual number of impaired water bodies. In particular, water bodies in rural or remote areas where there is not an active data collection program may not be represented in the listing process as noted on page 4.2-12, lines 2-3 of the DSEIR.

As more data is collected, additional water bodies are being added to the 303(d) list. The state has completed compilation of the recommended 2010 update of the Section 303(d) list, which identifies an additional 1,464 listings that will require TMDL development, and 195 recommended delistings (SWRCB, 2010). EPA approval of the list is pending, at which point the state will have a fully adopted 2010 Section 303(d) list.

Many streams that were actively mined during the Gold Rush and have a very high likelihood of being impaired due to mercury contamination have not been tested and therefore are not listed as mercury-impaired. For the streams for which there is no information, it is reckless to propose suction dredging mining. For streams for which there is known mercury contamination it is reckless and irresponsible and illegal to propose suction dredge mining resume at these locations, and yet that is exactly what this program does.

Suction dredgers target areas with the most mercury: Suction dredge miners may target deep sediments (i.e., those too deep to be available to scour under winter flows), and thus mobilize sediment that may not be mobilized by typical winter high-flow events. Sediments in the historic gold-bearing and gold-mining areas of California that would be targeted by suction dredgers also may be elevated in mercury, compared to sediments in other non-mining areas. (page 4.2-52 line 9-12)

A handful of suction dredge miners mobilize as much mercury as an entire season of winter storms: Within areas of highly elevated sediment mercury concentrations, a single suction dredge operator using an average size (4 inch) dredge could discharge approximately 10% of the entire watershed mercury loading during a dry year over an average suction dredging time of 160 hours. By inference, the analysis indicates that larger capacity dredges or multiple dredges operating in similar sediments with highly elevated sediment mercury concentrations could potentially contribute a much larger proportion of the watershed load than 10%. (page 4.2-52 lines 23-29)

Suction dredging activities likely mobilize mercury that is highly reactive, therefore most dangerous to human health and wildlife:

Suction dredging discharge and transport of total mercury occurs primarily in the summer rather than the winter, while winter is when most background mercury is transported to reservoirs. Although the precise implications of this are not known, it is known that methylation is generally more pronounced at higher temperatures and lower oxygen environments, both of which are more likely under summer conditions than winter conditions. (page 4.2-52 lines 41-45) The increased surface area of mercury and increased potential for downstream transport will likely enhance reactivity and transport to areas favorable to methylation (i.e., downstream reservoirs and wetlands). Moreover, resuspension of sediments containing Mercury in oxygenated environments has been shown to increase levels of Mercury (II) R, which has been shown to be directly related to methylation rate. (page 4.2-52 lines 1-6)

The Proposed Program and DSEIR fail to protect the waters of the state from contamination by mercury and fail to explain why there is any public good in accepting the deterioration of California's water quality. The Department states that it has no responsibility for ensuring that laws protecting health and safety are obeyed as part of this program, and does not even explore reasonable mitigation measures to ensure such protection. This renders the document insufficient for decision making.

Recommended Action: The DSEIR needs to be re-drafted with restrictions in place forbidding any suction dredge mining in a water body that is 303(d) listed as impaired for mercury or other toxic metals, or that is otherwise known or suspected to be contaminated by naturally occurring or introduced mercury. This would include almost any water body in the historic gold country where mercury was commonly used in the 19th century. All areas that are suspected to be contaminated by mercury should be closed to suction dredging and remain closed until testing has confirmed that no mercury is present in the sediments of that stretch of water.

Comment #5: The DSEIR fails to require common sense mitigation measures to reduce problems associated with mobilizing mercury. Potential mitigation measures to reduce the impact would necessarily involve actions to avoid or limit total mercury discharge from suction dredging activities in areas containing elevated sediment mercury and/or elemental mercury. .

Recommended Action: The DSEIR and regulations need to be redrafted to limit mercury discharge by requiring the following actions:

- **Stay out of areas where there is mercury:** Identify river watersheds or sub-watersheds where sediment mercury levels are elevated above regional background levels or where elemental mercury deposits exist and establish closure areas to avoid suction dredging within these areas. No such data currently exist to comprehensively identify mercury "hot-spots"; however,

data, especially from Sierra Nevada watersheds impacted by mining, suggest that sediment mercury levels at these sites are all elevated above background levels. This action could involve a phased study to identify the presence of such areas based on intrinsic properties including proximity to mines, hydraulic and channel features, and other factors.

- **Make the nozzle small:** Limit the allowable suction dredge nozzle size and/or allowable seasonal duration of dredging activity within water bodies known to contain sediment elevated in mercury or that contain elemental mercury deposits. Although smaller nozzle sizes would still cause mercury releases when dredging mercury-enriched sediment, the amount of mercury discharged would be lower than dredging with larger nozzle sizes.
- **Special permit in hot spot areas:** Implement a special individual permit system for suction dredge operators in areas where mercury “hot-spots” exist. The permit system would be designed to require assessment of the area prior to initiation of dredging activity and issuance of terms and conditions to ensure that mercury hot-spots are identified and avoided or other provisions are implemented to ensure that the dredging activity does not result in substantial discharge of mercury downstream from the site.
- Implementation of such mitigation actions, implementation procedures, monitoring, and enforcement may reduce potential impacts. However, because not all locations of elemental mercury deposits are known, it is uncertain how feasible it would be to identify sites containing elemental mercury at a level of certainty that is sufficient to develop appropriate closure areas or other restrictions for allowable dredging activities. (page 4.2-53 and 54)

The program recommended by Fish and Game incorporates none of the above recommendations, and dredging is allowed on well-documented mercury impacted waters with an 8 inch nozzle (see table below).

Comment #6: The DSEIR presents scientific evidence to establish that suction dredge mining in waters impaired with mercury is deleterious to fish, and then makes the inconsistent finding that suction dredge mining is not deleterious to fish. As discussed below, Chapter 4.2 Water Quality and Toxicology does describe the significant and unavoidable impacts from suction dredge mining to the water quality and aquatic resources of the State of California’s streams and rivers including on fish health and the health of other aquatic organisms.

The DSEIR states that suction dredge mining where mercury is known to be present is deleterious to fish because of the effects of mercury on fish reproduction. The DSEIR finds, on page 4.2-55 lines 3-4, that aquatic life beneficial uses are the most sensitive beneficial uses to ambient water body concentrations of most trace metals.

Mercury (Hg) is the constituent that poses the greatest toxicological risk to humans and fish and wildlife in areas where suction dredging activity might occur. Potential impacts of mercury and other heavy metals on fish and aquatic organisms are also discussed in Chapter 4. *Biological Resources*, page 4.2-14 lines 31-34. In addition, as noted in the Literature Review (Appendix D), suction dredging activities typically target the known gold-bearing streams and rivers of California where much of the historic mining activity took place after the California Gold Rush of 1849. (page 4.2-14 lines 35-38)

Elemental (i.e., liquid) mercury was used extensively in gold mining processes and much of the mercury was discharged or wasted directly to streams and river channels, resulting in extensive areas of mercury-enriched channel sediments and watershed-wide contamination with elemental mercury. (page 4.2-14 lines 38-40)

Mercury is a toxic constituent that bioaccumulates in the food chain of aquatic organisms and terrestrial wildlife, and is ultimately a human health concern, primarily through the consumption of mercury-contaminated fish. Methylmercury (MeHg) is a more bioavailable form of mercury that is produced from inorganic mercury by specific types of aquatic bacteria in rivers and reservoirs. (pages 4.2-14-15)

The major pathway for human and wildlife exposure to methylmercury (MeHg) is consumption of mercury-contaminated fish. Dietary MeHg is almost completely absorbed into the blood and is distributed to all tissues including the brain. In pregnant women, it also readily passes through the placenta to the fetus and fetal brain. MeHg is a highly toxic substance with a number of adverse health effects associated with its exposure in humans and animals. High-dose human exposure results in mental retardation, cerebral palsy, deafness, blindness, and dysarthria in utero and in sensory and motor impairment in adults. Although developmental neurotoxicity is currently considered the most sensitive health endpoint, data on cardiovascular and immunological effects are beginning to be reported and provide more evidence for toxicity from low-dose MeHg exposure (U.S. EPA, 2001). In birds and mammalian wildlife, high levels of MeHg can result in death, reduced reproduction, slower growth and development, and abnormal behavior (U.S. EPA, 2010). (page 4.2-15 lines 8-18)

Mercury Hurts Fish and People too: The Sierra Fund's recent study on sport fish consumption at mercury impacted water ways describes the potential for a serious public health threat. The Gold Country Angler Survey quantifies the methylmercury exposure of more than 150 anglers at mercury-impacted waterways in the Yuba, Bear, and American and Deer Creek watersheds. Findings of the Gold Country Angler Survey include people that are exposed to more than three times the recommended safe level of mercury through sport fish consumption in the American River watershed. The significant and unavoidable impacts of recreational dredging activities in mercury-impaired water bodies would only worsen this public health issue, by propagating mercury dispersal and incorporation into the aquatic food chain, increasing the mercury levels in fish, and increasing mercury exposure to people that eat sport fish in the Sierra Nevada.

Recommended action: The Sierra Fund recommends that DFG redraft their program to not allow suction dredging in known or suspected mercury impaired water bodies as it is clear that suction dredge mining in water bodies contaminated with mercury is in fact deleterious to fish

Comment # 7: The DDSEIR proposes a program that the Department does not have the resources to monitor or enforce. These regulations add more rules to the program, but no additional enforcement funds or resources are included in the program. The Department asserts that it cannot spend any additional funds on monitoring compliance with its own regulations, and relies on compliance with voluntary actions outlined in the “brochure” to mitigate all impacts on fish. Other regulations protecting water quality, historical sites, aesthetics and more are not even mentioned, much less a strategy for enforcing regulations to abate the known, significant and unavoidable impacts of their proposed program.

In effect the DSEIR and proposed regulations outline a program that has the potential to encourage more damage to water quality, historic sites, noise, wildlife and more – with absolutely no plan or even acknowledged responsibility for enforcing any rules to mitigate this damage.

The Department has had real trouble getting compliance by suction dredge miners with the regulations enacted in 1994. Requiring compliance with suction dredge regulations has been nearly impossible. As part of our work to understand the impacts of suction dredge mining, The Sierra Fund conducted a survey of how suction dredge regulations are enforced on federal lands held by the Bureau of Land Management (BLM) and the United States Forest Service (USFS). Our report, which was included in the literature review conducted as part of the DSEIR process, found that suction dredge regulations are already nearly impossible to enforce. The result of our survey showed that even suction dredge miners with egregious violations of suction dredge regulations faced almost no consequences in the past – and no additional consequences are contemplated by this document.

Currently, a DFG warden that finds violations of suction dredge mining must rely on local enforcement agencies to prosecute the violation or shut down the operation. This means that the warden will issue a notice of violation to the miner and ask that the violations cease. If the miner chooses to not to shut down their operation, the case is turned over the local district attorney who decides whether or not to pursue the case. In the rare cases where the district attorney has taken on the case it takes time, effort and substantial resources by local government to try the case and implement the enforcement action. The rural counties most impacted by suction dredge mining rarely find that this kind of enforcement action is viable on their tiny budgets.

Recommended Action: Compliance with the laws of the state of California needs to be a top priority of this program. Many of the serious impacts of suction dredge mining could be avoided if all of the rules protective of the environment were enforced. The DSEIR needs to be redrafted to require:

- All water quality, environmental health, noise, aesthetics, historic and cultural regulations must be described and miners must be held accountable for upholding these laws. The laws must be clear and a strategy for enforcing them needs to be described.
- Fish and Game wardens that find violations of suction dredge mining regulations need to be empowered to take direct action to shut the operation down rather than relying on local government for this activity. This could take the form of a much larger “fine” that is levied on the suction dredge miner. The fine could be based on the cost it takes to identify, document and shut down illegal suction dredge mining operations.
- A realistic approach to enforcement requires more funding for Fish and Game wardens to regularly monitor suction dredge operations. These funds must be generated as part of the permit fee. This means that suction dredge mining permit fees must be raised in order to cover these expenses. This requirement needs to be added to the document, including an outline of the procedures necessary to increase fees and a timeline for pursuing this fee increase.
- If the Department of Fish and Game cannot afford to enforce the regulations around suction dredge mining they should not allow the program to continue.

Comment #8: The document has inconsistent or confusing language, and is hard to understand. The alternatives section is especially confusing. These problems have been pointed out throughout this process and are documented in some detail in other comments being submitted to the Department. Perhaps the most outlandish one is the regulation that forbids suction dredging along one reach of the Feather River on one bank, while allowing it on the other side of the same reach.

Recommended Action: Redraft the document to clarify the alternatives discussion and to bring coherence to the description of river stretches closed by the new regulations.

Comment #9: The chosen program is not consistent with California law. The DSEIR clearly outlines the numerous significant and unavoidable impacts of suction dredge mining under the regulations proposed by the Department of Fish and Game. The Department has chosen as its preferred Program regulations that are clearly not consistent with California law.

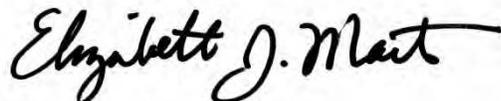
Recommended Action: The Department should reconsider its decision about which alternative to choose. It should instead choose either the “no project” alternative, or a combination of the “reduce intensity” alternative and the “water quality” alternative. These alternatives are much more consistent with California laws.

Conclusion: The proposed program and accompanying Environmental Impact Report fail to meet the most basic requirements of CEQA. Impacts from the proposed program are not documented in a rigorously scientific way, especially in contrast with the environmentally superior alternative of "Reduce Intensity" or the even more conservative "No Project" alternative. No reason for rejecting the environmentally superior alternative is given. Impacts of suction dredge mining on fish are documented in the report but dismissed without discussion in the Proposed Project choice. Numerous significant and unmitigable impacts are documented but no attempt to mitigate these impacts is required in the proposed program.

This DSEIR needs to be redrafted with an eye toward protecting all of California's fish and wildlife and other natural resources and conforming to legislative intent. It is not acceptable for the DFG to spend \$1.5 million on this document and then fail to issue protective regulations that are appropriate and consistent with California's state laws.

There are significant changes needed to bring this document into compliance. A redrafted set of regulations and a new DSEIR need to be developed and re-circulated for public comment prior to any further decision making on suction dredge regulations.

Thank you again for this opportunity to comment.



Elizabeth Martin
CEO



Carrie Monohan, Ph.D.
Science Director

The Sierra Fund
432 Broad St.
Nevada City, CA 95959

Table A: Mercury-impacted streams and rivers in the Sierra Nevada and proposed suction dredge use classification

Proposed Use Classification Code	Proposed Use Classification	Location	303(d) listed as impaired for mercury
C	Open to dredging from June 1 through September 30	Bear River Mainstem and all tributaries from Camp Far West upstream to Lake Combie	Bear River, Camp Far West and Lake Combie
A	No dredging permitted at any time	Deer Creek Mainstem and all tributaries from Nevada-Yuba County Line upstream to Lake Wildwood	Deer Creek, tributary Little Deer Creek, Lake Wild wood
A	No dredging permitted at any time	Yuba River Mainstem downstream of Englebright Reservoir	Englebright Lake, Lower Yuba
C	Open to dredging from June 1 through September 30	Yuba River Mainstem and all tributaries from Englebright Reservoir upstream to South Yuba River	Englebright Lake
D	Open to dredging from July 1 through January 31	Yuba River, South Fork (Mainstem) Mainstem from Yuba River upstream to Lake Spaulding	South Yuba River, Spaulding to Englebright
E	Open to dredging from September 1 through January 31	Yuba River, South Fork (Tributaries) All tributaries from Yuba River upstream to Lake Spaulding	South Yuba River, Spaulding to Englebright
E	Open to dredging from September 1 through January 31	Yuba River, Middle Mainstem and all tributaries from Yuba River upstream to Yuba-Sierra County Line	Middle Fork of the Yuba, Bear Creek to the North Yuba
D	Open to dredging from July 1 through January 31	Yuba River, North Fork Mainstem Mainstem from New Bullards Bar Reservoir upstream to Yuba-Sierra County Line	North Fork of the Yuba New Bullards Bar to Lake Englebright
E	Open to dredging from September 1 through January 31	Yuba River, North Fork (Tributaries) All tributaries from New Bullards Bar Reservoir upstream to Yuba-Sierra County Line	North Fork of the Yuba New Bullards Bar to Lake Englebright
D	Open to dredging from July 1 through January 31	American River, Middle Fork Mainstem upstream of Oxbow Dam	Oxbow Reservoir
E	Open to dredging from September 1 through January 31	American River, Middle Fork (Tributaries) All tributaries upstream of Oxbow Dam	Oxbow Reservoir
G	Open to dredging from September 1 through September 30	American River, North Fork Mainstem and all tributaries from Lake Clementine Dam to Big Valley Canyon	Folsom Lake
G	Open to dredging from September 1 through September 30	Lake Tahoe (Tributaries) All waters draining to Lake Tahoe	
D	Open to dredging from July 1 through January 31	Sacramento River Lake Shasta to Siskiyou County	Sacramento River Knights Landing to the Delta
G	Open to dredging from September 1 through September 30	Truckee River Mainstem and all tributaries	
D	Open to dredging from July 1 through January 31	Feather River, Middle Fork (Mainstem)	
E	Open to dredging from September 1 through January 31	Feather River, Middle Fork (Tributaries) All tributaries, unless otherwise noted	
D	Open to dredging from July 1 through January 31	Feather River, North Fork (Mainstem) Mainstem from Plumas-Butte County Line to East Branch of North Fork Feather River	Feather River Lower lake Oroville to Sacramento
E	Open to dredging from September 1 through January 31	Feather River, North Fork (Tributaries) All tributaries, unless otherwise noted	Feather River North Fork
D	Open to dredging from July 1 through January 31	Feather River, South Fork Mainstem	
E	Open to dredging from September 1 through January 31	Feather River, South Fork All tributaries, unless otherwise noted	

Re: Opposition to Proposed Changes to DF&G Dredging Regulations

Department of Fish & Game:

It appears that considerable political pressure has been applied to the DF&G by some of the Klamath Indians and the legislature to curtail dredging for an excessively long three years while you study and complete your DSEIR. It would have been far more prudent to continue allowing people to dredge while the study was being made. You have negatively impacted many families both economically and with their hobby pursuits. I believe that your SEIR findings are flawed and that dredging does not create a sediment or mercury problem for fish and people. If you have visited the waterways during winter and especially in flood years, then it should be obvious that dredging is not significant in moving sediment, and potentially helps fish and other animals by stirring the gravel beds. Asking dredgers to back fill their workings is totally absurd and without merit. Each winter the stream beds undergo major shifts in gravel beds and boulder locations.

Since current regulations limit locations and times of year that dredgers have access to creeks and rivers, it is not apparent why you shut down dredging? Would you do the same for fishermen and hunters? Some regulation of outdoor resources may be warranted to preserve these areas for everyone to use, including dredgers.

Briefly, I oppose collecting fees for dredging. Initially California did not regulate permits and collect fees for suction dredging. I feel like the small group of dredgers is carrying a disproportionate burden of taxation to pay the salaries of regulators. Do not raise the fee structure and it is also not reasonable to limit the number of dredge permits offered annually (I believe the general public and their concerns. These people are your employers and they have a right to know the reasoning and research that supports any proposed regulation changes. Once again, you have alienated many responsible citizens by usurping their rights to using portable suction dredges in California's waterways. Good decisions that support the public's use of portable dredging equipment in the outdoors would go a long way at regaining the confidence in DF&G programs.

Sincerely,

Stan Smart
3078 Sea Gull Lane
Stockton, Ca 95219
H(209)951-4959
Email: ssmart49@aol.com

Subject: Dredging for Gold in Cal. Rivers and streams!

Date: Tuesday, May 10, 2011 11:28:57 AM PT

From: todd smith

To: mstopher@dfg.ca.gov

Please return to pre SB670 rules , they did the job for both sides of the issue and the fish love me when i am dredging! the complete new rules are nothing but a hardship on both sides as well!

Todd Smith

Subject: Dredge comments

Date: Tuesday, May 10, 2011 2:18:08 PM PT

From: Lonnie Swartout

To: dfgsuctiondredge@dfg.ca.gov

Dear DFG: please use the pre 1994 EIR and dredge regulations the new EIR and regulations should be considered illegal, 1 the SEIR report showed " less than significant" impacts from dredging, DFG attorneys refused to provide proof otherwise, no dredge was used in the mercury test ??

Lonnie Swartout

Red Bluff, CA 96080

530-524-8616

SUCTION DREDGE PERMITTING PROGRAM
Draft Subsequent Environmental Impact Report (DSEIR)
Comment Form

Name:	John L. Swicegood		
Mailing Address:	712 Watson Ave.		
	Modesto, CA 95358-5725		
Telephone No. (optional):	209 538-2930	Cell	209 262-8845
Email (optional):	baldeagle576365@yahoo.com		

Comments/Issues:

I entered the profession of mining after I retired to supplement my income from Social Security. I have been greatly subdued by the action that has stopped suction dredging in California

Please use additional sheets if necessary.

SUBMIT WRITTEN COMMENTS (POSTMARKED BY 05/10/11) TO:

Mail: Mark Stopher
California Department of Fish and Game
601 Locust Street
Redding, CA 96001

Email: dfgsuctiondredge@dfg.ca.gov

Fax: (530) 225-2391

Questions? Please call us at (530) 225-2275 • More information: www.dfg.ca.gov/suctiondredge

State Water Resources Control Board



Linda S. Adams
Acting Secretary for
Environmental Protection

Executive Office

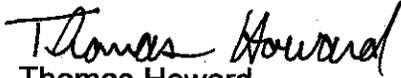
Charles R. Hoppin, Chairman
1001 I Street • Sacramento, California 95814 • (916) 341-5603
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
Fax (916) 341-5621 • <http://www.waterboards.ca.gov>



Edmund G. Brown Jr.
Governor

MEMORANDUM

TO: Mr. Mark C. Stopher
Acting Regional Manager
Department of Fish and Game
601 Locust Street
Redding, CA 96001

FROM: 
Thomas Howard
Executive Director

DATE: May 10, 2011

SUBJECT: STATE WATER RESOURCES CONTROL BOARD, REGIONAL WATER QUALITY CONTROL BOARD, AND PEER REVIEW COMMENTS ON THE DEPARTMENT OF FISH AND GAME'S DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT ON SUCTION DREDGING

Thank you for the opportunity to comment on the Department of Fish and Game's (DFG's) draft Supplemental Environmental Impact Report (SEIR) on suction dredging. This memorandum contains our comments and also attaches comments from Regional Water Quality Control Board staff and, as discussed below, from scientific peer reviewers. As you know, the State Water Resources Control Board (State Water Board) is the statewide agency charged with water quality protection. As such, we have been concerned for many years about the water quality impacts of suction dredging. In 2007, we held a public hearing to receive comments on this subject. We also provided initial comments to DFG as it began the scoping process for the present rulemaking effort. In a contract executed in June of 2009, the State Water Board provided \$500,000 and made staff available to DFG in order to ensure that the SEIR fully addressed the water quality impacts from suction dredging. This contract required submittal for scientific peer review of the water quality portions of the SEIR. These comments are attached to this memorandum for your consideration.

We would like to commend DFG on the SEIR's discussion of the water quality impacts from suction dredging. The analysis presented is sound, thorough, and reflective of the best science available on his topic. Specifically, we concur with DFG's initial determination that suction dredging has the potential to contribute to: (1) watershed

mercury loading to downstream reaches within the same water body and to downstream water bodies, (2) methymercury formation in the downstream reaches/water bodies, and (3) bioaccumulation in aquatic organisms in these downstream reaches/water bodies. We also concur that the associated increase in health risks to wildlife (including fish) or humans consuming these organisms is considered a potential significant and unavoidable impact. Finally, we concur with the finding that under the proposed program, mercury discharges would make a cumulatively considerable contribution to existing cumulative impacts related to watershed mercury loading, methymercury formation in downstream areas and bioaccumulation in aquatic organisms.

Given these unavoidable impacts, we consider the No Program Alternative to be the alternative that is best supported by scientific information regarding water quality impacts related to remobilizing mercury. The No Program Alternative, a continuation of the current suction dredging moratorium, would provide the best water quality protection at no cost to the State. The other alternatives, including DFG's Proposed Program, would result in mercury discharges that would likely require issuance of National Pollutant Discharge Elimination System (NPDES) permits. If DFG's proposed program is implemented, the Water Board would likely need both to embark on a costly program to develop a permit to address mercury discharges from suction dredges, and to use scarce resources to ensure compliance with permit conditions through inspections and enforcement. The fiscal costs are unjustifiable considering the minimal economic benefit suction dredging provides, as documented in Appendix H of the SEIR.

Our specific comments are attached. As mentioned above, we have also attached comments from Regional Water Quality Control Board staff and from the scientific peer reviewers. Thank you again for the opportunity to comment. If you have any questions, please feel free to contact either me at (916) 341-5615 or Rick Humphreys at (916) 341-5493.

Attachments (see list next page)

Attachments

- Attachment A – Specific State Water Board Comments
- Attachment B – North Coast Regional Water Quality Control Board Comments
- Attachment C – Los Angeles Regional Water Quality Control Board Comments
- Attachment D – Central Valley Regional Water Quality Control Board Comments
- Attachment E – Lahontan Regional Water Quality Control Board Comments
- Attachment F – Santa Ana Regional Water Quality Control Board Comments
- Attachment G – Peer Reviews – Dr. A. Russell Flegal's review
- Attachment H – Peer Reviews – Dr. Celia Chen's review
- Attachment I – Peer Review – Dr. Joanna Curran's review
- Attachment J – Peer Review – Dr. David Evers' review

ATTACHMENT A

SPECIFIC STATE WATER BOARD COMMENTS

Page #, Line #

ES-6, 30 **If DFG does not select the No Program Alternative, we recommend restricting nozzle diameter to 2 inches.**

Reason: From a water quality perspective, the smaller the volume of dredged material, the better. Manufacturer's specifications (Keene, 2010) indicate that a suction dredge equipped with a 2 inch diameter nozzle can vacuum sediment at a rates up to 1.5 cubic yards per hour, while a dredge equipped with a 4 inch diameter nozzle can vacuum sediment over three times as fast (5 cubic yards per hour). Therefore, restricting suction dredge nozzles to 2 inches or less would result in less disruption of stream sediment compared to dredges equipped with larger diameter nozzles.

ES-7, 25 **If DFG does not select the No Program Alternative, we recommend changing "Reasonable care shall be used to avoid dredging in silt and clay materials, the disturbance of which would significantly increase in turbidity" to "Dredging in silt and clay materials is prohibited."**

Reason: The United States Geological Survey (USGS) studies cited in the SEIR indicate that dredging silt and clay materials will result in both substantial increases in turbidity, and, in mercury-contaminated water bodies, discharges of mercury-contaminated sediment. We are extremely concerned about such discharges, especially since suction dredgers tend to seek out buried, in-stream clay pan layers because they are rich in gold.^{1,2}

ES-8, 3 **If DFG does not select the No Program Alternative, we recommend changing "All fueling and servicing of dredging equipment must not result in leaks, spills or otherwise release into a watercourse or where the product may enter waters of the state" to "All fueling and servicing of dredging equipment shall not result in leaks, spills or otherwise release into a watercourse or where the product may enter waters of the state. All dredge engines shall be equipped with fuel spill catching skirts; dredging engines without fuel catching skirts are prohibited."**

Reason: Refueling a dredge while it is in the water without spilling fuel is a major challenge, considering that stream currents, poor footing and the bobbing of a floating dredge would all create conditions conducive to spilling fuel. Thus,

¹ New 49ers Mining Club web site <www.goldgold.com>

² The in-stream portion of the USGS study...

requiring that the dredge engines have spill catchment is warranted. In addition, the regulations should specify requirements for proper disposal of any spilled fuel.

Replace "minimize" with "reduce" at the following locations (page #, line #).

ES-8, 36	Ch 4.3-36, 37	Ch 4.3-50, 18	Ch 4.4-1, 33
ES-12, 35	Ch 4.3-37, 7	Ch 4.3-52, 11	Ch 4.5-13
Ch 3-3, 13	Ch 4.3-39, 36	Ch 4.3-52, 32	Ch 4.6-13, 15
Ch 4.3-19, 34	Ch 4.3-41, 24	Ch 4.3-53, 4	Ch 4.7-3, 14
Ch 4.3-24, 37	Ch 4.3-41, 33	Ch 4.3-53, 40	Ch 4.10-5, 4
Ch 4.3-25, 2	Ch 4.3-44, 35	Ch 4.3-54, 2	Ch 5-28, 13
Ch 4.3-28, 12	Ch 4.3-48, 2	Ch 4.3-54, 11	Ch 5-28, 14
Ch 4.3-28, 27	Ch 4.3-49, 6	Ch 4.3-54, 37	Ch 5-29, 16
Ch 4.3-30, 44	Ch 4.3-49, 9	Ch 4.3-55, 8	Ch 5-30, 40
Ch 4.3-32, 33	Ch 4.3-49, 12	Ch 4.3-56, 17	Ch 6-7, 13
Ch 4.3-33, 6	Ch 4.3-49, 15	Ch 4.3-57, 41	Ch 6-13, 1
Ch 4.3-34, 7	Ch 4.3-50, 12	Ch 4.3-58, 20	
Ch 4.3-34, 11	Ch 4.3-50, 15	Ch 4.3-59, 16	

Reason: "Minimize" means to reduce to a minimum and means the least quantity assignable, admissible, or possible. "Reduce," on the other hand means to diminish in size, amount, extent, or number. We consider reduce to be the more accurate term.

In comparing the baseline condition of "no dredging" to the proposed program, neither "minimize", nor "reduce" are appropriate terms. "Reduce" is a barely acceptable word choice when the proposed Program is compared to the 1994 program, because the proposed Program would allow more annual permits than the average issued over the last 10 years of the 1994 program (3,650), and it would rely on only slightly more stringent best management practices (BMPs). "Reduce" is an acceptable word choice when comparing both the "Environmentally Protective Alternative" and the "Water Quality Alternative" to the 1994 Program. However, when compared to current no dredging conditions, all the alternatives except for the "No Program Alternative" would increase rather than reduce the impacts.

ES-12, 6 **Insert "Other states have addressed mercury remobilization. Oregon prohibits suction dredging in streams listed as impaired for mercury or other toxics. Wyoming's program contains the following prohibition: 'due to mercury in stream sediment from historical mining operations, no mining activities are allowed in Rock and Willow Creeks in the upper Sweetwater River drainage.'"**

Reason: Providing examples of how other states have dealt with mercury will allow comparison with DFG's proposal.

ES-14, 22 Delete "Although the regulations under the Proposed Program would reduce the potential for flouring and reduce the potential incremental contribution of the suction dredge discharges to the significant cumulative impact". Replace with "Mercury discharges would continue under the Proposed Program."

Reason: The SEIR does not contain or refer to any evidence that any of the proposed methods of operation, BMPs, and nozzle size restriction would reduce elemental mercury flouring.

ES-16, 24-44 (and corresponding full discussion) If DFG does not select the No Program Alternative and instead selects the Water Quality Alternative, this alternative should be revised to include additional areas with known mercury contamination.

Reason: The Water Quality Alternative is described solely in terms of water bodies listed for mercury or sediments. However, we are aware of widespread mercury-contamination of sediments in areas whose water bodies have not yet been listed for mercury. Listing under Section 303(d) of the Clean Water Act is an arduous and lengthy procedure at best. The procedure is even more arduous for mercury, since the listing process currently depends on relatively expensive and time-consuming fish tissue sampling and analysis. As indicated in the draft SEIR, significant mercury discharges can be expected if dredging is allowed in the areas where mercury occurs, regardless of whether the areas have been formally listed. Therefore, a true "Water Quality Alternative" would include an approach like that used by Wyoming, that would address all areas with mercury-contamination in sediments rather than only those that have been listed for mercury.

ES-17, 23 Change "chosen" to "identify".

Reason: The change makes the sentence correct with respect to the CEQA requirement as stated in Cal. Code of Regulation, title 14, Section 15126.6(e)(2).

Ch 2-7 If DFG does not select the No Program Alternative, we recommend that the use of the terms "permittee" and "no person" be clarified.

The proposed regulations use the terms "permittee" and "no person" interchangeably, and that may cause confusion. For example the proposed regulation on page 2-21, line 14 states, "No person shall import any earthen material into a stream, river, or lake." DFG's regulations should clarify that this prohibition pertains to all persons engaged in activities related to suction

dredging, whether the person actually has a permit or is merely assisting another person who actually has a permit. However, DFG's regulations obviously cannot apply to all persons regardless of whether they have any connection to suction dredging activities.

Ch 2-10, 15 If DFG does not select the No Program Alternative, we recommend specifying a maximum horsepower (Hp) rating (for example, 5 Hp).

Reason: As stated above, from a water quality perspective, the smaller the volume of sediment dredged, the better. We would expect that, all other things being equal, the greater the horsepower of the engine, the more volume could be dredged. DFG's basis for not including a horsepower restriction appears to be suction dredgers' claims that engine horsepower has little effect on dredge performance compared to nozzle size. However, the SEIR does not include any test results or any other evidence to back up the claim. In contrast, manufacturer's information (Keene 2010 catalog) suggests that a 1 horsepower increase equates to a 5.5% increase in "performance" (presumably volume capacity).

Ch 2-21, 16: see discussion above under ES-8, 3.

Ch 2-22, 1: see discussion above under ES-7, 25.

Ch 3-4, 32 Recommend deleting lines 32 to 43 and replace with "The volume of sediment moved by a suction dredge is based on nozzle size and engine horsepower (as well as operator-dependent factors such as operating time). According to manufacturer's catalogs (e.g., Keene, 2010), dredges with small diameter nozzles (e.g., 2 inches and less) and low horsepower engines (e.g., 5 horsepower and less) have less sediment-excavating capacity than dredges equipped with large diameter nozzles and high horsepower engines."

Reason: See Reason above for Ch 2-10, 15.

Ch 3-5, 1 Comment – The statement implies that DFG's reason for selecting a 4 inch maximum diameter nozzle is based on its popularity among dredgers as opposed to its technical merits for protecting fish.

Ch 4.2-1, 13 Change "waste" to "pollutants."

Reason – The Clean Water Act regulates the discharge of pollutants not waste.

Ch 4.2-18, 27 Comment – Wading bird poisonings by lead shot that lands in marshes and carrion eater poisonings by eating animals that have been killed by lead shot are documented. However, we are not aware of any documentation of bird poisonings by ingesting lead buried under feet of steam sediment,

presumably because birds are not physically able to get at lead buried by stream sediment. Lead that suction dredgers recover while dredging may be deeply buried and thus, be beyond the reach of waterfowl. Consequently, the main beneficiaries appears to be the dredgers, who cast diving weights from lead they recover or sell it as scrap. Unfortunately, if they melt lead to cast weights in their camps, they release lead fumes unless, as seems unlikely, they use a fume hood.

Recommend that lines 27-29 be deleted.

Ch 4.2-28, 18 **Insert after "limited.": "However, any such discharge would require a permit under the applicable federal and/or state water quality laws."**

Reason: The public should be made aware that other permits, such as a Water Board NPDES permit, may be necessary.

Ch 4.2-28, 20 **Delete – "Because dredging activities are largely conducted on a seasonal, temporary, and intermittent basis in California, any water quality degradation that may occur is expected to be infrequent and dispersed and thus not cause substantial or long-term degradation of water quality."**

Reason: The language is speculative, since the SEIR does not provide information that supports this assertion.

Ch 4.2-33, 1: see above under Ch 4.2-28, 20.

Ch 4.4-11, 23 **Delete – "However, since the total number of suction dredgers state wide is small and the number of violations anticipated to be even smaller, such effects would not constitute a significant impact."**

Reason: First, the statement is speculative. Second, the impact of hazardous material violations by suction dredgers should not be presented as a statewide average. The suction dredge survey (Appendix F) found that suction dredging is concentrated in 18 rural counties (and Los Angeles) with the highest levels in occurring in Sierra, Plumas, and Siskiyou Counties. Using a 20% violation rate (assuming that DFG conducted regular inspections) for 4,000 permit holders under the program, there would be 800 violations, or 44 violations on average for each of the 18 rural counties where suction dredging is concentrated. Based on staff's first-hand observations of suction dredgers' camps in the past, costly hazardous materials cleanups would likely be needed where these violations occur. The cost of such cleanups could be significant to both the rural counties and the federal land management agencies and thus, the impact should be viewed as significant.

Ch 5-29, 23 Remove – “Additionally, implementation of the regulations under the program related to nozzle size restrictions may reduce the potential for flouring and reduce the potential incremental contribution of the suction dredge discharges to the significant cumulative impact.”

Reason: The statement is speculative because the SEIR does not present any evidence that suction dredges have been tested systematically to determine whether nozzle diameter and engine horsepower affect mercury flouring.

Appendix E, Comparison of Suction Dredge Mining Regulations in the United States

For the Wyoming entry under “Water body restrictions”, please change “Yes, based on numerous factors” to “Yes, based on numerous factors including the presence of mercury in stream sediment from historical mining operations.”

ATTACHMENT B
NORTH COAST REGIONAL WATER QUALITY CONTROL BOARD
COMMENTS

[RB-1's comment letter]



**California Regional Water Quality Control Board
North Coast Region**

Geoffrey M. Hales, Chairman



Linda S. Adams
Acting Secretary for
Environmental Protection

www.waterboards.ca.gov/northcoast
5550 Skylane Boulevard, Suite A, Santa Rosa, California 95403
Phone: (877) 721-9203 (toll free) • Office: (707) 576-2220 • FAX: (707) 523-0135

Edmund G. Brown Jr.
Governor

May 9, 2011

To: Mark Stopher
California Department of Fish and Game
601 Locust Street
Redding, CA 96001

Re: Comments on the Department of Fish and Game Suction Dredge Permitting Program Draft Subsequent Environmental Impact Report (SEIR) and Draft Proposed Regulations

Dear Mr. Stopher:

Thank you for this opportunity for the staff of the North Coast Regional Water Quality Control Board (Regional Water Board) to submit comments. We appreciate the effort that was put into developing the draft DEIR, and support the scientific approach taken to the development of the proposed regulations.

The Regional Water Board has an interest in ensuring that the suction dredging regulations are protective of water quality. While our mandate may differ from the Department of Fish and Game's (DFG) mandate, we share the common goal of protecting the cold water fishery in the North Coast Region. The Regional Water Boards regulate discharges of waste to waters of the state and other controllable water quality factors in the interest of protecting the beneficial uses of water, of which, the cold water fishery is one. It is with this shared goal in mind, and the desire to coordinate our regulatory approach to suction dredging, that we are submitting the following comments.

The comments relate to five topics:

1. Consistency between DFG proposed regulations and the Klamath Total Maximum Daily Load (TMDL) Thermal Refugia Protection Policy
2. Addressing documented alterations to the stream channel
3. Compliance with the Regional Water Board's Basin Plan turbidity water quality objective
4. Mercury Transport and Concentration
5. Maximum Nozzle Diameters

Klamath TMDL Thermal Refugia Protection Policy

Thermal refugia play an important role in the vitality of a cold water fishery because they moderate the effects of naturally elevated temperatures and also provide a refuge from depressed mainstem dissolved oxygen levels. This is particularly important in the mainstem Klamath River, where even natural temperatures are sometimes and in some

California Environmental Protection Agency

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places stressful to salmonids. To provide enhanced protection of these areas, the Klamath TMDL Action Plan¹, adopted into the Water Quality Control Plan for the North Coast Region (Basin Plan) in March 2010, includes a Thermal Refugia Protection Policy (Refugia Policy). The Refugia Policy establishes buffer widths around known thermal refugia locations where parties conducting suction dredging activities are restricted from discharging. The default buffer widths are 500 feet, consistent with DFG's proposed regulations, but larger buffers are prescribed in certain situations that will be explained below. The restrictions apply from April 15th through September 15th. To implement the restrictions, the Refugia Policy includes a specific policy recommendation to DFG and the State Water Resources Control Board:

"The State Water Resources Control Board and the California Department of Fish and Game should restrict discharges associated with suction dredging activities as specified by this policy. This directive in no way limits the permitting agency from implementing more stringent requirement."

In order to identify the locations of known thermal refugia in the basin and appropriate widths, Regional Water Board staff solicited information from fisheries biologists working in the Klamath River basin through a formal request in April 2009. Letters and emails were received from the following people in response to the April 2009 request:

- Mark Stopher, California Department of Fish and Game, April 15, 2009.
- Mike Belchick, Yurok Tribal Fisheries Program, April 24, 2009.
- Earl Crosby of the Karuk Tribe, April 30, 2009.
- Will Harling, Mid-Klamath Watershed Council, April 28, 2009.
- Jon Grunbaum, Klamath National Forest, May 1, 2009.

In addition, Regional Water Board staff consulted the following references to compile the list of tributaries:

1. Grunbaum, Jon B. Memo of Recommended Suction Dredging Guidelines for the Happy Camp Ranger District of Klamath National Forest. 2005.
2. Superior Court of California, County of Alameda, Hayward Division. Case No.: RG 05 211597. Declaration of Peter B. Moyle, Ph. D., in Support of Entry of Stipulated Judgment. January 26, 2006.
3. Belchik, Michael. Use of Thermal Refugial Areas on the Klamath River by Juvenile Salmonids; summer 1998. Yurok Tribal Fisheries Program, November, 2003.
4. Belchik, Michael Summer Locations and Salmonid Use of Cool Water Areas in the Klamath River. Yurok Tribal Fisheries Program. August 1997.

While the draft SEIR provides similar protections as those in the Refugia Policy, there are a couple of differences Regional Water Board staff would like to resolve in order to better coordinate our approach. First, there are a some inconsistencies between the lists of thermal refugia locations. Table 1 below, also included in the Refugia Policy,

¹ http://www.waterboards.ca.gov/northcoast/water_issues/programs/tmdls/klamath_river/

lists tributaries known to provide thermal refugia in the Klamath River basin. There are two tributaries to the mainstem Klamath River highlighted in yellow – Little Horse Creek and West Grider Creek - are included on this list, but not in DFG's draft SEIR. There are also three tributaries to the Scott River highlighted in yellow in the table and include Boulder, Canyon, and Kelsey creeks. The Regional Water Board staff recommend that the draft regulations include these tributaries and provide the default instream buffer protection for them.

Table 1. Tributaries to the Klamath River known to provide thermal refugia in and around their confluence

Tributaries		
Aikens Creek	Halverson Creek	Pine Creek
Aubrey Creek	Hopkins Creek	Portuguese Creek
Barkhouse Creek	Horse Creek	Red Cap Creek
Beaver Creek	Humbug Creek	Reynolds Creek
Blue Creek	Hunter Creek	Roach Creek
Bluff Creek	Ikes Creek	Rock Creek
Bogus Creek	Independence Creek	Rogers Creek
Boise Creek	Indian Creek	Rosaleno Creek
Boulder Creek ¹	Irving Creek	Sandy Bar Creek
Cade Creek	Kelsey Creek ¹	Salt Creek
Camp Creek	King Creek	Seiad Creek
Canyon Creek ¹	Kohl Creek	Slate Creek
Cappell Creek	Kuntz Creek	Stanshaw Creek
Cheenitch Creek	Ladds Creek	Swillup Creek
China Creek	Little Horse Creek	Ten Eyck Creek
Clear Creek	Little Humbug Creek	Thompson Creek
Coon Creek	Little Grider Creek	Thomas Creek
Crawford Creek (Humboldt Co.)	Lumgrey Creek	Ti Creek
Crawford Creek (Siskiyou Co.)	McGarvey Creek	Titus Creek
Dillon Creek	Mill Creek	Tom Martin Creek
Doggett Creek	Miners Creek	Trinity River
Dona Creek	McKinney Creek	Tully Creek
Donahue Flat Creek	Nantucket Creek	Ukonom Creek
Elk Creek	Negro Creek	Ullathorne Creek
Elliot Creek	Oak Flat Creek	Walker Creek
Empire Creek	O'Neil Creek	West Grider Creek
Fort Goff Creek	Pecwan Creek	Whitmore Creek
Grider Creek	Pearch Creek	Wilson Creek

¹ Scott River tributary

The second difference between the Refugia Policy and the proposed regulations is in the prescribed buffer widths where suction dredging is prohibited in the draft regulations. The Regional Board's policy includes the added protection of a 1,500-3,000 foot buffer in the downstream direction for select tributaries as opposed to the default 500 feet. The additional buffer lengths were developed based on a thermal infrared study of the Klamath River basin conducted in August 2003, as well as information submitted in response to the Regional Water Board's April 2009 request for information. The thermal infrared study depicted the spatial dimensions and water temperatures of cold-water refugia in the mainstem Klamath River. The images clearly showed that for some tributaries, the influence of the cold water extended greater than 500 feet below the tributary confluence. Based on this study, the Refugia Policy recommends that DFG include a 1,500 foot buffer in the downstream direction for the following tributaries: Aubrey, Beaver, Clear, Dillon, Elk Creek, Grider, Horse, Indian, Rock, Swillup, Thompson, and Ukonom creeks.

The Refugia Policy also recommends additional buffers where juvenile fish have been found holding in the cold water in the tributary upstream of the confluence. As with the buffer extent in the downstream direction in the Klamath River, the fisheries biologists that responded to the April 2009 solicitation identified a number of tributaries known to provide refugia for fish. To protect these tributaries from the impacts of suction dredging, the policy recommends that the buffer be extended to 3,000 feet within the tributary, upstream of its confluence with the mainstem river. The following tributaries should be afforded this added protection or should be added to the list of tributaries where no dredging is allowed: Aubrey, Dillon, Empire, Fort Goff, King, Little Horse, Little Humbug, Mill, Nantucket, O'Neil, Portuguese, Reynolds, Rock, Sandy Bar, Stanshaw, Swillup, Ti, and Titus creeks.

Compliance with the Water Quality Objective for Turbidity

The Regional Board's Basin Plan contains the following water quality objective for turbidity:

"Turbidity shall not be increased more than 20 percent above naturally occurring background levels. Allowable zones of dilution within which higher percentages can be tolerated may be defined for specific discharges upon the issuance of discharge permits or waiver thereof."

As turbidity values in the North Coast Region are, on average, relatively low during the dry season when suction dredging is permitted, it is likely that the Regional Water Board's turbidity objective will be violated downstream of suction dredge operations. The draft regulations include the requirement that "reasonable care shall be used to avoid dredging silt and clay materials that would result in a significant increase in turbidity." This requirement needs more definition to be enforceable. Regional Water Board staff recommend that DFG's suction dredging regulations include be modified so that the turbidity objective is achieved.

Risk of Alterations to the Stream Channel

Significant alterations to the stream channel are well documented in the literature that covers the geomorphic impacts of suction dredging. Whether the impact of these alterations will persist through the winter is dependent on the average winter flows in the given stream. In streams, or stream reaches, that have significant flushing flows in the winter, any alterations due to suction dredging will mostly be redistributed during the winter season. For example, pits in the gravel created by suction dredging will be filled in by the winter flows. However, smaller stream channels do not produce the same magnitudes of winter flows compared to the mainstems of rivers, such as the Klamath or Trinity Rivers, and therefore have the potential to undergo significant alterations to their channel structure. These alterations may persist through the winter resulting in more permanent damage to stream habitat. Regional Board staff recommend that DFG consider adding some level of additional protection to smaller streams in the proposed regulations, to address the heightened risk of longer term impacts to fish habitat.

Mercury Transport and Concentration

The Central Valley Regional Water Board has noted several potential impacts of suction dredging on the mobilization of mercury and the potential increase in mercury concentrations. The State Anti-Degradation Policy directs the Regional Board to prevent the degradation of high quality or unimpaired waters. Staff therefore support the recommendations of the Central Valley Regional Water Board staff regarding the mitigation of the effects of suction dredging on mercury transport and concentration.

Maximum Nozzle Diameters

Regional Board staff support a limit of 4 inches on the nozzle diameter of suction dredges to minimize turbidity and impacts to the stream channel, especially in smaller streams. The proposed regulations state that an 8 inch diameter nozzle may be permitted on the condition that there is an onsite inspection. We recommend that the regulations be more specific regarding the conditions under which an 8 inch nozzle will be permitted. We recommend that 8 inch nozzles not be permitted in small streams or in locations where significant turbidity is likely to result.

In closing, Regional Water Board staff, again, appreciate this opportunity to provide comments on the draft SEIR and proposed regulations. It is my hope that DFG and the Regional Water Board continue to coordinate their approach to protecting the beneficial uses of waterbodies in the North Coast Region. Please feel free to contact Ben Zabinsky of my staff at the following phone number if you have questions about these comments or want to coordinate further on subsequent drafts: (707) 576-6750.

Sincerely,

Cat Kuhlman
Executive Officer

110502_BZ_Suction_Dredging_Comment_Draft

ATTACHMENT C

**LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD
COMMENTS**

[RB-4's comment letter]



California Regional Water Quality Control Board

Los Angeles Region



Linda S. Adams
Acting Secretary for
Environmental Protection

320 W. 4th Street, Suite 200, Los Angeles, California 90013
Phone (213) 576-6600 FAX (213) 576-6640 - Internet Address: <http://www.waterboards.ca.gov/losangeles>

Edmund G. Brown Jr
Governor

TO: Mr. Mark Stopher
Environmental Program Manager
California Department of Fish and Game
601 Locust Street
Redding, CA 96001

FROM: Deborah Smith
Chief Deputy Executive Officer

DATE: April 19, 2011

SUBJECT: SUCTION DREDGE PROGRAM DRAFT SUBSEQUENT ENVIRONMENTAL
IMPACT REPORT COMMENTS

Dear Mr. Stopher

We have reviewed the Draft Subsequent Environmental Impact Report (SEIR) which addresses the potential environmental effects of the currently suspended Suction Dredge Permitting Program operated by the California Department of Fish and Game (CDFG). We also have reviewed the Proposed Suction Dredge Regulations (Title 14, Section 228 et seq.).

On average, CDFG issued approximately 3,200 suction dredge mining permits to California residents annually for the 15 years prior to the current moratorium established in July 2009. The comparable average number of non-resident suction dredge mining permits issued annually by CDFG was approximately 450. Within the Los Angeles region, most suction dredge mining permits were issued for mining within the San Gabriel River system.

We are extremely concerned about the potential adverse impacts that this activity could have upon water quality and beneficial uses in rivers, streams, lakes and reservoirs throughout the Los Angeles Region and across the state. The United States Environmental Protection Agency's Healthy Watersheds Initiative and the Draft Healthy Watersheds Technical Document (2011) provide clear evidence of recent and ongoing declines in our aquatic resources, showing that two-thirds of the nation's streams are in poor or fair biological condition. Recent studies of the benthic macroinvertebrate community in California's perennial streams support this conclusion. In our opinion, an activity such as suction dredge mining, which extensively modifies the natural

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structure of the aquatic habitat, would be inappropriate within streams or other waterbodies that already are in decline and probably would produce unacceptable adverse impacts within most streams that remain in good condition within the Los Angeles Region. Therefore, we recommend closing all streams in the Los Angeles Region to suction dredging.

The Draft SEIR identifies several potential adverse impacts to water quality resulting from suction dredge mining activities. Adverse impacts include contaminant discharges from onshore dredge site encampments, increased levels of turbidity and total suspended solids, and resuspension of mercury, other trace metals and trace organic compounds (e.g., pesticides).

The Draft SEIR characterizes adverse impacts to water quality associated with contaminant discharges from onshore encampments and increased levels of turbidity and total suspended solids downstream from suction dredging operations as "Less than Significant". Unfortunately, this characterization is based upon very little quantitative data. Los Angeles Regional Board staff believes that these adverse impacts could be significant in many cases, particularly within water bodies that already are degraded, as well as in high quality water bodies ("reference" quality waters).

The Draft SEIR characterizes adverse impacts to water quality associated with resuspension of mercury and other trace metals as "Significant and Unavoidable". Los Angeles Regional Board staff agrees that these impacts would be significant and unavoidable. Although the Draft SEIR suggests that adverse impacts to water quality associated with resuspension of trace organic compounds would be "Less than Significant", there is very little data available to characterize existing concentrations of these contaminants in freshwater sediments. Los Angeles Regional Board staff believes that these adverse impacts could be significant in some cases.

The Draft SEIR states that suction dredging activity was found to have short-term, localized adverse impacts on the local invertebrate abundance and community composition in the water bodies where this activity occurs. These impacts were characterized as "Less than Significant". However, the Draft SEIR does not present any monitoring data to support this conclusion. Los Angeles Regional Board staff believes that there would be widespread and significant adverse impacts to the benthic macroinvertebrate community in streams, due to the extensive movement of boulders and cobbles by hand within stream reaches and the subsequent removal and redeposition of bottom material associated with suction dredging activities. Los Angeles Regional Board staff does not believe that this potentially significant adverse impact was addressed adequately in the Draft SEIR. This should be analyzed in much greater detail in the document.

The Los Angeles Regional Board recommends that the proposed Suction Dredge Regulations be modified as follows:

- Classification of Los Angeles County waters (starting on page 33) – all lakes, reservoirs, rivers and streams within Los Angeles County should be classified as Class A (No dredging permitted at any time).
- Classification of Ventura County waters (starting on page 67) – all lakes, reservoirs, rivers and streams within Ventura County should be classified as Class A (No dredging permitted at any time).

Thank you for the opportunity to comment on the Draft SEIR and the new Proposed Suction Dredge Regulations. If you have any questions, please telephone Michael Lyons at (213) 576-6718 as he is the staff person most familiar with these issues.

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ATTACHMENT D

**CENTRAL VALLEY REGIONAL WATER QUALITY
CONTROL BOARD COMMENTS**

[RB-5's comment letter]

**Central Valley Water Board Comments on the CA Department of Fish and Game
Suction Dredge SEIR
28 April 2011**

Major Comment:

The SEIR does not contain adequate justification to support selection of the Proposed Program instead of the No Program Alternative. The SEIR recognizes impacts to water quality from suction dredging as significant and unavoidable. The No Program Alternative would continue the prohibition on instream suction dredging in California. This alternative would avoid all of the significant and unavoidable effects of the Proposed Program and is considered environmentally superior. The No Program option is the most protective of water quality. It is not clear from the document why CDFG did not select the No Program Alternative.

Other Comments:

If the No Program Alternative is not selected, the final SEIR should fully describe the mitigation programs to avoid or mitigate significant and unavoidable impacts. The draft SEIR describes mitigation actions that could possibly make impacts on water quality related to turbidity, mercury, and resuspension of trace metals less than significant. Mitigation actions that result in removal of mercury from stream environments should be considered in this SEIR. If mitigation actions would render the water quality impacts to be less than significant, then the mitigation programs should be fully developed under the proposed regulatory program. The Proposed Program must comply with the Clean Water Act and the Porter Cologne Water Quality Control Act. If the Proposed Program with mitigation programs does not adequately protect water quality under these Acts, it will be inadequate.

Impact WQ-3: Effects of Turbidity / TSS Discharges

The SEIR finds that turbidity and suspended sediment discharges from suction dredging operations to be less than significant. We have concerns with this finding for the following reasons:

1. The finding is based on regional sediment load conditions and doesn't recognize stream conditions in the northern Sierra and Klamath mining areas. Streams in these areas have fine grained sediment which, when discharged by suction dredging, can violate Basin Plan objectives. We have received public complaints about sediment discharges from suction dredges in these areas.
2. Suction dredging and associated rock and bank disturbance have the potential to promote channel migration and/or incisement which leads to accelerated erosion and increased sediment loads. Ongoing restoration projects to address accelerated erosion on Central Valley Region streams, and implemented with public funds, could be impacted by suction dredging.

For the above reasons, and the lack of effective mitigation for suction dredges working in finer grained sediments, we request this finding be changed to significant and unavoidable.

Impact WQ-4: Effects of Mercury Resuspension and Discharge - Significant and unavoidable

The recognition in the draft SEIR of the potential significant and unavoidable impacts of mercury during suction dredging underscores the need to minimize mercury impacts with a mitigation plan should the Proposed Program be selected. The presence of mercury has impaired the beneficial uses, specifically safe consumption of fish by humans and wildlife species, of many waters that may be subject to suction dredging. Suction dredging brings previously buried mercury into the water column, thus contributing to the impairment of the beneficial uses. The SEIR states, "any impact of suction dredging on Hg loading and MeHg concentrations in downstream environments might further exacerbate the existing Hg impairments."

The report states that to reduce impacts of mercury, "potential mitigation includes closures or restrictions on suction dredging in areas impaired for Hg, or further restrictions on nozzle size, number of permits, and hours/days spent dredging. However, such closures are not within CDFG's jurisdiction to implement since they are not believed to be necessary to avoid deleterious effects to fish, and are therefore considered infeasible. No other feasible mitigation measures exist. Therefore, this impact would be significant and unavoidable." CDFG does not propose to close suction dredging areas with elevated mercury levels. Wildlife and humans consuming fish and other biota are impacted by mercury resuspended during dredging. CDFG has an obligation to protect and manage wildlife other than fish immediately in the dredging area. Even though mercury levels in the local fish may not be elevated enough to be deleterious, bioconcentration of mercury by organisms feeding on the fish could be significant.

Impact Analysis of Proposed Program on Water Quality and Toxicology- Other Pollutants

The SEIR should evaluate the significance of all local impacts and provide mitigation measures. The SEIR indicates many ancillary activities associated with suction dredging would have a less-than-significant impact on water quality. This finding appears to be based on comparisons of impacts of specific activities on a statewide level, i.e., the activities are widely dispersed and only impacts a small portion of the state as a whole. However, on a local level in the area near the suction dredging sites, the impacts could be significant. For example, a fuel spill or human waste from an undeveloped campsite could have local, but significant effects.

Impact Analysis of Proposed Program on Hazards and Hazardous Materials

In addition to the significant water quality concerns, mercury creates problems arising from accumulation and storage by dredgers and potential inhalation during "cooking" mercury-gold amalgam. Suction dredgers recover mercury with gold. Fate of that mercury includes reuse in sluice boxes, storage by dredgers in unsecured places, release to the air and inhalation by miners during gold refining, and according to information cited in the draft SEIR, illegal disposal. The draft SEIR states that dredgers' handling, storage and transport of mercury is a less than significant effect on human health. However, for human and environmental health reasons, mercury captured during suction dredging must be prevented from being released again to water or air. If the Proposed Program is implemented, we recommend that CDFG coordinate with State and Regional Water Boards, Department of Toxic Substances Control, and other appropriate state and local agencies to develop and implement a mercury collection program for mercury collected during suction dredging activities.

Best Management Practice Pamphlet

CDFG is proposing to create a "Best Management Practices" (BMP) pamphlet. The BMP pamphlet will give limited guidance to limit environmental impacts over which CDFG does not have jurisdiction. Only if CDFG can enforce compliance with best management practices should environmental impacts be considered less than significant with incorporation of mitigation measures in the form of BMPs. Use of best management practices should be a permit requirement and be enforceable.

Alternatives Evaluation

Please include text explaining why the Proposed Program was selected instead of the other alternatives that were evaluated. Table 6-1 provides a summary of the impacts of each of the alternatives compared to the Proposed Program. In the draft SEIR, however, we could not find justification for selection of the Proposed Program. This explanation is particularly important because the No Program, Water Quality, and Reduced Intensity Alternatives would cause fewer adverse environmental effects in comparison with the Proposed Program.

Table 4.2-2

References in Table 4.2-2 to human health criteria from OEHHA (2001) should be removed. OEHHA's 2008 Advisory Tissue Levels and Fish Contaminant Goals report provides revised contaminant levels calculated with and without assumptions that there are health benefits from eating fish. OEHHA also revised all of its advisories in 2009 to issue advice for sensitive and other populations using different reference doses. To show the range of advice thresholds, the table could include OEHHA's advisory tissue level and fish contaminant goal based on one fish meal/week (32 g/day) and/or the advice levels for the two different populations.

ATTACHMENT E

**LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD
COMMENTS**

[RB-6's comment letter]



California Regional Water Quality Control Board
Lahontan Region



Linda S. Adams
Acting Secretary for
Environmental Protection

2501 Lake Tahoe Boulevard, South Lake Tahoe, California 96150
(530) 542-5400 • Fax (530) 544-2271
www.waterboards.ca.gov/lahontan

Edmund G. Brown Jr.
Governor

MEMORANDUM

TO: Suction Dredge Program Draft SEIR
California Department of Fish and Game
601 Locust Street
Redding, CA 96001

FROM: 
Lauri Kemper, PE
Assistant Executive Officer
LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD

DATE: APR 08 2011

**SUBJECT: COMMENTS ON DRAFT PROPOSED REGULATIONS AND DRAFT
SUBSEQUENT ENVIRONMENTAL IMPACT REPORT (SEIR) FOR THE
SUCTION DREDGE PERMITTING PROGRAM (SCH #2009112005)**

This letter provides comments on the above-referenced SEIR and Draft Proposed Regulations for suction dredging.

The SEIR and Draft Proposed Regulations should be substantially supplemented to adequately address suction dredging in: 1) water bodies impaired by sediment and/or mercury, and 2) water bodies that are of "reference" quality. These situations lie at the two extremes of the waterbody-condition scale, and both deserve special attention to address key environmental and regulatory considerations.

At one end of the waterbody-condition scale are those water bodies listed as impaired pursuant to Section 303(d) of the Clean Water Act. For water bodies so listed as impaired due to sediment and/or mercury, the SEIR and Draft Proposed Regulations should explicitly prohibit suction dredging within or upstream of the listed water body segment(s), unless suction dredging is explicitly allowed and regulated under a Total Maximum Daily Load (TMDL) adopted by the State Water Resources Control Board.

At the other end of the waterbody-condition scale are those high-quality water bodies which are undisturbed, or minimally disturbed, and which may serve to define or preserve reference conditions and/or qualify for designation as Outstanding National Resource Waters (ONRWs). The SEIR and Draft Proposed Regulations should be supplemented to: 1) acknowledge recent developments in federal-state programs to

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provide adequate protection for remaining high-quality aquatic ecosystems; and 2) prohibit the practice of suction dredging in "reference quality" water bodies in California.

The USEPA recently released its final *Clean Water Strategy* (USEPA 2011) which places fundamental emphasis on the needs to define baseline conditions, to increase protection for existing high-quality (i.e., "healthy") waters, and to emphasize strict adherence to antidegradation policies in order to prevent the incremental degradation of high-quality waters over time. The State Water Resources Control Board is implementing the USEPA's Clean Water Strategy in part via a *Reference Condition Management Program* (RCMP) for California (Ode and Schiff 2009). Scientists working on the RCMP could provide the CDFG with information to identify high-quality or "reference-condition" water bodies in California. We suggest that you contact the authors of that report for more details, and to request assistance in identifying reference-quality water bodies. For such water bodies, the SEIR and Draft Proposed Regulations should explicitly prohibit suction dredging unless a Regional Water Board, after a public hearing, makes the requisite nondegradation findings (i.e., under State Water Resources Control Board Resolution No. 68-16) to allow degradation due to suction dredging.

As you may know, the State Water Resources Control Board, along with the Regional Water Boards and other stakeholders, is now developing biological objectives for wadeable streams and rivers throughout California. The maintenance of reference-quality waters is crucial to the success of this project. In order to adequately protect California's high-quality waters into the future, known high-impact activities such as suction dredging should be prohibited in reference-quality streams and rivers unless the findings required under Resolution No. 68-16 are explicitly made.

Please contact Thomas Suk of my staff at (530) 542-5419 if you have any questions regarding these comments.

References

Ode, P., and K. Schiff. 2009. Recommendations for the development and maintenance of a reference condition management program (RCMP) to support biological assessment of California's wadeable streams: Report to the State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP). Technical Report 581, March 2009.

U.S. Environmental Protection Agency. 2011. Coming Together for Clean Water: EPA's Strategy for Protecting America's Waters. USEPA, Washington, DC. March 2011.

cc: Mark Stopher/CA Dept. of Fish and Game

ATTACHMENT F

**SANTA ANA REGIONAL WATER QUALITY CONTROL BOARD
COMMENTS**

[Insert R-8's comment letter]

not available

ATTACHMENT G

PEER REVIEWS

[Dr. A. Russell Flegal's review]

UNIVERSITY OF CALIFORNIA, SANTA CRUZ

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Department of Microbiology and Environmental Toxicology
DIVISION OF PHYSICAL AND BIOLOGICAL SCIENCES

April 29, 2011

Dear Mr. Humphreys:

I have reviewed the documents that you provided me for a *Peer Review of Water Quality Impacts of Suction Dredging for Gold* (March 2, 2011). In preface to my specific comments, I wish to congratulate you and your associates for the care, thoroughness and rigor invested in the development of those documents. Since I am especially interested in the potential of suction dredging operations on the remobilization and accelerated methylation of mercury in California's watersheds, I am particularly pleased with the state's involvement of the USGS in studies focused on that potential prior to the development of those documents and the incorporation of the results of the USGS findings in the *Supplemental Impact Report*. Consequently, my overall assessment of that report is that it represents a state-of-the-art analysis of the potential adverse impacts of suction dredging for gold in California's waterways.

My specific comments on the documents are listed in the attached file.

Sincerely,

A handwritten signature in black ink, appearing to read "A. Russell Flegal".

A. Russell Flegal
Distinguished Professor

Response to specific questions listed in Attachment 2: Description of Scientific Topics to be Addressed by Reviewers. The responses follow the 1-4 numeration of the attachment. Statements within each of those four headings have been alphabetized in sequence.

1. Sediment/Turbidity and TSS:

1a. Agreed. The scientific literature and physical dispersion models indicate that suction dredge plumes are localized, persist only during dredging activities, and are usually, rapidly dispersed downstream to background TSS levels. This is consistent with my observations of suction dredging operations in California rivers.

1b. Agreed. The scientific literature has shown that plumes at suction dredging may exceed California Basin Plan objectives.

1c. The scientific literature indicates turbidity and TSS concentrations within suction dredging plumes will not normally exceed 50 NTUs and 340 mg/L, respectively. As the report states, some organisms – especially sessile organisms - may be adversely impacted (including killed) by the turbidity and TSS in the plumes, but it does not appear that turbidity and TSS will cause populations measurable adverse impacts to populations of those organisms. Moreover, the proposed criteria for suction dredging will protect sensitive populations by regulating the location and timing of that dredging.

1d. Agreed. The scientific literature indicates that suction dredging turbidity and TSS commonly returns to background levels downstream within hundreds of meters.

1e. As noted above (1c.) “report states, some organisms – especially sessile organisms - may be adversely impacted (including killed) by the turbidity and TSS in the plumes, but it does not appear that turbidity and TSS will cause populations measurable adverse impacts to populations of those organisms. Moreover, the proposed criteria for suction dredging will protect sensitive populations by regulating the location and timing of that dredging.”

1f. Agreed. The long-term effects of individual plumes with regards to turbidity from suction dredging should be negligible, based on the requirements proposed for individuals using suction dredges in California waters. These include the requirements on the areas that may be dredged and the treatment of tailings.

2. Mercury

2a. Agreed. It is likely that suction dredging will remobilize mercury in buried sediments within waterways that were previously contaminated from mercury and/or gold mining activities. Much of that mercury will be associated with the finest fraction of those sediments (<63 μm), as reported in the scientific literature. Since those small grain size sediments are not recovered in suction dredging operations and they are suspended longer than larger grain sediments, the mercury associated with the finer sediments will tend to be dispersed to the greatest distances from suction dredging operations.

2b. Agreed. Some of the elemental and cationic mercury remobilized by suction dredging will be converted to organic mercury (e.g., methylmercury) downstream from that activity. This conversion will probably be greatest with mercury associated with fine grained sediments mobilized by that activity, because those resuspended sediments will subsequently be deposited in relatively calm waters downstream from the dredging and then buried by other fine grained sediments. That burial will create the suboxic conditions where the microbially mediated conversion of inorganic mercury to organic mercury by sulfate reducing bacteria and iron reducing bacteria occurs.

2c. Agreed. The scientific literature shows that the bioavailability, bioaccumulation, and biomagnification of mercury is essentially limited to organic forms of mercury (e.g., methylmercury). Since suction dredging operations will remobilize mercury (primarily inorganic species) in sediments (primarily fine grained sediments) and some of that mercury will then be dispersed downstream and deposited in areas that may be relatively more conducive to microbial methylation, some suction dredging operations may cause measurable increases in mercury concentrations in biota downstream from those operations.

2d. Agreed. The threshold for sublethal mercury toxicity in wildlife and humans continues to be lowered, as extensively documented in the scientific literature. For wildlife, the principal problem is associated with the biomagnification of mercury in aquatic food chains; and for humans, the principal of mercury intake is from the consumption of fish. These problems are most often found in areas where industrial activities (e.g., mercury and gold mining) have increased the level of mercury in the environment and/or increased the conditions for microbial mercury methylation (e.g., reservoirs). Consequently, the biomagnification of mercury to potentially toxic levels to wildlife and humans is of special concern in California.

3. Other Trace Metals:

3a. Agreed. Based on the scientific literature, as well as our group's studies of metals in California waterways, it is unlikely that suction dredging operations will measurably increase concentrations of other trace metals to levels that exceed state and/or federal water quality criteria.

Because of the relatively high concentrations of chromium in some sediments in California and recent studies documenting the sublethal toxicity of hexavalent chromium in humans, it is – theoretically – possible that suction dredging could contribute to an increase of hexavalent chromium in an aquifer downstream from that activity. But based on the scientific literature and our group's studies on chromium in California watershed and aquifers, I do not believe that possibility is a legitimate concern.

3b. Agreed. Based on the scientific literature, as well as our group's studies of metals in California waterways, on the proposed restrictions, it is unlikely that suction dredging

operations will cause any substantial, long-term degradation of a water body in California by metals – other than mercury.

3c. Agreed. Based on the scientific literature and the proposed restrictions, it is very unlikely that suction dredging operations will measurably increase concentrations of other trace metals through bioaccumulative pathways to levels that pose a health threat to wildlife or humans.

3d. Agreed. The other metals potentially mobilized by suction dredging activities should not result in concentrations exceeding CTR metals criteria, unless those activities occurred in unique places (e.g., acid mine drainage areas and downstream from a copper mine). The proposed restrictions on suction dredging in such places appear to adequately address that potential problem.

4. Trace Organic Compounds:

4a. Agreed. Based on the literature, there does not appear to be high levels of toxic organic compounds (excluding methylmercury) in potential suction dredging locations in freshwater locations. There may be locations that have relatively high levels of those compounds, but I am not aware of any of them.

4b. Agreed. Based on the relatively low concentrations of toxic organic compounds (excluding methylmercury) reported for potential suction dredging in freshwater locations, there is no indication that activity would increase levels of any of those above state and/or federal water quality criteria.

4c. Agreed. Based on the relatively low concentrations of toxic organic compounds (excluding methylmercury) reported for potential suction dredging in freshwater locations, there is no indication that activity would cause levels of any of those compounds to increase to the point where they had a measurable adverse effect on any beneficial uses of those water bodies.

4d. Suction dredging will mobilize trace organic compounds that have been scavenged onto sediments and/or buried under sediments in water bodies, but I am not aware of any potential suction dredging location in California freshwaters where the amount of any of those organic compounds (with the exception of methylmercury) represents a potential environmental and/or human health threat.

Response to “The Big Picture” questions in Attachment 2:

In general, I am quite impressed with the depth and breadth of the material that I reviewed for the Water Quality Impacts of Suction Dredging for Gold. It shows that (1) a great deal of effort has been invested in the project and (2) the multiple environmental and human health problems that could potentially be caused by suction dredging operations in California’s fresh water systems have been carefully assessed. Most

importantly, those assessments are substantiated – whenever possible – by references to peer-reviewed reports in scientific journals and texts.

What makes the assessment so comprehensive is that one of the principal concerns with suction dredging in those water systems – the remobilization inorganic mercury and its subsequent biotransformation to methylmercury that can be biomagnified to toxic levels – has been investigated by the USGS. That study was outstanding. It built on numerous other studies of the sources, transport, biogeochemical cycling, bioaccumulation, and biomagnification of mercury in California's watersheds by multiple investigators at state and federal agencies, universities, and environmental companies. Therefore, while the impact of suction dredging on mercury cycling in California's fresh waters can only be truly quantified by studies at each site and each dredging activity, there is a wealth of information available to address those potential impacts – and that information has been carefully and objectively addresses in the draft report on Water Quality Impacts of Suction Dredging for Gold and the associated material that I reviewed.

My main concern with the material that I reviewed was that it should have been more carefully edited. The errors in grammar and composition, along with the inconsistencies in terminology, sometimes made it difficult – or at least frustrating – to read the material. More importantly, those editorial shortcomings detracted from the scientific rigor of the report.

As noted in my cover letter, I would prefer that the report used terms other than “significant”, which has a defined statistical value, and “substantial”, which does not have defined value. However, I have not been able to come up with other words for either term that would be more appropriate.

Other Comments:

The following comments address some other questions that I had in reading the material.

Section 228(16) “requires dredgers to avoid the disturbance of eggs, redds, tadpoles, and mollusks” (page 4.3-28 and elsewhere). I am not an aquatic biologist (although my BS and MS were in the biological sciences) so I had to look up what a “redd” was; and the report discusses the difficulties of observing some eggs, tadpoles, and mollusks in fresh water systems. Therefore, I wonder how effective that requirement will be.

I believe the “several limitations” to studies discussed on pages 4.3-38 to 39 are notable.

I find the comment that “Benthic communities seem to recover over time frames of 30-60 days after the disturbance ceases and the adverse impacts of suction dredging are not evident after a year (unless there is a very small population that is threatened or endangered)” is problematic because it appears to assume that there will not be more than one dredging event in a year or dredging events in successive years. Consequently, I have concerns with the subsequent Finding that “If left unrestricted, the impacts of suction

dredging on stream benthic communities would be less than significant with respect to all significance criteria" (page 4.3-39).

"Section 228(k)(2): Prohibits dredging within 3 feet of the current water level; at the time of dredging" is an example of the credibility problems created by poor editing.

I suggest a consistent use of "Hg" or "mercury", "MeHg" and "methyl mercury", and other chemical terminology. The inconsistent use of those terms in Chapter 4.2 and the rest of the material (often within a single paragraph) gives the appearance that chapter was assembled by committee and not carefully reviewed.

"Human health" but not environmental health concerns are listed in the sentence at the top of page 4.2-15, but both "human and wildlife exposure" are then discussed in the following paragraph.

With modern instrumentation, it is possible to measure all trace metal concentrations in essentially any sediment and it is also possible to measure trace concentrations of "synthetic organic compounds (e.g., pesticides)" in even the most pristine environments, so the discussion of those materials should be based on concentrations at potentially toxic levels – rather than simply whether they "may be present" (page 4.2-15).

Rainbow trout are "piscivorous", just less piscivorous than some other fish – in contrast to the statement on page 4.2-47.

"Although smaller nozzle sizes will still cause mercury releases when dredging mercury enriched sediment, the amount of mercury discharged would be lower than with larger nozzle sizes" is (1) grammatically incorrect and (2) only true if the durations of dredging are comparable.

Finally, I apologize for any editorial deficiencies in this brief review. It does not have the importance of your report, so I don't feel it needs rigorous editing. Still, I do feel a little hypocritical about not having someone proof these comments.

ATTACHMENT H

PEER REVIEWS

[Dr. Celia Chen's review]

Celia Chen, Ph.D., Department of Biological Sciences, Dartmouth College

The purpose of this peer review is to determine whether the scientific basis of the findings concerning water quality impacts of suction dredging for gold are both supported by the literature evaluated by the consultant team contracted by the Department of Fish and Game (DFG) and are based on sound scientific knowledge, methods, and practices. I have limited my comments to findings on the impact of resuspension of mercury and other toxic metals because those are the areas of research with which I am most familiar. These are both areas for which the impacts are considered potentially significant. I have addressed the two questions as they pertain to the findings on mercury and other toxic metals and have added my comments below in italics.

(a) In reading Chapter 4.2 of DFG's in the context of the entire Suction Dredging SEIR, are there any additional scientific issues that are part of the scientific basis not described above? If so, please comment with respect to the statute language given above in the first three paragraphs of Attachment 2.

2. Mercury. Pages 4.2-33 to 4.2-54. Available evidence suggests that suction dredging has the potential to contribute substantially to:

- **Watershed mercury loading (both elemental mercury and mercury-enriched suspended sediment) to downstream reaches within the same water body and to downstream water bodies.**

I concur that the scientific evidence for this finding is scientifically sound.

- **Methylmercury formation in the downstream reaches of the same water body and in to downstream water bodies (e.g., the Bay-Delta) from dredging caused mercury loading.**
- *I concur that the scientific evidence for this finding is scientifically sound. The studies conducted by Marvin-DiPasquale (2011) are strong support for this finding.*

- **Mercury bioaccumulation and magnification in aquatic organisms in downstream reaches within the same water body and downstream /water bodies.**

While the scientific data for Hg bioaccumulation downstream of gold dredging operations is minimal, I do strongly concur that mercury bioaccumulation and biomagnifications in downstream aquatic organisms could be substantially increased by the formation of methylmercury from dredging caused mercury loading. Not only would the total mercury burdens increase in biota but the percent of the total that is methylmercury could also increase as the inorganic mercury is transported to higher methylation systems such as reservoirs, floodplains, and wetlands.

- **Increased methylmercury body burdens in aquatic organisms which increase the health risks to wildlife (including fish) and humans consuming these organisms.**
- *I strongly concur that the scientific evidence for this finding is scientifically sound. Methylmercury is largely transferred to higher trophic levels via consumption of food and is preferentially assimilated in animal tissue relative to inorganic mercury. As a result, fish are almost 100% methylmercury. Thus, piscivorous wildlife and humans who consume fish can be exposed to levels of methylmercury that have reproductive, developmental, and neurological consequences.*

In California, suction dredging frequently occurs in streams that were contaminated with mercury beginning in the Gold Rush. Suction dredgers encounter mercury in the forms of elemental mercury, mercury alloyed with gold (amalgam), and mercury-enriched sediment. Both elemental and reactive mercury are adsorbed onto the sediments. Suction dredgers recover and process amalgam because it contains gold. Suction dredge sluices do not capture 100% of the mercury, amalgam, and gold in sediment that passes through them (losses are in the percent range). In addition, suction dredgers dredge fine grained sediment (i.e., 63 micron and smaller) in mercury contaminated streams is at least 10x higher in mercury than what would be considered background for an uncontaminated stream. Suction dredges do not recover sediment finer than 63 microns.

Suction dredges then release mercury and mercury enriched fine-grained sediment that was formerly buried. This mercury may then be transported to aquatic environments where it can be converted into bio-available methylmercury.

I concur with these statements and the potential for methylmercury exposure in aquatic environments downstream of suction dredging activity.

3. Other Trace Metals. Pages 4.2-54 to 4.2-59. Available evidence suggests that while suction dredging has the potential to remobilize trace elements (e.g., cadmium, zinc, copper, and arsenic), the levels of increase:

- **Would not be expected to exceed state or federal water quality criteria by frequency, magnitude, or geographic extent that would result in adverse effects on one or more beneficial uses.**
- *I do not concur with this statement since the spatial variation in toxic metal concentrations in stream sediments is great and dredging activities in toxic metal hotspots could result in mobilization of metals to the water column that would exceed state or federal criteria.*
- **Would not result in substantial, long-term degradation that would cause substantial adverse effects to one or more beneficial uses of a water body.**

While other trace metals do not have the same propensity to biomagnify as mercury, there is still the possibility of these other metals to be bioaccumulated by aquatic invertebrates and fish (Chapman 2003; and the many papers by NS Fisher and his colleagues). I disagree with the assessment in the SEIR that aquatic organisms do not take up metals bound to sediments or only a limited amount from water:

"...metals that are bound to sediment particles are not bioavailable to fish and benthic macroinvertebrates and thus are not in a form that can cause toxicity to aquatic life. Moreover, the dissolved fraction of metals measured is not all bioavailable for uptake by organisms".

Aquatic organisms can bioaccumulate metals from ingesting particles, both organic and sedimentary. They can also take up a great deal of metals from water particularly when the pH and dissolved organic matter conditions are both low (common in these mountain streams). The degree of toxicity from the exposure would entirely depend on the concentrations of metals and the chemistry of the water as the SEIR suggests. But these routes of exposure should not be underestimated since the extent of hotspots and the effects of gold dredging on mobilization of these metals are poorly known.

- **Would not substantially increase the health risks to wildlife (including fish) or humans consuming these organisms through bio-accumulative pathways.**
- *I do not agree with the statement which precedes this finding (p. 4.2-58, lines 29-33) and states that "because trace metals addressed in this assessment are not bioaccumulative constituents, the potential to mobilize the trace metals discussed herein would not substantially increase the health risks to wildlife or humans...". The metal contaminants other than mercury being considered here are certainly bioaccumulated by aquatic invertebrates and fish but are not biomagnified like mercury. There is an enormous literature about the exposures and and bioaccumulation of toxic metals by aquatic fauna that supports this but these studies are not included in this SEIR.*

As I have stated above, I do believe that aquatic organisms, e.g. fish, can take up metals from particle ingestion and via uptake from water. Thus, fish could be exposed to health risks from the mobilization and transport of metal contaminated sediments. By dredging up deeper contaminated sediments that may not have been in contact with biota prior to the disturbance of gold dredging, the operation could result in exposures to these metals in surface sediments downstream in which benthic infauna live and benthic feeding fish consume their prey. There is a broad literature that suggests that benthic infauna toxicity is related to porewater concentrations of metals (Besser et al. 2009; D. DiToro and his colleagues). There was no mention of these studies in the review and also no mention of porewater measurements of metals in the areas downstream of contaminated hotspots. Moreover, there are possible indirect effects of metals on fish due to the metal toxicity effects on invertebrate prey that then result in changes in the food

web and subsequent decreases in food availability for fish (Iwasaki et al. 2009). Finally, while chronic or acute effects of metals from disturbed sediments may not be a problem, the effect of metals in hotspot areas likely already have impacts on invertebrate communities (e.g. decreases in diversity) and disturbance from dredging would likely exacerbate that impact (Lefcort et al. 2010)

- **Would not exceed CTR metals criteria by frequency, magnitude, and geographic extent that could result in adverse effects to one or more beneficial uses, relative to baseline conditions, unless suction dredging occurs at known trace metal hot-spots (e.g., caused by acid mine drainage caused trace metal contaminated sediment and pore water) where high metal concentrations and bio-available forms are present.**

Until better identification of the geographic extent of hotspots is conducted for mercury or for other trace metals, I don't think that this finding is very useful. If there are extensive hotspots in these watersheds, it is likely that the CTR metals criteria could be exceeded and adverse effects could result.

In California, suction dredging frequently occurs in streams that were contaminated with trace metals beginning in the Gold Rush. Historic base metal mines align along the Sierra Nevada foothill copper belt, and are found in the Klamath-Trinity Mountains. Historic base metal and gold mines discharged their waste to streams if possible until the practice was prohibited in about 1910. In addition, many abandoned base metal mines still discharge metal-rich, acid mine water to streams in California. Although trace metal levels in Sierra Nevada streams have not been thoroughly evaluated (except for site specific data at form mine clean up projects), Regional Water Quality Control Boards have designated numerous stream segments as impaired because of trace metals. Suction dredges discharge trace metal contaminated sediment when operating in a trace metal-contaminated stream

Given that there are many trace metal contaminated streams in which suction dredging is likely to occur, the effects of metal bioaccumulation and toxicity to downstream fauna could be significant.

(b) Taken as a whole, is the scientific evaluation of the water quality effects of suction dredging presented in Chapter 4.2 of DFG's Suction Dredging SEIR based upon sound scientific knowledge, methods, and practices?

For the most part, the SEIR is based on sound scientific knowledge except for the points made above. However, the lack of information on the mercury and other toxic metal distributions in the watersheds is a very important and problematic: "not all locations of elemental mercury deposits (and other metal contamination) are known, the feasibility with which sites containing elemental mercury (or metal contaminated sites) could be identified at a level of certainty that is sufficient to develop appropriate closure areas or other restrictions for allowable dredging activities, is uncertain at this time." This

uncertainty makes the protection of aquatic resources throughout these watershed extremely difficult.

I also feel that while the review of the Hg literature is extensive and up to date, the review of literature for other toxic metals is less extensive and possibly incomplete. There is an assumption made that metals will be entirely bound to sediments and not bioavailable to aquatic fauna. The references below are just an example of some of the information that would have been useful to this SEIR.

References:

Angelo, RT; Cringan, MS; Chamberlain, DL, et al. 2007. Residual effects of lead and zinc mining on freshwater mussels in the Spring River Bason (Kansas, Missouri, and Oklahoma, USA. *Science of the Total Environment* 384: 467-496.

Besser, JM; Brumbaugh, WG; Allert, AL, et al. 2009. Ecological impacts of lead mining on Ozark streams: toxicity of sediment and porewater. *Ecotoxicology and Environmental Safety* 72: 516-526.

Chapman, PM, Wang, F, Janssen, CR, Goulet, RR, Kamunde, CN. 2003. Conducting ecological risk assessments of inorganic metals and metalloids: Current status. *Human and Ecological Risk Assessment* 9:641-697.

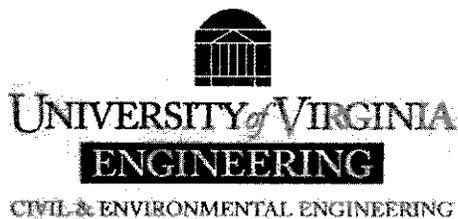
Iwasaki, Y; Kagaya, T; Miyamoto, K, et al. 2009. Effect of heavy metals on riverine benthic macroinvertebrate assemblages with reference to potential food availability for drift feeding fishes. *Environmental Toxicology and Chemistry* 28: 354-363.

Lefcort, H; Vancura, J; Lider, EL. 2010. 75 years after mining ends stream insect diversity is still affected by heavy metals. *Ecotoxicology* 19: 1416-1425.

ATTACHMENT I

PEER REVIEWS

[Dr. Joanna Curran's review]



To: Rick Humphreys, Mine Cleanup Coordinator
Groundwater Protection Section
Division of Water Quality

From: Joanna Crowe Curran, Ph.D.
Assistant Professor
Civil and Environmental Engineering
University of Virginia

Date: May 2, 2011

**External Peer Review of the Water Quality Impacts of Suction Dredging for Gold
Presented in the Draft Subsequent Environmental Impact Report of February, 2011**

This review centers around the potential impacts of suction dredge mining on water quality and toxicology (Chapter 4.2 in the Suction Dredge Permitting Program: Draft Subsequent Environmental Impact Report), specifically the effects on turbidity/TSS, mercury, trace metal, and trace organic compounds mobilized into the river system as a result of suction dredging operations. Throughout this review Chapter 4.2 is referred to as the report. References are made to Attachment 2, which details the issues to be addressed by the peer reviewers.

The report summarizes a literature review, and makes statements regarding the significance of turbidity/TSS, mercury, trace metal, and trace organic compounds released as a consequence of suction dredging on water quality. Overall the report suffers from a lack of the quantitative data needed to judge the appropriateness of suction dredging for all of California. Many of the studies in the literature are specific case studies and applicable only under river and dredging conditions similar to those applied in the case studies. Extrapolation beyond case study conditions can only be done with caution, especially given the diverse physiographic conditions in California. Many of the sections in the report also fail to consider all of the potential impacts of each parameter to the watershed as a whole or the downstream portions of the river systems. This leaves the report lacking in completeness and the conclusions difficult to justify in some cases.

Each water quality parameter is addressed separately in this document. There is first a summary of the findings followed by detailed comments on specific lines of the report.

Turbidity/TSS

The report classified the effects of turbidity/TSS as 'less than significant.' The information presented in the literature has too many gaps to conclude that the impacts from suspension and mobilization of fine sediments are in fact less than significant. The report states that the plumes created by the dredges will elevate levels of turbidity and total suspended solids up to 300-340 mg/L. The values are presented as an upper limit but derive from a single case study conducted in an area with coarse substrate, a 4" nozzle and no other dredges operating in the immediate area. This scenario is not a worst case scenario as larger nozzles (up to 10") are known to be used in suction dredging, there are often multiple dredgers in the same watershed or on a single river reach. The cited study did not explore in depth the potential impacts of several dredges or larger nozzle sizes. Therefore the estimate of 340 mg/L cannot be used as the maximum value. Because there are no limitations on the number of dredgers allowed per watershed, the dredgers don't have to report where they are dredging, and there is limited monitoring of the watersheds, it is feasible that there could be several dredges in the same watershed. It is expected that if/when suction dredging is allowed there will be multiple dredgers operating along rivers within easy access points from campsites. It would be more reasonable for the literature summary to cite the 340 mg/L estimate and apply a multiplier determined by the expected number of dredgers in a single area.

The turbidity section is focused on the distance the visible turbidity plume travels from a single dredger. The report finds that the individual plumes would not cause long term degradation of water quality with regards to turbidity and TSS. However, the literature looking further downstream at the impacts of transported sediment on mercury accumulation with lake aggradation indicate that there is a greater amount of sediment mobilized and transported than what was measured by literature cited in the turbidity section. Admittedly there has been more quantitative research into the transport of mercury, but the studies showing downstream deposition of fine sediments are indicative of upstream releases of fine sediment into suspension. There is limited mention of reservoir infilling presented in the turbidity section and the case studies that discuss the potential to have the sediment transported downstream and accumulate in reservoirs behind dams are not emphasized. While this impact may be minimal for a single dredge, the combined impact of all of the dredges releasing sediment downstream would compound the negative effects. Over time the storage capacity of a reservoir would be reduced requiring an expensive dredging operation to remove excess sediment, and a safety hazard if the dam fails.

The cited studies acknowledge that the plumes could exceed turbidity objectives, but state that the plumes would not negatively affect aquatic organisms. In contrast, other studies that have shown that as the sediment settles out of the water column that it does have an impact on mussels in the downstream reach. The dredge tailings resulted in the death of a majority of each mussel species observed, and none of the organisms were able to escape from the tailings that deposited on them (e.g. Krueger, Chapman, Hallock, and Quinn, 2007). Again, the downstream impacts of the release of sediments into suspension need to be more fully considered.

Fine sediment that creates turbidity will deposit on the surface of the stream bed, potentially infilling any open spaces in the sediments and burying any aquatic insects or mussels. As the sediment accumulates on the channel bed, it will smooth the bed surface and reduce surface

complexities. If a number of dredgers operate in a single area, the amount of sediment released and deposited downstream could be enough to fill in any natural pools in the channel, which are often sites of important aquatic habitat. Most of these negative effects receive little mention in the literature review on water quality. They are discussed at greater length in the geomorphology section but deserve mention here as well because the added sediment deposition will affect overall stream health. While the turbidity studies have not detailed a significant negative direct effect on aquatic life, they have shown an effect on aquatic habitat.

The literature reviewed in the report is not sufficient to classify turbidity and TSS as either 'significant and unavoidable' or 'less than significant.' By the definition presented on page 4.2-24 significant impacts include "increase levels of any priority pollutant or other regulated water quality parameter in a water body such that the water body would be expected to exceed state or federal numeric or narrative water quality criteria... by frequency, magnitude and geographic extent and would result in adverse effects on one or more beneficial uses." While the increased turbidity and TSS may not result in bioaccumulation, there is not enough information about the impacts of dredge nozzle sizes larger than those presented in the literature, channel beds with significant fine sediment content, or multiple pieces of equipment operating in the same watershed to definitively rule out the potential to cause a significant impact. The data presented in the literature are from a sequence of individual case studies from streams with coarse substrate, using equipment that is smaller than specified by the regulations, and without any other dredging operations occurring nearby. If the regulation is to explicitly specify require that dredgers conform to these conditions, the impact may be 'less than significant,' but there is not enough information to consciously deem the impacts less than significant at this time.

In order to make a valid conclusion more information is needed in areas with silty substrate, using the maximum allowable equipment size, and with several dredges operating in the same watershed. These types of quantitative studies were not included in the literature considered in this report. The report makes note of these data gaps on page 4.2-21 line 43 "... the available data likely does not address every possible combination of variables in which turbidity/TSS discharges may occur." However, the language of the report minimizes these issues in the individual impact sections.

Specific Comments on IMPACT WQ-3: Effects of Turbidity/TSS Discharges

4.2-28 line 31: "resuspension of coarse and fine sediments into the water column by suction dredging activity is a function of several factors..." One of these factors is the number of dredgers operating in a watershed or river reach. Please specify the number of dredgers and their locations relative to each other.

4.2-29 line 14: the distance of the turbidity disturbance has been underestimated because the cited studies would not provide an accurate estimate. Harvey (1986) studied a site with a 100% gravel surface. The amount of fines that could have been suspended and created turbidity was negligible at best. Somer and Hassler (1992) conducted their studies under conditions that would minimize turbidity plumes. The dredging was conducted without any other nearby dredgers, using the small size 4" nozzle, and during high flows, which allowed for the fastest possible dispersal of suspended material.

4.2-29 line 16: "maximum reported TSS concentrations were up to 300- 340 milligrams per liter (mg/l) immediately downstream of the dredge, decreasing to background levels within 160 meters (Thomas 1985)." This finding derives from one case study from Montana. The stream bed in the case study was primarily gravels and cobbles, which would have minimal fine sediment available for suspension. Thus, this study is not a reliable source from which to estimate maximum TSS concentrations. It is from a state with a very different physiographic setting, from a stream with higher grain size distribution than is reasonable for a maximum scenario, and result from use of a 6.4 cm nozzle, which is much smaller than the regulatory maximum for recreational dredgers of approximately 18 cm in most areas.

4.2-29 line 23: "In one case, a turbidity plume was said to extend "well over a mile," but turbidity levels from this plume were "within limits" (USFS, 1996). This study underestimates turbidity levels because the samples were taken below the mixing zone. If the samples were taken within the turbidity plume, the levels would have been much high and likely above acceptable limits.

4.2.29 line 24: "The extent of the turbidity plume is influenced by the composition of the streambed, dredging in streams with higher proportions of fine materials will generate a more extensive turbidity plume (Harvey 1982, Harvey 1986). Also, observations of large dredges and many dredges in a water course suggest that the turbidity increases can be large." By these statements, the author communicates the limitations of his study and warns against broad extrapolation of the results. This kind of cautionary language needs to be included in the report. Showing data from a majority cobble stream or smaller dredging nozzles than the regulation stipulates is not giving an honest representation of the potential impacts of turbidity or TSS.

4.2-30 line 21: "affects and entire" - should be 'an' and not 'and'

4.2-31 line 39: The impact of suspended solids on burial of non-mobile organisms is mentioned in the report, but no real solution considered or provided. Research from Washington State suggests dredge tailings have a significant impact on the lifespan of mussels in the streams. While there wasn't a large impact on the organisms as they passed through the equipment, there was a very high mortality rate of those that were buried in the tailings.

Krueger, K., Chapman, P., Hallock, M. and T. Quinn. 2007. Some Effects of Suction Dredge Placer Mining on the Short Term Survival of Freshwater Mussels in Washington. *Northwest Science* 81(4): 323-32.

4.2-31 line 36: "Thomas (1985) and Harvey (1986) indicate that in some streams where dredges operate at low density, suspended sediment is not a significant concern because effects are moderate, highly localized and readily avoided by mobile organisms." Both of these studies underestimate suspended sediment as a result of the large grain sizes of the river substrate.

4.2-32 line 14: In addition to underestimating the TSS and turbidity values by presenting data from "average" scenarios and not worse case, no exploration is made into quantifying the impacts of having several dredges working together or in the same watershed. It is reasonable to expect that under those conditions the water would have increased suspended sediment and turbidity levels. The extent of an increase in turbidity is unknown, but could increase the likelihood of having an adverse impact on the fish and invertebrates.

4.2-32 line 23-26: The Program is supposed to include additional prohibitions that would avoid and limit potential disturbance of fine sediment, however no specifics are mentioned concerning moving dredging equipment in and out of rivers and the potential damage to the riparian area or channel bank.

Mercury

The report concludes that the effects of mercury discharged from suction dredging are 'significant and unavoidable.' This finding relies heavily on a case study comparing two dredging pits. The report is written with an emphasis on findings from Pit #2, leading the reader to believe that Pit #2 is a worst case scenario but without statistical evidence to prove show this. At the same time Pit #1 is presented as representative of the more common impact of dredging on contaminant transport. However, Pit #1 is a specific case from a channel where mining is unlikely to occur (see specific line comments below). Thus, the estimates of suspended sediment and contaminant concentrations in the water column as a result of conditions at Pit #1 are an underestimate of what should be expected. The impacts of suction dredging on mercury mobilization and transport are potentially more significant than what is presented in the report.

Because the report does not consider all potential impacts of mercury on the system, the conclusion that mercury's effects are 'significant and unavoidable' can be considered conservative. Upon study and analysis of the effects of larger dredging nozzles and mining at hot spots in the river system, the negative impacts of suction dredging on mercury mobilization can be anticipated to be greater. The addition of that information would serve to strengthen the conclusion already made based on a robust body of knowledge.

Specific Comments on IMPACT WQ-4: Effects of Mercury Resuspension and Discharge

4.2-36 line 13: "Humphreys (2005) describes a location where elemental Hg was present and whose sediment Hg concentration was 1,170 mg/kg." These results are from a lab test. The Hg concentration from tests performed on river waters is approximately 10 times higher than the lab test.

4.2-36 line 25: "some have noted that the equipment used in this study is no longer in production, and suggested that modern equipment may result in less flouing (McCracken, 2007)." There are no specifications in the rules that requiring operators to use flare end dredges, so it is not reasonable to assume they will. This was the mention of flare end dredges in the literature.

4.2-36 line 40: "This exercise was conducted for both the more typical background average Hg level sediment (Pit #1) and the worst-case hot spot sediment (Pit #2: BC)." The report defends the use of Pit #1 to represent background levels through literature citations that support the assumption (4.2-35) but an equally thorough case is not made for use of Pit #2:BC as the critical scenario in this analysis. Page 4.2-33 states "Levels from the bedrock contact layer of Pit #2:BC are assumed to be worst case from a mercury release standpoint because they are from a location know to be contaminated with historic gold mining Hg and because they are among the highest levels measured in California." There are no citations associated with these statements to lend credibility to these assumptions. Further, p.4.2-35 states "source assessment and sniping results

suggested that this location is not a unique hotspot within the South Yuba River Watershed." If it is not a unique scenario, how can it be assumed that this is a true "worst case"?

4.2-36 line 45: specify that mercury discharge rates are from Pit #2:BC

4.2-37 line 10: The reported values cannot be extrapolated. The "worst case scenario" was based on a 6.4 cm nozzle in Montana while in California the dredges are typically 14 to 18 cm. In addition the cited literatures makes note that the results would be much larger if they used a larger dredge, smaller stream channel, or siltier substrate. The report should justify the numerical values picked and assumptions made when estimating values.

4.2-38 line 1: Use of the term "estimated" in the table title implies the table provides values that have been extrapolated from 1 set of measurements taken from 2 sites. The actual studies from which these values were taken should be cited. It is not possible to assess the accuracy of the estimates without knowing how the measurements were made and if any replicate measurements were taken that could provide error bars for the estimates. The report needs to comment on the applicability of these estimates to the entire state of California.

4.2-38 line 11: The wording needs to make clear the length of the data record used to determine normal and dry flow years. As the report is currently written, it may be interpreted to say that a 4 year span to estimate normal and dry years. It would be useful to present a longer span of water data to be able to show how the observed flows compare to a long term data set and what discharge patterns constitute normal and dry.

4.2-42 line 2 -14: "More than the entire permitted population of suction dredgers ... would need to be operating... to discharge 10% of the background Hg loading in a dry year using average size... dredges." Again, the wording when presenting information based on the results from Pit #1 is misleading when it implies that the results from one study under specific conditions can be extrapolated to broad conclusions about loading. The report states that these are unlikely conditions (4.2-41), and they should be treated as such throughout the report. Less text should be spent on Pit #1 and more text should be devoted to the conditions of Pit #2? The current report can be misinterpreted due to the limited discussion of Pit #2 to indicate that dredgers would only impact the river under only one specific situation when in reality it is the most plausible situation.

4.2-42 line 10: "assuming 50% of transported sediment is deposited in a reservoir between where suction dredging is occurring and downstream reaches where particle bound Hg may reach the Delta"- where is this 50% estimate coming from? Is it from the Alpers (in prep) data set? Why assume 50% when 4.2-41 states that "During water years 2001-2004, it is estimated that only 40% of total Hg inputs into Englebright Lake were deposited?" The Alpers (in prep) number may not accurately estimate the values transport downstream, as it relies on a single case study, but the report should expand upon the assumption to use 50% and therefore underestimate the values presented.

4.2-42 line 16: what about reservoir sediment accumulation and the impacts of Hg on this?

4.2-43: Figure 4.3-12 and comments derived from these results should reflect that these results are relative to an entire watershed. While the results alone show significant impact from the suction dredgers, the report should mention the likelihood that there could be several dredges in a

watershed at the same time, perhaps after 4.2-42 line 2 "... of the background watershed loading."

4.2-46 line 36: "all taxa collected in 2007 had higher concentrations of MeHg than the same taxa from the same sites in 2008.... Overall, levels in 2008 were statistically significantly higher than levels in 2007." These statements appear contradictory.

4.2-51 line 15: "type sediment.." only need one period.

4.2-52 line 2: "2) estimates of watershed load" - is this water or sediment loadings, please specify.

4.2-52 line 36: Again, this is not where dredging is likely to occur, if the report includes this statement, it should add a statement about the unlikelihood of suction dredging taking place under non-ideal conditions. If the purpose is to show that background levels are not a substantial concern, please explicitly state that.

4.2-53 line 38- 4.2-54 line 16: How are these suggestions going to be implemented? As currently written, they are rather vague, for example not specifying an allowable nozzle size.

The Sierra Club, 2009 produced a document for Oregon that included an extensive list of suggested improvements to suction dredging regulations (i.e., improving and funding increased enforcement and education, identification and requirements of best practices and special rules for mercury). Any improvements to the regulations should consider limiting the number of dredgers per watershed, having the miners applying for the permits that specify machine type, horse power, nozzle size, and both watershed and specific river location where dredging will occur.

Riskedahl, Mark, and Lesley Adams. Letter to Beth Moore. 8 June 2010. Oregon Coastal Alliance. <http://www.oregoncoastalliance.org/documents/NEDC%20re%20suction%20dred.pdf>. Accessed online on 18 Apr. 2011.

4.2-54 line 11: who would monitor and enforce this?

Other Trace Metals

The release of trace metals is listed as a 'significant and unavoidable' effect of suction dredge mining. This contradicts the findings summarized for other trace metals in attachment 2 (page 3) which indicates that they are not expected to have a significant impact outside of hot spots, and that suction dredging would not "result in substantial, long term degradation that would cause substantial adverse effects to one or more beneficial uses of a water body." The difference may be due to an update but the language of the report could be misinterpreted.

The report indicates that "dissolved trace metals or that fraction of the total metal mobilized that is adsorbed to sediment particles <63 μm that stay suspended for long periods of time tend to be rapidly diluted..." (4.2-55 line 14). This statement can lead the reader to believe that once outside of the immediate proximity of the dredging operation there are few downstream impacts of the increased release of other trace metals. Instead, because these metals are transported with fine sediments, there is a strong possibility that these contaminants will deposit downstream and accumulate over several seasons. The report identifies suction dredging at river hot spots as

having the potential to severely impact the river by releasing a large quantity of metal into the flow (4.2-58 line 7), but does not then detail the potential for accumulation of these metals although acknowledging that many 303(d) listed water bodies are lower elevation bays and estuaries, where the fine sediments transported downstream from suction dredging sites would be likely to accumulate. There is also no consideration given to the increased probability of trace metal impacts on the river system when multiple dredgers are operating in a single river reach.

Similar to the situation with the turbidity section, there is not a robust body of scientific literature from which to draw quantitative conclusions. However, there is enough information to indicate a possibility of adverse water quality effects from suction dredging. Releases of trace metals with suction dredging would be unavoidable because there are currently no means of tracking where suction dredging occurs or a database of hot spots in California Rivers. Without any record of where the dredging activity is going to take place, there exists the potential for dredging upstream of a habitat sensitive areas. The qualitative evidence of negative impacts from trace metals in hot spots makes dredging location an important factor in the classification of this parameter as 'significant and unavoidable,' and any summary of that section should clearly spell that out for the readers if attachment 2 is to be distributed to decision makers. Thus, in the case of trace metals, the conclusion that impacts are 'significant and unavoidable' derives more from qualitative assessment of the information than from quantitative analysis.

Specific Comments on IMPACT WQ-5: Effects of Resuspension and Discharge of Other Trace Metals

4.2-55 line 14: What about accumulation behind dams, or in pools and riffles? While this may be covered in the earlier report section on Geomorphology, it should be mentioned here as it can impact the overall stream health and quality.

4.2-56 line 20: Is this area a good representative? Does it represent a worst case scenario?

4.2-57 line 9: "particulate-derived metals should not affect downstream sediment concentrations significantly" What about what is bound to fine sediment traveling in suspension down to reservoirs as discussed in the mercury section? It may not explicitly be bioavailable, but it will still accumulate overtime.

4.2-57 line 25: these results are based on a single dredge operating. The report should make mention of the expected results when several dredgers are operating in the same watershed and if they are operating in series? (See USFS, 1996 for the likelihood of having several dredgers in a watershed).

4.2-57 line 26: What about impacts to buried eggs in the dredging areas? Are there any expected impacts to mussels (see Krueger et. al., 2007)?

Trace Organic Compounds

The finding for impacts due to trace organic compounds is 'less than significant.' The literature reviewed for this finding is both quantitative and qualitative. Trace organics are not known to have accumulated in large amounts in the upstream areas of California Rivers. Although there are not estimates of their actual amounts in California Rivers, the conclusions is supported by the

cited literature. Organic compounds travel adsorbed to fine sediment and remain attached to the sediment upon its deposition. Because the compounds do not become bioavailable, even after mobilization and transport, they are unlikely to have any effect on overall water quality. Although the scientific literature on the subject is not extensive, it is complete and supports the finding of a 'less than significant' impact.

Specific Comments on IMPACT WQ-6: Effects of Trace Organic Compounds Discharged

4.2-59 line 19: "trace organic compounds have rarely been observed above public health thresholds in fish in upper elevation watersheds where suction dredging generally occurs."

4.2-59 line 44: "the vast majority of trace organic compounds mobilized by suction dredging would be adsorbed to sediments, most of which would rapidly re-settle to the stream bed within close proximity to the dredging site." A portion of the sediment may be transported far downstream (as stated in the mercury section). While the magnitudes on the individual scale may be small, the potential cumulative impact may be much more significant. The potential for future problems due to the effect of accumulated trace organics should be discussed.

4.2-60 line 18: What about several dredgers operating at the same time?

4.2-60 line 43: "would potential affect sediment..." should that be potentially?

Respectfully submitted,

Joanna Curran

Joanna Crowe Curran, Ph.D.
Assistant Professor
Civil and Environmental Engineering
University of Virginia

ATTACHMENT J

PEER REVIEWS

[Dr. David Evers' review]

To: Rick Humphreys
From: David Evers
Re: Peer review of water quality impacts of suction dredging for gold
Date: 4 May 2011

Please find below my responses to the scientific topics to be addressed by reviewers. My scientific background and expertise is limited to question 2. My response to each question is in italics.

**Description of SCIENTIFIC Topics
to be addressed by reviewers**

1) Sediment/Turbidity and TSS. Pages 4.2-28 to 4.2-33. Available evidence suggests that individual suction dredges have the potential to re-suspend in-stream sediments, resulting in plumes containing elevated levels of turbidity and total suspended solids (TSS) (e.g., up to 300-340 mg/L).

This question is outside of my area of expertise and I therefore do not have a comment.

2. Mercury. Pages 4.2-33 to 4.2-54. Available evidence suggests that suction dredging has the potential to contribute substantially to:

- **Watershed mercury loading (both elemental mercury and mercury-enriched suspended sediment) to downstream reaches within the same water body and to downstream water bodies.**

Suspended sediments with mercury can travel great distances downstream from point sources (see response for next bulleted question).

- **Methylmercury formation in the downstream reaches of the same water body and in to downstream water bodies (e.g., the Bay-Delta) from dredging caused mercury loading.**

The formation of methylmercury downstream from a point source of mercury is a known, but only recently quantified phenomenon for higher trophic level, terrestrially-based organisms (e.g., songbirds and bats). A recent study on the South River, Virginia found point source related contamination for mercury at levels of significant reproductive concern to 137 km downstream. Therefore, mercury can travel at great distances, and often times not methylate at levels of concern to fish and wildlife until it is deposited in areas that have great abilities to methylate.

- **Mercury bioaccumulation and magnification in aquatic organisms in downstream reaches within the same water body and downstream /water bodies.**

Suspended sediments with mercury can travel great distances downstream from point sources and have an ability to methylate at levels that can create adverse impacts to aquatic and terrestrial organisms (see response for above bulleted question).

- **Increased methylmercury body burdens in aquatic organisms which increase the health risks to wildlife (including fish) and humans consuming these organisms.**

Increased methylation and availability of mercury can have individual and population level impacts to aquatic and terrestrial organisms, including vertebrates such as fish, amphibians, birds and mammals. Based on studies in the eastern United States, piscivores are at high risk to methylmercury contamination and toxicity because they often occupy elevated trophic positions where the biomagnifications of methylmercury can have its greatest impacts. The toxic levels of methylmercury causing significant reproductive impacts in avian piscivores is well established in the Common Loon by Evers et al. 2008 and Burgess and Meyer 2008. Based on these and other studies, the dietary criterion listed in Table 4.2-2 for avian wildlife of 0.02 mg/kg is out-dated and should not be used. Yeardley et al. 1998 used an existing dietary criterion that does not represent actual toxic thresholds for avian piscivores and therefore should not be used as a reference for dietary criteria (e.g., the citation of this paper simply continues that incorrect assertion for a dietary criteria).

Also, the dietary criteria used for avian piscivores should not be used for avian invertivores. Recent evidence demonstrates that avian invertivores are often more sensitive than avian piscivores based on Heinz et al. 2009. Based on recent evidence, invertivores (songbirds and bats) that have a diet originating from wetland habitats can have the ability to be at greater risk to environmental mercury loads vs. piscivores.

Burgess, N.M. and Meyer, M.W. 2008. Methylmercury exposure associated with reduced productivity in common loons. *Ecotoxicology* 17:83-91.

Evers, D.C., L. Savoy, C.R. DeSorbo, D. Yates, W. Hanson, K.M. Taylor, L. Siegel, J.H. Cooley, M. Bank, A. Major, K. Munney, H.S. Vogel, N. Schoch, M. Pokras, W. Goodale, and J. Fair. 2008. Adverse effects from environmental mercury loads on breeding common loons. *Ecotoxicology* 17:69-81.

Heinz, G., D. Hoffman, J. Klimstra, K. Stebbins, S. Kondrad, and C. Erwin. 2009. Species differences in the sensitivity of avian embryos to methylmercury. *Archives of Environmental Contamination and Toxicology*. 56:129-38.

In California, suction dredging frequently occurs in streams that were contaminated with mercury beginning in the Gold Rush. Suction dredgers encounter mercury in the forms of elemental mercury, mercury alloyed with gold (amalgam), and mercury-enriched sediment. Both elemental and reactive mercury are adsorbed onto the sediments. Suction dredgers recover and process amalgam because it contains gold. Suction dredge sluices do not capture 100% of the mercury, amalgam, and gold in sediment that passes through them (losses are in the percent range). In addition, suction dredgers dredge fine grained sediment (i.e., 63 micron and smaller) in mercury contaminated streams is at least 10x higher in mercury than what would be considered background for an uncontaminated stream. Suction dredges do not recover sediment

finer than 63 microns.

Suction dredges then release mercury and mercury enriched fine-grained sediment that was formerly buried. This mercury may then be transported to aquatic environments where it can be converted into bio-available methylmercury.

3. Other Trace Metals. Pages 4.2-54 to 4.2-59. Available evidence suggests that while suction dredging has the potential to remobilize trace elements (e.g., cadmium, zinc, copper, and arsenic), the levels of increase:

This question is outside of my area of expertise and I therefore do not have a comment.

4. Trace Organic Compounds. 4.2-59 to 4.2-60. Available evidence suggests suction dredging has the potential to remobilize trace organic compounds if present:

This question is outside of my area of expertise and I therefore do not have a comment.

The Big Picture

Reviewers are not limited to addressing only the specific issues presented above, and are asked to contemplate the following questions.

(a) In reading Chapter 4.2 of DFG's in the context of the entire Suction Dredging SEIR, are there any additional scientific issues that are part of the scientific basis not described above? If so, please comment with respect to the statute language given above in the first three paragraphs of Attachment 2.

The scientific issue of greatest concern is the use of older references that have been superseded by more recent information.

(b) Taken as a whole, is the scientific evaluation of the water quality effects of suction dredging presented in Chapter 4.2 of DFG's Suction Dredging SEIR based upon sound scientific knowledge, methods, and practices?

The scientific evaluation of the water quality effects of suction dredging is generally based on sound scientific knowledge, however, recent scientific studies are not well represented and therefore information presented in this document may not be relevant.

CONCLUSIONS: *The scientific merit of this report is high. However, recent advances in the understanding of mercury transport in riverine ecosystems and the effects of methylmercury in wildlife are not well represented. Recent findings should be recognized as they may have significant ramifications in decision-making. Streams and rivers that have significant wetland areas should be of particular concern for mercury remobilization by suction dredging, even if dredging activities are over 130km upstream.*



SOUTH YUBA RIVER CITIZENS LEAGUE

May 10, 2011

Mark Stopher
CA Department of Fish & Game
601 Locust Street
Redding, CA 96001

Re: Comments on Draft Suction Dredge Mining EIR

Dear Mr. Stopher,

The South Yuba River Citizens League, an organization dedicated to protecting and restoring the Yuba River watershed, appreciates the opportunity to comment on the draft Supplemental Environmental Impact Review (EIR) for suction dredge mining.

The Yuba River watershed is home to myriad and diverse species, including federally protected amphibians, plants, and runs of Chinook salmon, steelhead, and green sturgeon. These species require extensive recovery actions, beginning with protection from pollution impacts to their habitats. In addition, people who use the watershed for their recreation and sustenance also require protection from impacts to the river.

The Yuba watershed struggles daily with a toxic legacy of mining on a massive scale. A number of streams, rivers and reservoirs are listed as impaired waterways due to mercury, including Englebright reservoir, which has a Total Maximum Daily Load (TMDL) scheduled to be set in 2016, due to the health and environmental damage wrought by mercury.

The Yuba River watershed is a microcosm of the Sierra Nevada, where many dozens of waterways, lakes and reservoirs suffer the effects of mercury poisoning. Allowing any mercury into our waterways would be a giant step backwards, contributing to a cumulative impact on the system as a whole.

Please revise the regulations to prohibit suction dredge mining in all rivers and streams that provide critical habitat and future recovery areas for threatened and endangered fish and wildlife. Please close all mercury-impaired rivers and streams to suction dredge mining, and prohibit suction dredge mining in waterways that flow into these rivers and streams, to protect water quality, human health, fish, and wildlife. And, please ban suction dredge mining where data is insufficient regarding mercury load, transport, and bioaccumulation.

Recreational and commercial mining is not a legitimate activity in California if it is done at the expense of the state's fish, wildlife, water quality, human health, and state-protected beneficial uses of our rivers and streams.

California's rivers, streams, fish, wildlife, and water quality must be protected from the adverse impacts of suction dredge mining. The proposed regulations simply do not provide sufficient protection for these sensitive resources.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jason Rainey", is placed above the typed name.

Jason Rainey
Executive Director
South Yuba River Citizens League

SUCTION DREDGE PERMITTING PROGRAM
Draft Subsequent Environmental Impact Report (DSEIR)
Comment Form

Name:	Russell C. Tait
Mailing Address:	P.O. Box. 1411
	Columbia Calif 95310
Telephone No. (optional):	209- 532 9774
Email (optional):	

Comments/Issues: I disagree with the dredge size you want the edge of the river or stream 3 ft. from the edge. Telling the location of where I am dredging. What yellow legged frog. I haven't seen one. There are so many things that I disagree with that I can't go forward with it. I truly think that 80% of this new study is in correct. Five speakers at the Sacramento hearing that testified were well informed on the correct information that they gave.

I had the last dredge permit that was issued & had two to three weeks use out of it.

And back over dredging.

Russell C. Tait

Please use additional sheets if necessary.

SUBMIT WRITTEN COMMENTS (POSTMARKED BY 05/10/11) TO:

Mail: Mark Stopher
 California Department of Fish and Game
 601 Locust Street
 Redding, CA 96001

Email: dfgsuctiondredge@dfg.ca.gov

Fax: (530) 225-2391

Subject: Stream flow and aquatic life

Date: Tuesday, May 10, 2011 9:57:17 PM PT

From: Unknown

To: dfgsuctiondredge@dfg.ca.gov

During flood stage and spring runoff enormous amounts of water and detritus are moving in California streams. The average suction dredge moves approximately 50 cubic feet of water and solids per minute. For millions of years salmon, trout, and other aquatic species existed in this watery maelstrom. To suggest that the movement of 50 cubic feet of water and solids per a minute against the enormous flow of spring runoff is detrimental to aquatic life is utterly ridiculous. Yours, Sherm Tresca 88 'O' St. Sparks, Nevada 89431 email: ssertres@775.net



MIWOK
MAIDU

United Auburn Indian Community
of the Auburn Rancheria

David Keyser
Chairman

Kimberly DuBach
Vice Chair

Gene Whitehouse
Secretary

Brenda Conway
Treasurer

Calvin Moman
Council Member

May 10, 2011

Mr. Mark Stopher
Department of Fish and Game
601 Locust Street
Redding, CA 96001

RE: Suction Dredge Program Draft SEIR Comments

Dear Mr. Stopher:

I am writing on behalf of the members of the United Auburn Indian Community concerning new regulations proposed by the Department of Fish and Game for the permitting of instream suction gold dredge mining.

Specifically, the UAIC raises two significant defects in the proposed regulations:

1. Allowing the California public access to mine rivers and streams that are within the boundaries of California Indian reservations and rancherias.
2. The acknowledged damage that will occur statewide from this mining activity to archaeological resources and traditional cultural properties.

With regard to the first issue, the department has asserted that its authority to regulate suction dredging is limited entirely to its mandate under Fish and Game Code, and that if it determines the mining won't be "deleterious to fish," it must allow it.

On several streams and rivers stretches within reservations and rancherias, the department has made this determination and it now proposes to tell miners that it is OK to go onto the tribal trust land and take out gold.

These lands are under the sovereign authority of the Tribal government. Tribal governments are not subject to state regulation, and the department has no authority to declare waters within tribal lands open to suction gold dredge mining. If a tribal government determines that dredging would be acceptable in waters on its lands, it will regulate the activity through tribal law.

With regard to the second issue, the department's environmental impact report notes that "riverine settings are considered highly sensitive for the existence of significant archaeological resources."

Mr. Mark Stopher
Department of Fish and Game
May 10, 2011
Page 2

The document states that suction dredge mining has the potential to impact significant traditional cultural properties and unique archaeological resources. The environmental impact report states that these impacts are unavoidable, and that consultation was "not feasible," even though it was requested by a number of tribes.

The department stated that it has no jurisdictional authority to prevent damage to these cultural resources and appears ready to move forward with the proposed regulations, nonetheless. We note, for the record, that there is no other state agency that has the regulatory authority to protect cultural resources, either. The department's proposal to give miners an as yet unwritten "informational packet" to help them recognize and avoid cultural resources is not an acceptable alternative.

It is reckless for the department to issue regulations that tell miners it is acceptable to trespass on Indian lands and that fail to protect Native American human remains, associated grave goods, traditional cultural properties and priceless archaeological resources.

For these reasons, the United Auburn Indian Community urges the department to adopt the "no program" alternative.

Sincerely,



David M. Keyser, Tribal Chairman

Subject: Dredging regulations

Date: Tuesday, May 10, 2011 1:47:00 PM PT

From: Jacob Urban

To: dfgsuctiondredge@dfg.ca.gov

Mark Stopher
California Department of Fish and Game
[601 Locust Street](#)
[Redding, CA 96001](#)

Dear Sir,

Please consider my following comments regarding the SEIR and proposed regulations for suction dredging in California.

- SEIR baseline is wrong. I strongly disagree with the department using an arbitrary and misleading baseline in an attempt to make the impact of suction dredging appear greater than they are.
- Mercury is not a byproduct of dredging; in fact dredging removes at least 98% of mercury found in riverbeds. Dredgers should be rewarded, not condemned for their recovery of mercury. A recycling program should be established.
- In my opinion and experience with suction dredging there has been no evidence that dredging harms or endangers any fish. The regulations already in place protect the fish. Dredging helps spawning habitats by creating cold water refuges so fish have a habitat to live in during the warm summer months.
- The identification requirement proposed is not needed, the current system works.
- The DFG should not limit the number of suction dredging permits.
- Onsite approvals should immediately be signed off when approved.
- The DFG should not change the current nozzle size restrictions. There has been no evidence presented to substantiate a need for change. The 1994 regulations should stand.
- DFG should not further the limit places where dredging is allowed.
- Reduction of our existing dredging seasons is unreasonable.
- The proposed 3-foot rule is unreasonable
- Suction dredge regulations should not impose the requirement of Section 1600 Agreements
- Imposition of the 3/32-inch intake requirement on pumps is unreasonable
- Allowance of permit locations must be more broads. Flexibility should be allowed when searching for gold.
- The proposed dredge marking system is NOT workable
- Fuel should be allowed within 100 feet of the waterway if kept within a water-tight container or a boat.
- Limiting the operational hours of dredging is not within your authority.

The 1994 rule and regulations upon suction dredging in California have protected fish and their habitats adequately. There is no evidence that any changes are needed. It is in my opinion that these changes being proposed are just to appease certain special interest groups and are not in the benefit of the citizens of California and of the world. Many of the proposed regulations are not specific enough and will open the door to years of litigation. Changing existing regulations that currently work and protect the environment is a habit we should not get into. The economic impact from the closure of dredging in California has hurt many towns and small communities, when dredging is allowed again this help these communities economically and socially. Some of the

proposed regulations will hinder this process. Overall most of the regulations proposed are unnecessary and unsupported by evidence.

Thank you for your time and consideration in this matter. If you would like to further discuss the topic feel free to contact me.

Sincerely,

Jacob Urban
[8670 Camino Colegio Apt. 93](#)
[Rohnert Park, CA 94928](#)



United States
Department of
Agriculture

Forest
Service

Pacific
Southwest
Region

Regional Office, R5
1323 Club Drive
Vallejo, CA 94592
(707) 562-8737 Voice
(707) 562-9240 Text (TDD)

File Code: 2860

Date: May 10, 2011

Mark Stopher
Suction Dredging Program Draft SEIR Comments
California Department of Fish and Game
601 Locust Street
Redding, CA 96001

Dear Mr. Stopher:

This letter is in response to your request for comments on the Draft Subsequent Environmental Impact Report (SEIR) and draft regulations dated February 2011. We found the analysis in the SEIR to be quite thorough and appreciate the complexity and sensitivity of your agency's efforts in completing this analysis. Prior to the State moratorium on issuing suction dredging permits in 2009, there were hundreds of suction dredging operations on National Forest System lands in California. We recognize the importance of this activity and how it benefits rural economic activity. We also realize the importance of administering suction dredging activities and at the same time providing adequate and reasonable protection to Forest resources, including fisheries, cultural resources and water quality.

In the spirit of strengthening your analysis we are providing the attached comments that have been gathered from the forests of California which have a wealth of site specific resource information. Key areas that need to be strengthened in the analysis include; cumulative effects analysis, biological analysis of mercury re-suspension and discharge, incorporation of site-specific resource information provided by the Forest Service to add or modify closures and seasonal restrictions on key stream reaches to protect vulnerable species, and additional measures to protect freshwater mussel and lamprey populations.

In addition, the SEIR identified "Significant and Unavoidable Environmental Impacts of the Proposed Program" in section 6.2.3 of the SEIR. Included in these are impacts to water quality from suction dredging. Those that are of a particular concern to the Forest Service are in streams that are listed as impaired under section 303(d) of the Clean Water Act (CWA). We noticed in the range of alternatives analyzed at least one alternative addressed our concerns. We would also like to highlight that some stream reaches classified as open to suction dredging in the draft regulations lie within areas that have been withdrawn from all forms of mineral entry and location under federal law. This would preclude the State from promulgating regulations in these federally withdrawn areas. In addition the SEIR does not adequately address impacts to future administration by FS on federal lands that are open for mineral entry.



Thank you for this opportunity to provide information for your consideration. Please contact Rich Teixeira, Regional Mineral Examiners' Team Leader at (530) 295-5694, rteixeira@fs.fed.us or Michael Kellett, Regional Fisheries Biologist at (707) 562-8940, mkellett02@fs.fed.us for additional information.

Sincerely,

/s/ Randy Moore
RANDY MOORE
Regional Forester

Enclosure

Attachment 1

R5 – USFS Comments on Draft Subsequent EIR for Suction Dredging

(Biological comments compiled by M. Kellett)

Section	Page	Lines	Comments
ES	8	27-30	The DSEIR Executive Summary entitled 'Best Management Practices Information' states that "CDFG will develop and distribute a BMP pamphlet which will be issued to each permittee under the Proposed Program. Though some of the guidance contained in this pamphlet would not be legally enforceable by the CDFG, some requirements would be enforceable by other agencies..." We suggest clarification regarding enforcement of CDFG BMPs by the Forest Service and whether a policy is needed regarding Forest Service enforceable BMPs associated with permits obtained for dredging on Forest Service managed waters.
2.2.2	2-5	3-5	<p>This definition of deleterious is inconsistent with the definition provided in the CDFG November 2009 Notice of Preparation. In the 2009 Notice of Preparation, deleterious effects are described as follows:</p> <p align="center">“(1) Catch, capture, kill, or injure a species listed as candidate, threatened or endangered under the state or federal Endangered Species Act; (2) A substantial reduction in the range of any species, and/or extirpation of a population; (3) A fundamental change to the structure of a community or stream ecosystem, including substantial reductions in biodiversity or resiliency to disturbance, resulting in the reasonably foreseeable consequence of (1) or (2) above.”</p> <p>This definition of “deleterious to <i>Fish</i>” is also inconsistent with case law. The courts have ruled that a pollutant or material does not have to cause any permanent annihilation, dislodgement, etc. of fish, bird, or plant life for it to be deemed deleterious (People v. Guntert (1981) 126 Cal. App. 3d Supp. 1 [179 Cal.Rptr. 426]). In that case, the court ruled that “a substance or material is deleterious if, because of its nature or quantity, it has a harmful effect on fish, plant life or bird life when it is deposited in the waters of the State of California.”</p> <p>Clarification is needed regarding this discrepancy. Consistency regarding the definition of deleterious effects is essential since it is a key aspect of the impacts analysis and significance determinations.</p>
4.3	2	2	The Forest Service recognizes that the DSEIR represents a substantial compilation of fish species distribution information that has utility well beyond the scope of this analysis and we encourage CDFG to share the resulting spatial data with public land

			managers.
4.3 4.3	8 50	20 34	Cumulative effects are mentioned twice in Chapter 4.3 of the DSEIR. There is no cumulative effects assessment of concentrated or repeated suction dredging, concurrent activities, or the associated incremental or synergistic implications to biological resources. To avoid cumulative effects related to concentrations of suction dredging and connected actions, limit the number of dredges so that impacts related to turbidity, bedform changes, bank disturbance, noise, and vibration do not result in compound effects to aquatic resources. The recommended density is 2 to 10 dredges per mile on larger streams such as Klamath, Salmon, and Scott Rivers, and one dredge per mile on tributaries that provide habitat for ESA-listed coho salmon, Petitioned Chinook, or summer-run steelhead but are not otherwise designated "Class A." These concentration limits are based on professional fisheries evaluations and science regarding sediment plumes (USGS 1997) and substrate disturbance with consideration of the existing condition of rivers and water quality in the Klamath, Scott, and Salmon mainstem rivers. In a 1999 report, it was determined that the cumulative effects on the biota of the study stream...was likely dependent on the number of dredges operating concurrently, the distance between them, the size of the dredge, and the extent of re-colonization (USDI 1999). The same report said that at 525 feet downstream of dredges, turbidity returned to NTU levels upstream of a dredge.
4.3	23	32-33	<p>This statement is the only reference to the toxic effects of mercury from the proposed program activities on Biological Resources in Chapter 4.3 of the DSEIR, although Chapter 4.2-14, line 32 states that :</p> <p style="padding-left: 40px;">“Potential impacts of Hg and other heavy metals on fish and aquatic organisms are also discussed in Chapter 4.3 Biological Resources.”</p> <p>and Chapter 4.2-22, line 16 states that:</p> <p style="padding-left: 40px;">“Potential toxicological risks of Hg to higher trophic levels in the wildlife food chain are also discussed in Chapter 4.3 Biological Resources.”</p> <p>Although Chapter 4.2 finds that there will be significant and unavoidable effects of mercury re-suspension and discharge from suction dredging, there is no analysis of the biological implications of this finding in Chapter 4.2 or 4.3.</p> <p>Mercury poses a threat to individual organisms via lethal and sublethal impacts such as immunosuppression, teratogenesis, and endocrine disruption (Wiener and Spry 1996). There is sufficient evidence from laboratory studies to link exposure to mercury with reproductive impairment in many fish species, including species in California (Crump and Trudeau 2009). All of the Trinity River ammocoete samples evaluated by Bettaso and Goodman (2010)</p>

			had mercury concentrations considered detrimental to early life stages of fish (>0.2 mg/g; Beckvar et al. 2005). Elevated concentrations of total mercury in ammocoetes pose two potential threats: 1) adverse health effects to the individual ammocoetes and 2) ecosystem effects on ammocoete predators through bioaccumulation. At an ecosystem level, bioaccumulation of mercury in aquatic biota can result in biomagnification in higher order predators. There is no analysis of the biological implications of mercury re-suspension and discharge from suction dredging in Chapter 4.3.
4.3	24	30-34	<p>This finding contradicts a preceding statement in the DSEIR:</p> <p>“In addition, unlike salmonids, lamprey larvae may also emerge from the red[d] and find backwater or low gradient areas of sand and silt to continue development for up to seven years, filtering substrates to feed on detritus (Moyle, 2002). Therefore, for lamprey, many areas of the channel may be considered sensitive to disturbance.”</p> <p>No lamprey species were identified as fish action species in the DSEIR. The proposed closures and seasonal restrictions identified in Appendix L do not address documented lamprey spawning streams, such as S.F. Trinity River and Papoose Creek. Dredging from mining activities can impact all age classes of lamprey ammocoetes. Many age classes can concentrate together in the same areas because of habitat preference, making ammocoete populations particularly susceptible to activities that involve dredging (USFWS 2010a). Unless all occupied lamprey habitats are closed to suction dredging (Class A) the Proposed Program is likely to have a significant impact to lamprey populations, because their ammocoetes occupy stream substrates throughout the year.</p>
4.3	24	39-42	Section 228(c)(2) affords no added protection, because it relies on unfunded implementation monitoring and subsequent unfunded adaptive management.
4.3	25	4-5	Section 228(k)(16) affords no added protection, because it relies on the ability of untrained permittees to correctly identify “redds and adult fish” and self regulate their suction dredging activities when either is detected.
4.3	25	6-8	Section 4.3.5 includes analysis of the Proposed Program on spawning fish and their habitat. The analysis fails to disclose the potential impacts associated with a protracted spawning season for the Santa Ana sucker. This analysis concludes that implementation of a seasonal restriction will reduce impacts to less than significant. However, in the February 26, 2004 Federal Register (Volume 69, Number 38), the USFWS describes the Santa Ana sucker spawning period in East Fork San Gabriel as highly variable and protracted. They describe field surveys on the East Fork of the San Gabriel River where evidence was found of an extended spawning period. During these surveys, small juveniles (less than 30 millimeters [mm] standard length (1.2 inch [in]))

			were found in December 1998, and March of 1999 at the San Gabriel River site (Saiki 2000). These data indicate that spawning may be very protracted in this stream, and begin as early as November. Based on this, it appears a seasonal closure will offer limited protection for a species with such a variable spawning period.
4.3	25	24-28	Section 4.3.5 includes analysis of the Proposed Program and potential for direct entrainment, displacement or burial of eggs, larvae and mollusks. According to this analysis, fish less than four inches are at an increased risk for entrainment. Prior to the start of the suction dredging season, Santa Ana sucker, Santa Ana speckled dace and arroyo chub young of the year will not achieve a size greater than four inches. According to Saiki et al. (2007), Santa Ana suckers were found in East Fork San Gabriel in December 1998 measuring less than one inch in length. In September 1999, the majority of Santa Ana suckers measured in East Fork San Gabriel were less than 4 inches in length. Santa Ana suckers between one and two inches were found in December 1999 in East Fork San Gabriel with the majority measuring less than four inches. As a result, Santa Ana sucker and other similarly sized fish such as Santa Ana speckled dace and arroyo chub young of the year remain at risk of entrainment throughout the proposed suction dredging season.
4.3	25	37-39	<p>The freshwater mussels studied by Krueger et al. (2007) are not a suitable proxy for other freshwater mussels [or other mollusks] of California. For example, <i>Anodonta californiensis</i> has no cardinal teeth and a much thinner shell than the species (<i>Gonidea angulata</i> and <i>Margaritifera falcata</i>) studied by Krueger et al. (2007). The structure and composition of its valves renders <i>A. californiensis</i> far more vulnerable to suction dredging than <i>G. angulata</i> or <i>M. falcata</i>. Although the Krueger et al. (2007) study is very useful within its scope, it is limited in that they looked at larger, older individuals that are more robust to disturbance. Early life stages of all unionid mussels would be vulnerable to physical disturbances such as those related to suction dredge operations.</p> <p>Presuming that the effects of suction dredging on adult gastropods will be “similar to mussels” is unwarranted. In a study on sampling methods for apple snails (<i>Pomacea paludosa</i>) Darby et al. (1999) noted that “the dredge also had a tendency to damage the snails’ shells.” Gates and Kerans (2010) note that over 20% of the Snake River Physa (<i>Physa natricina</i>) specimens that were collected via suction dredge were either broken or crushed. Pulmonate snails, such as <i>Helisoma newberryi</i>, and limpets, such as <i>Lanx alta</i> have no operculum to protect their soft tissues. Certain prosobranch snails, such as those in the genera <i>Lyogyrus</i> and <i>Physella</i>, have very thin, fragile shells. Therefore, the analysis in section 4.3.5 fails to demonstrate that the Proposed Program will not be deleterious to populations of certain freshwater mollusks, such as <i>A. californiensis</i>, pulmonate snails, limpets, pea clams, and</p>

			thin-shelled prosobranch snails.
4.3	28	21-22	Section 228(k)16 affords no added protection, because it relies on the ability of untrained permittees to correctly identify “eggs, redds, tadpoles and mollusks” and self regulate their suction dredging activities when any of these are detected.
4.3	28	23-26	This finding is arbitrary and capricious, because it deviates from the criteria for significance established at 2.2.2 and 4.3.4 in the DSEIR by assessing impacts to “the species as a whole” rather than impacts manifest at the community or population level.
4.3	28	33	Section 228(k)(13) affords inadequate protection for mussels, because a “mussel bed” is arbitrarily defined as “an area of any size where the density of mussels is 40 or more/square yard.” This density is well above the mean density of mussel populations identified in the CDFG BIOS database. For example, Krall (2010), Westover (2010), and Tennent (2010) found that 66% of occupied mussel sites on the Klamath River had densities less than 40 mussels/m ² . Furthermore, actual mussel density may not be apparent based on surface estimates. For example, Westover (2010) “always found more mussels hidden under the substrate than counted on the surface per quadrat” in the middle Klamath River. The two populations of western pearlshell mussels (<i>Margaritifera falcata</i>) studied by Helmstetler and Cowles (2008) in the Clearwater River in Jefferson County, WA had mean densities of 8.6 – 20 individuals/m ² . Hastie and Toy (2008) surveyed two western pearlshell (<i>M. falcata</i>) populations in western Washington and found overall densities from 6.9 to 13.4 mussels/m ² . The highest mussel (<i>M. falcata</i>) density measured at any of the three streams studied in King County (2005) was 35 individuals/m ² . The largest aggregation of <i>M. falcata</i> that Cuffey (2002) found in the S.F. Eel River consisted of ~1100 individuals in a 78-m ² area (~14 individuals/m ²). In the upper Truckee River, the highest density mussel beds (<i>M. falcata</i>) identified by ENTRIX (2007) was 8.3 individuals/m ² . These studies clearly indicate that Section 228(k)(13) will not protect freshwater mussel populations in California from deleterious effects. All streams occupied by freshwater mussel populations that are documented in the CDFG BIOS database and other literature should be designated “Class A” in Appendix L of the DSEIR.
4.3	33	1-3	Section 228(j)(3) affords inadequate protection for juvenile salmonids and other Fish species. Although this Section requires 3/32” mesh on the intake, it does not specify the appropriate screen surface area to ensure a safe approach velocity and avoid impingement, both of which are prescribed in the NMFS (1996 & 1997) intake screening requirements.
4.3	33	5-8	Section 4.3.5 includes analysis of the Proposed Program and potential for direct entrainment of juvenile or adult fish in a suction dredge. According to this analysis, streams within the state that provide habitat for species that are very limited in number and

			<p>distribution are proposed to be closed to suction dredging (Class A), thus avoiding potential for impacts. However, there is no discussion displaying the rationale for the individual selection of streams considered to provide habitat for species that are very limited in number and distribution. Clarification is needed regarding the process used to select streams that provide habitat for species that are very limited in number and distribution.</p> <p>Santa Ana suckers now occupy only a small portion of their original range and are federally listed as threatened largely as a result of their limited distribution and numbers. San Gabriel Canyon and Big Tujunga Canyon represent two of the three remaining drainages occupied by the Santa Ana sucker. Based on the current distribution of Santa Ana sucker, Big Tujunga and all forks of San Gabriel warrant recognition as streams that provide habitat for a species that is very limited in number and distribution. Please provide the rationale for not including Big Tujunga and all forks of San Gabriel as Class A streams.</p>
4.3	35	10-12	<p>Section 4.3.5 includes analysis of the Proposed Program and potential for behavioral effects on juvenile or adult fish. Much of this discussion focuses on the effects of suction dredging to salmonids and juvenile fish. There is inadequate discussion specific to non-salmonid species such as Santa Ana sucker, Santa Ana speckled dace and arroyo chub.</p>
4.3	39	29-37	<p>This analysis focuses entirely on invertebrates as a prey base and fails to address impacts to other components of the benthic community such as algae. Algae are the primary food source for Santa Ana suckers, especially as fry or juveniles. According to the USFWS (2011) five year review, a stream system that contains the appropriate quantity of coarse substrates with some larger cobbles or boulders to provide the space for reproductive development and growth of algae as a primary food source is important for a viable population of Santa Ana suckers. Saiki states that Santa Ana suckers are more abundant in clear rather than in turbid (cloudy or hazy) water conditions (Saiki 2000, pp. 28, 52; 2007, p. 95). The 2010 USFWS critical habitat listing states this is preference is most likely because suspended sediments interrupt light penetration through the water column, causing a reduction in algal growth and thus limiting the primary food source of Santa Ana sucker. An analysis of suction dredging activity impacts on algae and Santa Ana suckers is needed.</p>
4.3	41	15-34	<p>Klamath River Thermal Refugia: The potential effects of suction dredging in stream with elevated water temperatures would produce synergistic effects (Lintz1971). Therefore, there is a need to protect cold water areas (thermal refugia). Cold water plumes from Aubrey, Beaver, Clear, Dillon, Elk, Grider, Horse, Indian, Rock, Swillup, Thompson, Ukonom Creeks can persist further than 500 feet downstream in the Klamath River (Jon Grunbaum, KNF fisheries biologist, personal communication): To protect feeding, rearing and migration to ESA-listed and at-risk salmonid species,</p>

			<p>and to be consistent with the Klamath River TMDL Action Plan and Basin Plan Amendment-September 2010, the KNF recommends expanding the 500 foot buffer around Klamath River thermal refugia associated with these creeks.</p> <p>Some of the thermal refugia associated with Klamath River tributaries require larger buffers than proposed in the tributary streams, because fish can swim further than 500 feet up these cool tributaries to utilize cool water for thermal refugia. The KNF recommends expanding the buffers in the Reduced Intensity, Water Quality and Proposed Alternatives to provide buffers in tributaries consistent with the Klamath River TMDL Action Plan and Basin Plan Amendment -September 2010. Due to their contribution of cool water habitat (thermal refugia), the KNF recommends these streams also be designated Class A: Aubrey, Beaver, Dillon, Empire, Fort Goff, King, Little Horse, Little Humbug, Mill, Nantucket, O’Neil, Portuguese, Reynolds, Rock, Sandy Bar, Stanshaw, Swillup, Ti, and Titus. (The following streams also provide cold water areas but are designated as Class A under the proposed regulation: Clear, Elk, Grider, Horse, Indian, Seiad, Thompson.)</p>
4.3 4.3	53 54	3-10 10-16	<p>Section 4.3.5 includes analysis of the Proposed Program and the potential for impacts to aquatic and wetland associated special status plant species and their habitat. CDFG states that special status aquatic and wetland associated plant species have the potential to be adversely affected by suction dredging through access to and egress from streams; establishment of encampments in riparian areas; the dispersal of non–native or invasive species; and unauthorized dredging–associated activities such as direct removal of aquatic or riparian vegetation, destabilization of streambanks, or release of noxious materials (e.g., fuel).</p> <p>The analysis confirms there is limited information regarding the location of special status plant locations. Based on this, avoidance areas cannot be reasonably identified. Suction dredge operators cannot be expected to identify or avoid special status plants. Additionally, it is not possible to predict where activities such as camping, staging, ingress and egress will occur. There is no evidence on the Angeles National Forest to support the conclusion that camping is most likely to occur in highly disturbed areas. Also, of significance, many special status plants are associated with areas of disturbance. For plant species with very small or highly localized populations, even low levels of habitat alteration can result in significant or complete loss of an occurrence. The analysis fails to analyze this potential or disclose the impacts. In general, the analysis fails to demonstrate the conclusion for a determination of “less than significant”.</p> <p>Slender–horned spineflower (<i>Dodecahema leptoceras</i>) is found in Big Tujunga Canyon and is limited in numbers and distribution. The analysis provides no information to illustrate that the Proposed Program activities will avoid further losses of this plant or its</p>

			suitable habitat.
4.3	55	28-31	The proposed regulation allows for a list of up to six locations where the permittee/applicant plans to suction dredge. This flexibility allows for the introduction and spread of aquatic invasive species to multiple watersheds in a short period of time if no regulations are specified to prevent the introduction and spread of such species. For example, a very noxious algae (Didymo) has been introduced into the Trinity River just below the Lewiston Dam area within the past few years apparently by out-of-state fishermen. Nine-thousand tons of spawning gravel delivered to the same area by the Forest Service the past few years is now at risk of becoming unusable due to the algae growth. This is one example of how a permittee could quickly spread this and other invasive aquatic species if allowed to dredge six different locations without stringent equipment cleaning requirements.
4.3	55	28-31	Address the impacts of suction dredge operations on Eurasian watermilfoil that has been identified on the Scott River.
4.3	55	32-36	Section 4.3.5 includes analysis of the Proposed Program and the potential for impacts to federal and state protected wetlands. The analysis concludes that while it is likely that some level of disturbance associated with the Proposed Program activities would occur, with the above regulations in place, it is not likely to result in substantial adverse effects to federal and state protected wetlands when considered statewide. Why is the scale for measuring effects to wetlands, riparian habitat and other sensitive natural communities considered at a statewide level? Many effects could be considered less than significant simply by adjusting the scale. This effect needs to be appropriately measured at the appropriate watershed level.
4.3	57	3-12	Section 4.3.5 includes analysis of the Proposed Program and the potential for impacts to the structure of a community or stream ecosystem including reductions in biodiversity or resiliency to disturbance. This analysis concludes that Proposed Program activities are likely to cause noticeable temporary reductions in biodiversity and/or resiliency at the dredging site and potentially at the reach scale, but not at the state-wide scale. Additionally, the analysis concludes that most reductions in biodiversity and/or resiliency at dredging sites are likely to be only temporary and many will largely recover their structure and function within a few months to a year following disturbances. Measuring the impact of program activities at a statewide scale is not appropriate. Impacts need to be evaluated at a biologically relevant scale. The effects analysis does not effectively support a conclusion of less than significant. If “most reductions in biodiversity and/or resiliency at dredging sites are likely to be only temporary,” clarify which ones are considered to be permanent. It is possible that although fewer changes are considered permanent, they may include the habitat conditions most significant to the

			overall health of the site. If literature indicates that most sites will largely recover their structure and function within a few months to a year following disturbance, how does this address streams where the suction dredging occurs repeatedly and annually at the same location? For sites used consistently for suction dredging, recurring use is likely to occur before sites have had time to recover.
4.3	59	12-31	<p>Section 4.3.5 includes analysis of the Proposed Program and the potential for activities to introduce or disperse aquatic invasive species. This analysis fails to adequately address the risk and potential effects of introduction and dispersal of aquatic invasive species as a result of Proposed Program activities. Instead of presenting a meaningful analysis, potential effects are dismissed based on the potential for other activities in the area to act as aquatic invasive species vectors. The analysis fails to support a conclusion of “less than significant.”</p> <p>The criteria for reaching a less than significant determination must not be based on whether other activities present a greater risk for impacts than those generated by the Proposed Program. If in fact, other activities occur in the same area and have potential for generating impacts similar to the Proposed Program; this would raise additional concerns about the cumulative impact of all combined activities within a finite geographic area.</p> <p>Assuming that suction dredgers are limited in the number of waterbodies that they can use in a season also fails to support the conclusion of less than significant. Additionally, some aquatic invasive species are very resilient and can persist for long periods of time outside of the water. Considering the ability of fungi and bacteria to persist outside of the water and the special treatment required for their complete elimination and the many discreet places in which a small organism can be lodged amongst equipment, the potential for aquatic invasive species to remain undetected or viable is very high. While education programs are useful and there are requirements for cleaning all equipment, there is a substantial risk that suction dredging activities will result in accidental introductions of aquatic invasive species with potentially significant impacts.</p>
Table 4.3-1 Chinook salmon (Klamath-Trinity rivers spring-run ESU)			Update the Status of Chinook salmon (Klamath-Trinity rivers spring-run ESU) Chinook. The species has been Petitioned and may become Proposed or Listed under ESA before a CEQA Declaration is completed.
Table 4.3-1 Hardhead			The segment of the San Joaquin River between Kerckhoff and Redinger reservoirs is locally known as Horseshoe Bend. This portion of the San Joaquin River has been identified as one of the few sites in the mid-elevation Sierra Nevada where hardhead minnow remain abundant (Moyle 1976; 2002). The Horseshoe Bend segment was identified as a Critical Aquatic Refuge under

			<p>the Sierra Nevada Forest Plan Amendment (USDA-Forest Service 2001; 2004), primarily due the presence of hardhead minnow. As noted in Table 4.3.1, hardhead spawning may extend into August. Monitoring of hardhead has been undertaken by Southern California Edison (SCE) as part of a condition for their license to produce hydroelectric power. Monitoring data from the Horseshoe Bend during 2009 (a below normal water year) and 2010 (an above normal water year) illustrates that fry were not detected during sampling until early-mid July, which indicates that spawning had not occurred by June 1. Dredging before July would result in direct entrainment, displacement or burial of eggs, larvae and mollusks (Impact BIO-FISH-2). Thus, July 1 should be applicable to both Fresno and Madera counties for the section of the San Joaquin River between Kerckhoff and Redinger reservoirs. However, based on the size of the fry collected from Horseshoe Bend (hardhead fry attachment) during early July of 2009-2010 (12-14 mm) it is apparent that this lifestage would be subject to direct entrainment in a suction dredge (Impact BIO-FISH-4) based on the dart speed formula provided on page 4.3-32 of the DSEIR when compared to the intake velocities displayed in Table 4.3-8. Impacts from suction dredging to these two lifestages may represent a significant impact under Criterion A: Have a substantial adverse effect directly on a Forest Service sensitive species. Hardhead in the Horseshoe Bend segment would be better conserved under Class G, open to suction dredging between September 1 and September 30.</p>
Table 4.3-1 Paiute sculpin			<p>The Paiute sculpin was not evaluated as a “fish action species” in the DSEIR. There are streams around Lake Tahoe (Placer Co.) that have Paiute sculpin, which is a narrow endemic to the Sierras. This species has a very limited distribution and resides in cobble/gravel bed rivers - usually in riffles, but can be found in pools as well. Paiute sculpin would undoubtedly be entrained by suction dredging in occupied habitats, regardless of time of year.</p>
5.5.3	23	1-3	<p>Section 5.5.3 describes cumulative impacts. The analysis of cumulative impacts to Fish Species and their Habitats, Wildlife Species and their Habitats and Special-Status Plant Species is inadequate. The analysis acknowledges that the cumulative effect of all previously described anthropogenic activities is significant. On pages 5-22 and 5-23, the document states the following:</p> <p style="padding-left: 40px;">“Thus, by definition, it is cumulative impacts that threaten the viability of the Fish species considered in this SEIR (i.e., there is not a single project or impact that is responsible for the decline of these Fish species). The decline of these species is considered to be a significant cumulative impact.”</p> <p>However, there is no adequate discussion to describe how the Proposed Program will avoid adding to these already significant cumulative impacts. In Section 4.3.5, the document discloses that nearly all Proposed Program activities will result in some level of</p>

			<p>impact to biological resources. Even with restrictions placed on the Proposed Program activities, activities are recognized as having impacts that can be minimized, but not entirely avoided through the use of restrictions. What is the cumulative effect of all these activities when combined with the already existing baseline conditions? The cumulative effects discussion fails to demonstrate that the incremental effects of the proposed program will not measurably contribute to the decline of any <i>Fish</i> species.</p>
Appendix L Butte			<p>The Action Species listed (Foothill yellow-legged frog) for certain Butte County waters (WB Feather River, Coon Hollow, Philbrook), does not correspond to species distribution information compiled by the Lassen NF. We have no data from historic records or current surveys indicating that foothill yellow legged frog (<i>Rana boylei</i>) occurred (or occurs) in the headwater tributaries of the North Fork Feather River within the Lassen National Forest boundary (USDA FS LNF 2010). In the Lassen area, the species referred to in the literature and/or historic records as the mountain yellow-legged frog (<i>Rana muscosa</i>), was redescribed in 2007 as a new species, the Sierra Nevada yellow-legged frog (<i>R. sierrae</i>). Available historic records document only <i>R. cascadae</i> and <i>R. sierrae</i> (Koo et. al 2004; Fellers and Drost 1993; CSUC database; MVZ database; Zweifel 1955). Because certain tributaries were [historically] known to contain one or more of the noted species and the existing habitat is considered “suitable”, use Class “E” should be changed to use Class “A” (Action species = Cascades frog) for all tributaries to the N.F. Feather River listed above. This would be consistent with CDFGs proposed use Class “A” listing for Warner Creek (Action Species = Cascades frog), another upper N.F. Feather River tributary.</p>
Appendix L El Dorado			<p>Alder Creek is a tributary to the South Fork American River. The SF American River, Mainstem and all tributaries (from Slab Creek Reservoir upstream to Highway 50 Bridge at Riverton), is designated Class “E” in Appendix L. This segment of the river and Alder Creek support populations of Forest Service Sensitive foothill yellow-legged frogs (many sightings by USFS fisheries crew and verified by Sierra Pacific Industries biologist Kevin Roberts between 1993 to present). The tadpoles overwinter in the river and would be adversely affected by suction dredging. The SF American River and all tributaries (from Slab Creek Reservoir upstream to Highway 50 Bridge at Riverton) should be changed from Class E to Class A to adequately protect populations of foothill yellow-legged frog.</p>
Appendix L El Dorado			<p>The mainstem and all tributaries of Rock Creek are designated Class “A” in Appendix L. The California red-legged frog was detected in Bear Creek in 2009 and 2010 by the Eldorado National Forest fisheries crew and verified by USFWS. Please clarify in Appendix L that the Bear Creek watershed in the Georgetown area is a tributary to Rock Creek, and therefore designated Class “A.”</p>

Appendix L El Dorado		The mainstem and all tributaries of Rock Creek are designated Class “A” in Appendix L. The California red-legged frog occupies habitats in Traverse Creek, per CA Red-legged Frog Recovery Plan (2006). Please clarify in Appendix L that Traverse Creek is a tributary to Rock Creek, and therefore designated Class “A.”
Appendix L Fresno		<p>The Fresno County table notes that the San Joaquin River between Redinger and Kerckhoff Reservoirs would be open to dredging between June 1 and September 30 and that the seasonal restriction was to protect hardhead minnow during spawning. The San Joaquin River forms the boundary between Fresno and Madera counties. In Appendix L under Madera County, it notes multiple waters between 1,000 and 4,000 feet in elevation would be open to suction dredging between July 1 and September 30, with the seasonal restriction identified for foothill yellow-legged frog and hardhead minnow. While the San Joaquin River between Redinger and Kerckhoff Reservoirs was not mentioned specifically under Madera County, it was proposed to be open to dredging one month later than the Fresno county side of the river. The Forest recommends the July 1st opening date to be the better date for both counties to provide an element of protection during hardhead spawning (local information below), although the fry lifestage present during this period would remain susceptible to affects.</p> <p>There are three counties partially within the Sierra National Forest (Mariposa, Fresno, and Madera). As identified in Appendix L, both Madera and Fresno counties are closed to suction dredging above 4,000 feet elevation to provide protection for Yosemite toad, mountain yellow-legged frog, and Lahontan cutthroat trout. However, Mariposa County is closed to dredging above 5,000 feet elevation for Yosemite toad and mountain yellow-legged frog. Use of 4,000 feet elevation would provide consistency across the Forest that would simplify U.S. Forest Service administration.</p>
Appendix L Fresno		Jose Creek (Fresno County) represents the only known site on the Sierra National Forest where foothill yellow-legged frog is confirmed. The basin draining the creek was identified as a Critical Aquatic Refuge under the Sierra Nevada Forest Plan Amendment (USDA-Forest Service 2001; 2004). The Forest recommends that Jose Creek and tributaries be designated as Class A – No dredging permitted at any time to assist conservation of foothill yellow-legged frog.

<p>Appendix L Los Angeles</p>			<p>The East Fork San Gabriel River, mainstem and all tributaries from San Gabriel Reservoir upstream to Cattle Canyon Creek, is designated Class “E” in Appendix L. Historically, suction dredging use in this stream stretch has included multiple operators in close proximity of each other. Harvey and Lisle (1998) states that no research has been dedicated to measuring the cumulative physical or biological effect of many closely spaced dredges. This is of particular relevance in the East Fork San Gabriel where multiple suction dredges operate simultaneously within a one mile stretch of stream. The Santa Ana sucker is limited in both numbers and distribution. Big Tujunga and San Gabriel represent two of the three remaining drainages occupied by this species. The USFWS listing rule states that approximately 80 percent of Santa Ana sucker’s historical range has been lost in the Los Angeles River watershed, 75 percent in the San Gabriel River watershed, and 70 percent in the Santa Ana River watershed (USFWS 2000, pp. 19687–19688). Additionally, in all watersheds inhabited by Santa Ana suckers, abundance is reduced because of the decrease in range (Moyle and Yoshiyama 1992, p. 204).</p> <p>Designation of “Use Code A” will prevent conflict with other federal laws and land use designations such as the Federal Watershed Withdrawal Act of 1928. Under the Federal Watershed Withdrawal Act of 1928, mineral location and entry is prohibited in San Gabriel Canyon. The EF San Gabriel River, mainstem and all tributaries from San Gabriel Reservoir upstream to Cattle Canyon Creek, should be changed from Class E to Class A to adequately protect populations of Santa Ana sucker, Santa Ana speckled dace, and arroyo chub.</p>
<p>Appendix L Placer</p>			<p>The Middle Fork American River, between Oxbow Reservoir and Interbay Dam, is designated Class “D” in Appendix L. This segment of the river supports populations of Forest Service Sensitive hardhead and foothill yellow-legged frogs (Placer County Water Agency 2010ab). The Middle Fork American River, between Oxbow Reservoir and Interbay Dam should be changed from Class D to Class A to adequately protect populations of these two species.</p>

Appendix L Plumas			<p>The Action Species listed (foothill yellow-legged frog) for certain Plumas County waters (N.F Feather above Lake Almanor, Rice, Willow, Domingo, Yellow, Butt, Little Grizzly), does not correspond to species distribution information compiled by the Lassen NF. We have no data from historic records or current surveys indicating that foothill yellow legged frog (<i>Rana boylii</i>) occurred (or occurs) in the headwater tributaries of the North Fork Feather River within the Lassen National Forest boundary (USDA FS LNF 2010). In the Lassen area, the species referred to in the literature and/or historic records as the mountain yellow-legged frog (<i>Rana muscosa</i>), was redescribed in 2007 as a new species, the Sierra Nevada yellow-legged frog (<i>R. sierrae</i>). Available historic records document only <i>R. cascadae</i> and <i>R. sierrae</i> (Koo et. al 2004; Fellers and Drost 1993; CSUC database; MVZ database; Zweifel 1955). Because certain tributaries were [historically] known to contain one or more of the noted species and the existing habitat is considered “suitable”, use Class “E” should be changed to use Class “A” (Action species = Cascades frog) for all tributaries to the N.F. Feather River listed above. This would be consistent with CDFGs proposed use Class “A” listing for Warner Creek (Action Species = Cascades frog), another upper N.F. Feather River tributary.</p>
Appendix L Riverside			<p>San Mateo Creek and its tributaries are not listed under Riverside County in Appendix L. A Class “A” designation is warranted for San Mateo Creek in Riverside County, which supports populations of Arroyo Toad and Southern Steelhead. NOTE: This stream is in a wilderness area so is closed to all mining.</p>

<p>Appendix L San Bernardino</p>			<p>The DSEIR 2-46 and Appendix L indicate that Lytle Creek (below Miller Narrows) and Cajon Creek on the Front Country Ranger District of the San Bernardino NF will be open to suction dredging, despite closure recommendations submitted by the Forest Service on December 27, 2007 and December 4, 2009.</p> <p>The Forest identified a need to close Lytle Creek (below Miller Narrows) due to the documented presence of Santa Ana speckled dace, a sensitive species. A year-round closure of this section of Lytle Creek is warranted to protect this rare fish and its habitat. The SBNF has been conducting habitat restoration and reintroduction activities for the speckled dace in Lytle Creek for several years. Allowing suction dredging would hinder this effort and impact the life cycle of speckled dace that are known to occur in this creek.</p> <p>Appendix L identifies the action species for Cajon Creek as Santa Ana sucker and Santa Ana speckled dace. Santa Ana sucker does not occur in Cajon Creek. However, in previous comments, the Forest has identified the following special status species to be of concern in Cajon Creek: arroyo toad, San Bernardino kangaroo rat, Santa Ana speckled dace, and slender-horned spineflower. Other streams have been identified by the CDFG for year-round closure due to presence of arroyo toad alone. The known presence of these four rare species, as well as critical habitat for arroyo toad, certainly warrants a year-round closure instead of the seasonal closure as is proposed in the DSEIR. Critical habitat is habitat necessary for the recovery of species and it is important to protect the habitat year-round as both arroyo toad and Santa Ana speckled dace would need this habitat year-round. Arroyo toads, a federally endangered species, are present either in the creek or its adjacent banks year-round and could be impacted by suction dredging and associated activities at any time during the year. Arroyo toads are present in the creek during the time of year that suction dredging would take place. Speckled dace, a Forest Service sensitive species, are present year-round in Cajon Creek and a seasonal closure would still allow impacts to occur to this sensitive fish.</p> <p>In the DSEIR, North Fork of the Whitewater River is identified as a year-round closure due to the action species Sierra Madre yellow-legged frog, a distinct population segment of the mountain yellow-legged frog that is federally endangered. Although there is historical habitat for this species in the Whitewater watershed, it is the Middle Fork of Whitewater that is Designated Critical Habitat for the frog. We recommend exclusion of the entire Whitewater River watershed (Mainstem, South Fork, Middle Fork, and North Fork) on the SBNF to be excluded from suction dredging on a year-round basis to protect habitat needed for the recovery of this endangered species.</p>
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<p>Appendix L San Bernardino</p>			<p>The San Bernardino National Forest provided the CDFG with current information on known occurrences of federally-listed riparian species in the form of our 2008 Riparian Biological Assessment. This document was included in our previously submitted comments. Our recommendation was to exclude streams on the SBNF with known occurrences of federally-listed species. This does not appear to have been done in the DSEIR. More specifically, our request is to clearly list each of these streams, even if they are not typically used for suction dredging, as excluded from suction dredging operations in the DSEIR. Please also include Plunge Creek in this list as it is occupied by Santa Ana speckled dace, a sensitive species.</p> <p>In addition, we previously provided additional rationale to close other areas on the Mountaintop and San Jacinto Ranger Districts. The 2008 Riparian Biological Assessment did not include perennial and intermittent streams with suitable habitat for Threatened and Endangered Species or important fish habitat for sensitive species and wild trout populations. Therefore, the Forest requests that suction dredging be excluded from any perennial or intermittent water sources that occur on the Mountaintop and San Jacinto Ranger Districts to minimize impacts to known occurrences, critical habitat, and suitable habitat for federally threatened, endangered, and sensitive species. Please inform the Forest if there is a need to identify each stream and associated tributary.</p> <p>Please recognize that the San Bernardino National Forest has newly designated wilderness areas on the San Jacinto Ranger District that are in addition to those areas that were recommended to be wilderness in the 2005 Land Management Plan. Suction dredging should also be restricted in special area designations such as Research Natural Areas and Wild and Scenic Rivers. We have four designated Wild and Scenic Rivers, and additional rivers that are eligible for designation, which we are directed to protect for outstandingly remarkable values. Please contact the Forest if assistance is needed in identifying these locations.</p> <p>In December 2010, Critical Habitat was designated for Santa Ana sucker in Mill Creek on the SBNF. Please identify a year-round exclusion of suction dredging for this stream to protect the habitat for the federally threatened Santa Ana sucker. Critical habitats are areas that have been identified as needed for the recovery of the species and should be closed year-round to allow for recovery of the species.</p> <p>The DSEIR identifies a seasonal closure (February 1 through August 31) within the Santa Ana River watershed in San Bernardino County (DSEIR Table (36) San Bernardino, line 6, page 2-46). The Santa Ana River within the SBNF has been identified as a suitable location to re-establish populations of native fish including the Santa Ana sucker. Please consider a year-round closure to suction dredging to protect this habitat.</p> <p>For additional information on species impacts, please contact Kim Boss at 909-382-2936.</p>
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Appendix L Shasta		<p>Action Species listed for certain Shasta County waters (Headwaters Old Cow Creek - Old Cow Creek Meadows, Rock and Screwdriver Creeks, tributaries to the Pit River) did not incorporate and/or correspond to certain waters/species distribution information available. Upper Old Cow Creek and, Screwdriver and Rock Creeks, are presently occupied by the Cascades frog (Fellers et. al 2008; Pope and Larson 2010; E.A. Engineering 1995; Fellers 1998; Koo et. al. 2004). Because upper Old Cow Creek (e.g. Old Cow Creek Meadows and elsewhere), are currently occupied by the Cascades Frog, the Cascades frog should be added as an Action Species for the portion of this headwater tributary where the species occurs, and receive a use Class “A”. The Cascades frog should also be added as an Action Species for all of Screwdriver Creek and Rock Creek and receive a use Class “A”.</p>
Appendix L Tehama		<p>Action Species listed (Sierra Nevada yellow-legged frog) for certain Tehama County waters (Elam, upper Deer Creek, Alder, upper Mill Creek) are incorrect and do not correspond to certain waters/species distribution information compiled by the Lassen NF.</p> <p>The Sierra Nevada yellow-legged frog has never been documented in either Deer Creek or Mill Creek (only foothill yellow-legged frog, below approximately 4200’ and Cascades frog above approximately 4200’). For the Cascades frog, primary sources for voucher records include CSUC and MVZ databases. See also Koo et. al (2004) and Fellers and Drost (1993).</p> <p>Because only the Cascades frog has ever been documented in upper Deer Creek and its tributaries, as well as in upper Mill Creek, use Class “A” should be retained but the Action species should be changed from Sierra Nevada yellow-legged frog to the Cascades frog. In upper Deer Creek, this would be consistent with CDFGs proposed use Class “A” for Carter Creek (Action Species = Cascades frog), an upper Deer Creek tributary “east” of Hwy 32.</p>
Appendix L Tehama		<p>Action Species listed (Foothill yellow-legged frog) for certain Tehama County waters (Martin, Summit) is incorrect and does not correspond to certain waters/species distribution information compiled by the Lassen NF.</p> <p>We have no data from historic records or current surveys indicating that foothill yellow legged frog (<i>R. boylei</i>) occurred (or occurs) in the headwater tributaries of the S. F. Battle Creek within the Lassen National Forest boundary (USDA FS LNF 2010). Available historic records document only <i>R. cascadae</i>.</p> <p>Because certain tributaries were known to (historically) contain the Cascades frog and the existing habitat is considered “suitable”, use Class “F” should be changed to use Class “A” (Action species = Cascades frog) for tributaries listed above.</p>

<p>Appendix L Tehama</p>			<p>Antelope Creek, which is occupied by CV spring-run Chinook salmon, is not listed as a water in Appendix L (Species-Based Restrictions on Proposed Program Activities). Distribution of the CV spring-run Chinook salmon for Antelope Creek can be found in report by California Department of Fish and Game (2011).</p> <p>Add Antelope Creek (Mainstem; N.F. Antelope to Judd Creek confluence; S.F. to Gun Club), Action Species (CV Spring-run Chinook salmon) and a Class “A” designation to Appendix L, Tehama County.</p>
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<p>Appendix L Trinity</p>		<p>The DSEIR 2-58 and Appendix L indicate that certain streams on the Shasta-Trinity NF that are known to currently support SONCC Coho salmon will be open to suction dredge mining. These streams include: Canyon Creek (a Forest “Tier 1 Key Watershed”), Manzanita Creek (a Research Natural Area), South Fork Trinity River, Deadwood Creek and Indian Creek. Potential impacts to the first three streams listed above will be discussed in greater detail below.</p> <p>Canyon Creek (and the adjacent portion of the mainstem Trinity River): Canyon Creek is recommended for Wild and Scenic River designation in the SHF Land and Resource Management Plan. The mainstem of the Trinity River was designated a Wild and Scenic River in 1981.</p> <p>During and presumably because of the ongoing two-year dredging moratorium, observations and fish-oriented snorkel surveys of Canyon Creek revealed significant improvements in water clarity, distance visibility and reduction in fine sediments as well as the presence of a number of spring-run Chinook salmon not seen since 2006.</p> <p>Regarding the adjacent mainstem Trinity, a recent study completed by the U.S. Fish and Wildlife Service has demonstrated the uptake of legacy mercury contamination by larval lamprey (ammocoetes; <i>Entosphenus</i> spp.) and the western pearlshell mussel (<i>Margaritifera falcata</i>) in the Trinity River (Bettaso and Goodman 2010). The study finds that there is a longitudinally increasing trend in mercury accumulation as you move downstream, in both juvenile lamprey and mussel tissue samples collected, within the 40-mile segment of the Trinity River below Lewiston Dam. The study also indicates that there is a potential point source of mercury contamination between river mile 79 (Junction City hole) and river mile 72 (just upstream of North Fork Trinity River confluence) as there was a 70% increase in total mercury levels in tissue samples collected in juvenile lamprey. The study could not resolve the source of the contamination. However, several potential sources exist between the sample sites including Canyon Creek. This should further compel CDFG to classify Canyon Creek, as well as the main stem of the Trinity River upstream of the North Fork Trinity River, as “Class A -No Dredging Permitted At Any Time,” at least until the point source of the mercury contamination can be identified.</p> <p>Manzanita Creek: Manzanita Creek has documented coho salmon adult spawning and juvenile rearing habitat. Manzanita Creek has also been granted special status as a Forest Service Research Natural Area (RNA). RNAs are part of a nationwide network of ecological areas set aside for both research and education. These areas contain important ecological and scientific values and are managed for minimum human disturbance. For these reasons, the Forest urges CDFG to classify this stream as “Class A - No Dredging Permitted at Any Time.”</p>
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		<p>South Fork Trinity River (SFTR): The SFTR was designated as a Wild and Scenic River in 1981. The area of designation is from the Trinity River confluence to the State Highway 36 bridge crossing.</p> <p>The SFTR is surveyed annually for anadromous fish during a cooperative snorkel survey between various local, state, federal and tribal entities. Although coho salmon are rarely found during surveys (being generally confined to a few tributaries on lower Hayfork Creek and the middle section of the SFTR), other anadromous fish species of concern and interest within the SFTR are found every year: spring-run Chinook salmon and summer-run steelhead. The National Marine Fisheries Service has just announced a finding for a petition to list the Chinook salmon of the Upper Klamath and Trinity Rivers Basin and critical habitat, which includes the spring-run Chinook, under the Endangered Species Act (April 12, 2011). The annual snorkel surveys continue to document the decline of the once numerous spring-run Chinook salmon and survey results show the SFTR population is near extirpation. A 1963-1964 survey estimated the spring-run Chinook population to be comprised of 11,604 adults in the SFTR (LaFaunce 1964). The results of the 2010 snorkel survey effort enumerated a total of 120 adult Chinook salmon and 88 adult summer steelhead within 61 miles of stream. The SFTR is included on California's Clean Water Act (CWA) Section 303(d) list for impairment or threat of impairment to water quality associated with sediment and temperature. The US Environmental Protection Agency developed a Total Maximum Daily Load (TMDL) for sediment within the SFTR (1998) but has yet to develop a similar plan for water temperature. The sediment TMDL for the SFTR includes all SFTR tributaries (including Hayfork Creek).</p> <p>The forest cannot support suction dredging on the SFTR as additional disturbances to the bed in this sediment-impaired stream could only be detrimental to aquatic habitat and fish survival. Additional mechanical disturbance that may release fine-grained sediment currently in storage is not acceptable. While there are proposed regulations about disallowing "high-banking" practices, etc., the potential for abuse of sensitive areas remains high. Based on the drastically declining anadromous fish populations of the SFTR and its tributaries, and the fact that the entire SFTR and its tributaries have been State listed under the CWA Section 303(d), the Forest urges CDFG to classify the SFTR and all its tributaries as a "Class A - No Dredging Permitted at Any Time" stream.</p>
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References:

Beckvar N, Dillon TM, Read LB. 2005. Approaches for linking whole-body fish tissue residues of mercury or DDT to biological effects thresholds. *Environmental Toxicology and Chemistry* 24:2094–2105.

- Bettaso JB, Goodman DH. 2010. A comparison of mercury contamination in mussel and ammocoete filter feeders. *Journal of Fish and Wildlife Management* 1(2):142–145
- CAS database. California Academy of Sciences, Herpetology. 2007. [Online database] <http://research.calacademy.org/research/herpetology/catalog/Index.asp>. Accessed May, 2009.
- California Department of Fish and Game. 2011. Chinook salmon population and physical habitat monitoring Clear, Antelope, Mill and Deer Creeks, 2008.
- CSUC database. California State University Chico. Amphibian Catalogue. 2002. On file with: USDA Forest Service, Lassen National Forest, Supervisor's Office, 2550 Riverside Drive, Susanville, CA 96130.
- Crump, K.L. and Trudeau, V.L. 2009. Mercury-induced reproductive impairment in fish. *Environmental Toxicology and Chemistry*, Vol. 28, No. 5, pp. 895–907.
- Cuffey, K.M. 2002. Freshwater mussels in a California North Coast Range river: occurrence, distribution, and controls. U.C. Water Resources Center Technical Completion Report Project No.: W-933. University of California, Berkeley.
- Darby, P.C., Bennetts, R.E., Croop, J.D., Valentine-Darby, P.L. and Kitchens, W.M. 1999. A comparison of sampling techniques for quantifying abundance of the Florida apple snail (*Pomacea paludosa* SAY), *J. Moll. Stud.* 65: 195-208.
- EA Engineering. 1995. Rock creek and Screwdriver creek aquatic resource inventories, Lassen National Forest, Hat Creek Ranger District, final report. Sacramento, CA: EA Engineering, Science, and Technology.
- ENTRIX. 2007. Draft Freshwater Mussel Report For Sunset Stables Restoration and Resource Management Plan Project. Unpublished report prepared for the California Department of General Services, Real Estate Services Division and the California Tahoe Conservancy by ENTRIX, Sacramento, CA. 21 pp.
- Fellers, G.M. 1998. 1996-97 aquatic amphibian surveys, Lassen National Forest. Point Reyes, CA: U.S. Geological Survey, Biological Resources Division, Point Reyes National Seashore.
- Fellers, G.M., K.L. Pope, J.E. Stead, M. Koo and H. Welsh, Jr. 2008. Turning population trend monitoring into active conservation: can we save the Cascades frog (*Rana cascadae*) in the Lassen region of California? *Herpetological Conservation and Biology*. 3(1): 28-39.
- Gates, K.K. and Kerans, B.L. 2010. Snake River Physa, Physa (Haitia) Natricina, Survey and Study. Department of Ecology, Montana State University, Bozeman, Montana. Work performed and completed under Bureau of Reclamation Agreement 1425-06FC1S202.
- Harvey, B.C. and T.E. Lisle. 1998. Effects of Suction Dredging on Streams: A Review and an Evaluation Strategy. *Fisheries* 23(8):8-17.
- Hastie, L.C. and K.A. Toy. 2008. Changes in density, age structure and age-specific mortality in two western pearlshell (*Margaritifera falcata*) populations in Washington (1995–2006). *Aquatic Conserv: Mar. Freshw. Ecosyst.* 18: 671–678.
- Helmstetler, H. and D.L. Cowles. 2008. Population Characteristics of Native Freshwater Mussels in the mid-Columbia and Clearwater Rivers, Washington State. *Northwest Science*, Vol. 82, No.3.

- Jennings, M. R. Personal and e-mail communications. 1997. Fish and Wildlife Biologist (Research) and Research Associate, Department of Herpetology, California Academy of Sciences
- King County. 2005. Results of a Pilot Freshwater Mussel Survey in King County. Bob Brenner, Water and Land Resources Division. Seattle, Washington.
- Koo, M.S., J.V. Vindum and M.McFarland. 2004. Results of 02-CS-11050650-029, the 2003 California Academy of Sciences survey: amphibians and reptiles of the Lassen National Forest. San Francisco, CA: California Academy of Sciences, Department of Herpetology. 172 p.
- Krall, M.A. 2010. Freshwater Mussel Abundance and Habitat in the Klamath River of Northern California. B.A. Thesis, Department of Biology and Environmental Studies, Whitman College, Walla Walla, WA.
- Krueger, K., et.al. 2007. Some Effects of Suction Dredge Placer Mining on the Short-term Survival of Freshwater Mussels in Washington. Northwest Science. 81(4): 323-332.
- LaFauce, D.A. 1964. A king salmon spawning survey of the South Fork Trinity River, Marine Resources Branch Administrative Report no. 67-10. The Resources Agency of California Department of Fish and Game - Region 1, Inland Fisheries.
- Lintz, R.L. 1971. Influence of Placer Mining on Primary Production of Alaskan Streams. U.S. Fish and Wildlife Service Research Bulletin No, 84-76.
- Moyle, P.B. 1976. Inland fishes of California. Berkeley and Los Angeles: University of California Press. 405 pp.
- Moyle, P.B. 2002. Inland fish of California, revised and expanded. University of California Press, Berkeley and Los Angeles, CA. 502 pp.
- Moyle, P.B. and R.M. Yoshiyama. 1992. Fishes, Aquatic Diversity Management Areas, and Endangered Species: A Plan to Protect California's Native Aquatic Biota. The California Policy Seminar, University of California, Berkeley, California.
- MVZ database. Museum of Vertebrate Zoology Collections Database. 2004. [Online database] <http://arctos.database.museum/SpecimenSearch.cfm>. Accessed May 2009 and May 2010. University of California at Berkeley.
- National Marine Fisheries Service (NMFS). 1996. Juvenile fish screen criteria for pump intakes. Revised May 9, 1996. Portland, OR.
- National Marine Fisheries Service (NMFS). 1997. Fish Screening Criteria for Anadromous Salmonids. NMFS Southwest Region, Santa Rosa, CA.
- Placer County Water Agency. 2010a. Final AQ-2 Fish Population Technical Study Report 2007-2009, Placer County Water Agency, Auburn, CA.
- Placer County Water Agency. 2010b. Amphibian Technical Study Report, Placer County Water Agency, Auburn, CA.
- Pope, K and M. Larson. 2010. Second Year of Population Monitoring of Remnant Populations of Cascades Frogs (*Rana cascadae*) in the Lassen Area of California. Final report to the Lassen National

Forest. Unpublished document. U.S. Department of Agriculture, Pacific Southwest Research Station, Redwood Sciences Laboratory.

Saiki, M.K. 2000. Water quality and other environmental variables associated with variation in population densities of the Santa Ana sucker. Unpublished report prepared for the National Fish and Wildlife Foundation, San Francisco, California. 117 pp.

Saiki, M.K., B.A. Martin, G.W. Knowles, and P.W. Tennant. 2007. Life history and ecological characteristics of the Santa Ana sucker, *Catostomus santaanae*. *California Fish and Game* 93(2):87-101.

Tennant, C.A. 2010. A population demographic analysis of *G. angulata* in the Mid-Klamath Basin. B.A. Thesis, Department of Biology and Environmental Studies, Whitman College, Walla Walla, WA.

USDA- Forest Service. 2001. Sierra Nevada Forest Plan Amendment. Final Environmental Impact Statement, Record of Decision, USDA Forest Service, Pacific Southwest Region, Jan 2001

USDA- Forest Service. 2004. Sierra Nevada Forest Plan Amendment. Final Supplemental Environmental Impact Statement, Record of Decision, USDA Forest Service, Pacific Southwest Region, R5-MB-046 Jan 2004.

USDA-Forest Service, Lassen National Forest. 2010. Existing Environment for Federally-listed (non-anadromous) and Forest Service Sensitive Aquatic Species, Part A: Forest Service Sensitive Amphibian Species, Lassen National Forest. Unpublished internal document (Version 4.29.10)

USDI Environmental Protection Agency. 1999. Impact of suction dredging on water quality, benthic habitat, and biota in the Fortymile River, Resurrection Creek, and Chatanika River, Alaska.

[USFWS] United States Fish and Wildlife Service. 2000. Endangered and Threatened Wildlife and Plants; Threatened Status for the Santa Ana Sucker; Final Rule. April 12, 2000. Pages 19686-19698.

[USFWS] United States Fish and Wildlife Service. 2004. Endangered and Threatened Wildlife and Plants; Final Rule to Designate Critical Habitat for the Santa Ana Sucker (*Catostomus santaanae*). February 26, 2004. Pages 8839-8861.

[USFWS] United States Fish and Wildlife Service. 2010a. Best Management Practices to Minimize Adverse Effects to Pacific lamprey. April, 2010. 25 pp.

http://www.fws.gov/pacific/fisheries/sp_habcon/lamprey/

[USFWS] United States Fish and Wildlife Service. 2010b. Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for Santa Ana Sucker; Final Rule. December 14, 2010. Pages 77962-78027.

[USFWS] United States Fish and Wildlife Service. 2011. Santa Ana Sucker (*Catostomas santaanae*) 5 Year Review: Summary and Evaluation. US Fish and Wildlife Service, Carlsbad Field Office. March 10, 2011.

USGS Fact sheet FS-154-97, October 1997. Studies of Suction Dredge Gold-Placer Mining Operations Along the Forty Mile, Eastern Alaska.

Westover, M.L. 2010. Freshwater Mussel Distribution, Abundance and Habitat Use in the Middle Klamath River. B.A. Thesis, Department of Biology and Environmental Studies, Whitman College, Walla Walla, WA.

Wiener, J.G., and Spry, D.J., 1996, Toxicological significance of mercury in freshwater fish, in Beyer, W.N., Heinz, G.H., and Redmon-Norwood, A.W., eds., Environmental contaminants in wildlife— Interpreting tissue concentrations: Boca Raton, Fla., Lewis Publishers, p. 297–339.

Zweifel, R.G. 1955. Ecology, distribution and systematics of frogs of the *Rana boylei* group. University of California Publications in Zoology. 54: 207-292.

(Non-Biological Comments compiled by R. Teixeira)

Section	Page	Line	Comments
2.2.4	2-18	13	The regulations have opened up the North Fork American River, which has been designated a “Wild” portion of a Wild & Scenic River and now would allow an 8-inch dredge. Except for valid existing rights, federal law prohibits all forms of mining, including suction dredging, to remove and extract gold and other minerals on NFS lands underlying the North Fork American River. Permitting suction dredge mining is in direct conflict with federal law. This river should remain closed to suction dredging.
2.2.4	2-19	10	The regulations should include requirements for using ropes or cables to tether dredges, minimum height above the stream, minimum freeboard requirements (e.g. minimum freeboard above the 100-year flood stage), protection of trees from chafing and time requirements for removal.
2.2.4	2-22	16	Due to the past and potential future introduction of aquatic invasive species, the CDFG should prescribe stringent equipment cleaning requirements for moving the dredge and all support equipment and tools between sites, even if the sites are the six sites listed on the permit.
2.2.4	2-24 through 2-61	-	The DSEIR identifies as open to suction dredging and proposes to issue regulations that allow the CDFG to issue permits to persons that allows the person to use a suction dredge to mine to extract and remove gold and other minerals rivers and streams that are located on federal lands administered by either the Forest Service for National Forest System lands or the Bureau of Land Management (BLM) for public domain lands. The United States owns all minerals within federal lands. Pursuant to the Property Clause, U.S. Const., Art. IV, §3, cl.2 Congress has the power to dispose of and enact laws respecting disposition of its property. The minerals on federal lands are the property of the United States and may not be disposed of or removed unless Congress enacts a law providing for its disposition. With respect to hardrock minerals, such as gold, Congress has enacted the United States mining laws, as amended, which, among other things, allows exploration, prospecting and extraction of valuable mineral deposits for commercial purposes on federal lands open to entry and location under the U.S. mining laws, as amended. See, 30 U.S.C. §22 et seq., as amended. While the DSEIR addresses the 1872 Mining Law and the Forest Service and BLM’s regulation of gold mining on the federal lands in Section 4.10.2, the DSEIR fails to identify and address those federal lands administered by the agencies where Congress has withdrawn the federal lands from mineral entry and location under the U.S. mining laws, as well as other laws providing for the disposal of other types of minerals. The DSEIR discloses that CDFG’s proposed regulations have classified certain rivers and streams as open for suction dredge mining on federal lands that have been withdrawn from mineral entry and location under the U.S. mining laws, and, hence, where federal law prohibits mining and the removal of gold. Where federal lands are withdrawn from mineral entry and location under the U.S. mining laws, as amended, CDFG’s proposed regulations are an obstacle to the accomplishment of

			<p>Congressional objectives in withdrawing the federal lands from mining. Simply put, to the extent that the proposed regulations allow the CDFG to issue permits for suction dredging for, and removal of, gold on withdrawn federal lands, CDFG’s proposed regulations are in direct conflict with federal law and preempted by federal law. <i>See, Kleppe v. New Mexico</i>, 426 U.S. 529, 541-543 (1976); <i>Hines v. Davidowitz</i>, 312 U.S. 52, 67 (1941). The DSEIR also fails to disclose that federal law prohibits suction dredge mining and removal of minerals on these withdrawn federal lands and that an individual, despite being issued a suction dredge permit from the CDFG, is subject to a civil and/or criminal enforcement action under federal law.</p> <p>Examples of the types of federal lands where Congress has withdrawn from mineral entry and location under the U.S. mining laws include wilderness areas, national recreation areas, watershed withdrawal areas, national monuments, and the wild portions of rivers within the wild and scenic rivers system. The DSEIR classifies certain rivers as open to suction dredging to mine gold on withdrawn federal lands in direct conflict with federal law. Some examples include, the portion of the Smith River within the Smith River Recreation Area, the portion of the American River designated as wild, the portions of the East Fork of the San Gabriel River within a watershed withdrawal. While the specific comments below have identified some, but not all, of withdrawn federal lands that have rivers or streams designated as “open” under the proposed regulations.</p>
2.2.4	2-36	-	The San Gabriel River, East Fork – Mainstem and all tributaries from San Gabriel Reservoir upstream to Cattle Canyon Creek is currently listed as Class E. This should be changed to Class A, due to concerns over adverse impacts to historic properties immediately adjacent to the water for the entire stream course. Except for valid existing rights, federal law prohibits all forms of mining, including suction dredging, to remove and extract gold and other minerals on NFS lands underlying the East Fork San Gabriel River. Permitting suction dredge mining is in direct conflict with federal law. This river should remain closed to suction dredging.
2.2.4	2-43	4	North Fork American River should be Class A since it a “Wild” portion of a W&SR.
2.2.4	2-54	-	Siskiyou Co., Humbug Creek – Mainstem. Should provide more specific information about what is included in the “Mainstem”. Is it from the mouth up the headwaters near Deadwood Peak, or is it only from the mouth to the confluence (forks area) with the South Fork and Middle Fork? This area receives heavy suction dredging activity so precise definitions are very important.
2.2.4	2-59	-	Trinity Co., Trinity, South Fork – Mainstem. Currently is Class B. We recommend Class A since it is a CWA Section 303(d) listed stream for impairment due to water quality associated with sediment and temperature.

3.4.4	3-10	15	Dredgers frequently use ropes or cables strung across streams to tether their dredges while dredging or to secure during non-operating periods. If not raised to a proper level these cables are a navigation hazard or create an obstruction to debris during high winter flow. In addition, if trees are not properly protected, the cables cause chafing to the bark and cambium and can cause girdling to the trees. These tether points are subject to Section 106 compliance for impacts to cultural resources. These impacts should be addressed in subsequent sections of the SEIR.
3.4.8	3-11	42	The public is allowed on any mining claim for none mining purposes, whether the claim is owned by a club or individual, as long as the public does not interfere with mining activities. There are isolated exceptions for certain mining claims with adjudicated Pre-1955 Surface Rights.
4.0.3	4.0-4	19	The SEIR appears to have under stated the impacts of time requirements for the Forest Service to properly administer suction dredging operations. Administration of suction dredging activities requires a substantial amount of field and administrative time on some Forests due to processing the notices and plans, compliance activities, noncompliance issues, and cleanup of abandoned or unauthorized sites. Although the actual number of suction dredging operators in noncompliance or operating without authorization may be small, the time and cost to the Forest Service to cleanup sites or administer noncompliant operators is high. Reclamation requirements would require a substantial increase in administration time and personnel to verify reclamation of dredge sites.
4.1.3	4.1-9	40-44	Comparison of dredging to geomorphic processes implies that streams will respond to dredging as if it were a 'natural' process. Dredging disturbance is not the same as natural geomorphic disturbances since dredging disturbances are more intense at the dredge location, the timing of bed disturbances is different than natural processes (causing different impacts to biota) and do not occur with accompanying high flows that provide for natural dynamic equilibrium. Natural geomorphic processes are complex and a response to multi-scaled processes.
4.1.4	4.1-21	12-22	Data presented here indicates that anywhere from 0% to 34% of the stream banks showed signs of instability after dredging activity. The findings go on to state that since dredging cannot occur in proximity to stream banks the impacts were less than significant. (A 3 foot restriction is included in the regulations to minimize bank disturbance.) The discussion does not disclose if these areas summarized were disturbed directly or indirectly by the dredging activity. The stream banks can become de-stabilized indirectly due to even small alterations to the course of the stream (even with the 3 foot restriction). An over-steepened stream bank can also de-stabilize the hillslope making the area more susceptible to small debris slides and debris flows directly

			impacting the stream. This impact needs more detailed discussion on both the direct and indirect impacts of dredging on bank stability and indirect effects to biota, including lamprey.
4.1.4	4.1-23	27-32	These regulation requirements will be difficult to monitor without additional time from CDFG personnel committed to field compliance of dredging operations.
4.2.5	4.2-33 & 4.2-54	7 31	<p>According to the DSEIR, suction dredge mining would increase loads of mercury and sediments, and the impacts are “significant and unavoidable.” With respect to turbidity and sedimentation the effect are deemed insignificant based upon the intermittent and seasonal nature of the activity. The following are issues and concerns with the DSEIR and the State’s proposal:</p> <p>(1) The proposed regulations in the DSEIR will open to suction dredge mining waters on NFS lands listed as impaired under Section 303(d) owing to mercury and sediment contamination. The disclosure of effects for the discharge of sediments, mercury, and other trace metals fails to take into account the difference between listed and non-listed rivers and streams under Clean Water Act Section 303(d) and the potential for increased adverse loading from rivers and streams listed under Section 303(d) as impaired water bodies. The DSEIR relies in part on the reasoning that the discharges from suction dredge mining are “dispersed geographically throughout the state” or “intermittent and temporary.” This reasoning is flawed. The disclosure of effects does not address that while the rivers and streams may be dispersed geographically throughout the state or intermittent and temporary, the suction dredge mining on the waters that are open are often take place in a cluster and produce concentrated, not dispersed, effects. When a river or stream is classified under Section 303(d) as impaired, the cluster of suction dredge miners with concentrated effects in the impaired waters will increase the loading that may be inconsistent with the Total Maximum Daily Load (TMDL) implementation plans for that impaired river or stream, particularly in the case of mercury and sediments. The SEIR does not address or disclose these impacts, nor does it propose mitigation measures.</p> <p>(2) As pointed in Comment #4 under 4.2.5 (4.2-53;17), allowing suction dredging in 303(d) listed mercury and sediment impaired waters conflicts with state TMDL programs and implementation plans intended to limit the discharge of pollutants into impaired waters. Regional Boards generally require land management agencies like the Forest Service and the BLM to be parties to TMDL implementation plans for mercury and sediment impaired waters, which would require the Forest Service on the affected National Forests to expend taxpayer dollars to reduce contaminants in these streams to meet TMDL load allocations. The proposed regulations in the DSEIR will open listed impaired waters owing to mercury and sediment contamination on NFS lands, and the DSEIR discloses that the suction dredge mining would increase the loads of these contaminants making the achievement of load allocations</p>

			<p>more difficult and an increased financial burden for the Forest Service. In addition, the CDFG's proposed regulations opening impaired waters to suction dredge mining is inconsistent with the Regional Boards' efforts to reduce loads for mercury and sediments in impaired waters and increases the burden for the Regional Boards' and the Forest Service's and BLM's efforts to reduce loading of these contaminants in impaired waters. Selection of the Water Quality Alternative as described in the DSEIR would likely reduce these impacts.</p> <p>(3) The DSEIR does not disclose the cumulative impacts from the amount of sediments and mercury discharged from suction dredging in combination with other methods of placer mining operations such as high-banking and processing using wash plants. The disclosure of effects of discharges of mercury and sediments and other contaminants from suction dredge operations in combination with other methods of placer mining would increase the loading in waters listed under Section 303(d) as impaired water bodies is lacking in the DSEIR. Without this type of disclosure of effects, it is unknown whether the effects from permitting suction dredge operations may push waters over the threshold to impair the water quality and require listing under Section 303(d) or the degree to which waters impaired under Section 303(d) owing to mercury and sediment contamination would be further impaired.</p>
4.2.5	4.2-53	17	<p>The DSEIR does not appear to adequately address how the State will mitigate, and regulate, the discharge of mercury from suction dredging activities. The following comment from the Lahonton RWQCB on the initial scoping report summarizes the concerns:</p> <p>"Without adequate mitigation, suction dredge mining operations permitted under the proposed Program could result in significant adverse impacts to water quality and may result in cumulative impacts that would permanently alter the hydrologic and ecological function of the surface water, thereby adversely affecting beneficial uses of waters of the State".</p> <p>Both the USGS studies and the DSEIR provide clear documentation as to how the operation of a suction dredge can re-suspend and re-release mercury into the environment. However, the proposed regulations fall far short in providing adequate mitigation for this impact. The additional protections offered by the "Water Quality Alternative" (prohibit suction dredging in waterways 303(d) listed for sediment and mercury) would begin to address these concerns.</p> <p>The following are issues and concerns with the DSEIR and the State's proposal:</p> <p>1) The mercury in question is not from naturally occurring deposits. As documented in various studies prepared by USGS and state agencies, it's presence throughout much of the State and in particular northern California and the Sierra Nevada's is the result of spills and releases from historic industrial activities (mining). As such the mercury present in the streams in the Sierra's and northern California is</p>

		<p>essentially an industrial waste.</p> <p>2) Under the Resource Conservation and Recovery Act (RCRA) mercury that has been released and/or disposed of is classified as a hazardous waste. Even though the mercury in the streams was released prior to the effective date of the federal hazardous waste management regulations in 1980, the subsequent management (collection by suction dredgers and its re-release into the environment by the dredging operation) triggers RCRA regulations for hazardous waste management. This issue was not addressed in the DSEIR.</p> <p>3) The operation of a suction dredge creates a point source discharge into waters of the U.S. In mercury impaired 303(d) listed waterways the operation will result in a point source discharge of mercury (a pollutant and CERCLA hazardous substance). Point source discharges, in particular those that result in a release of a pollutant or contaminant is a regulated activity under the Clean Water Act, which will require a permit. While this is acknowledged in the DSEIR, the State has not identified how it will regulate this discharge and mitigate the water quality degradation.</p> <p>4) Allowing suction dredging in 303(d) listed mercury impaired waterways will directly conflict with federal and state TMDL programs which are intended to limit the discharge of pollutants into these waterways. The ultimate goal of the TMDL program is to enable impacted waterways to attain water quality standards. The State and RWQCBs are presently setting mercury TMDLs for waterways throughout California. The TMDL allocates the permissible contaminant loading among current and future pollutant sources to the water body to ensure that water bodies maintain compliance with the established water quality standards. In many of the TMDLs being set the RWQCB has been looking at land owners to reduce mercury discharges from sites on lands under their jurisdiction. For land management agencies like the Forest Service and BLM this means reducing/mitigating mercury discharges from abandoned mine lands. If the State does not mitigate the discharge of mercury from suction dredging operations in 303(d) listed mercury impaired waterways, it will create an additional burden on those land owners like the Forest Service and BLM to undertake additional measures to mitigate the discharges from abandoned mine lands.</p> <p>5) Under CERCLA, mercury is a regulated hazardous substance. Persons who cause, or contribute to, the release of a hazardous substance into the environment can be liable for the damages caused by that release. As stated previously, the mercury present in the streams where there has been historic mining activities is not naturally occurring. It is there as a result of releases from industrial activities. The re-release and discharge of mercury into the waters by the operation of a suction dredge can be viewed as a CERCLA release.</p> <p>The State acknowledges that by this action there will be environmental and human health impacts, but does not propose adequate mitigation measures or describe how it will address the impacts from the mercury</p>
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			discharges, nor does it recommend the alternative that addresses these issues.
4.8.5	4.8-11	34	Dredgers frequently use ropes or cables strung across streams to tether their dredges while dredging or to secure during non-operating periods (see SEIR Section 3.4.4). If not raised to a proper level these cables are a navigation hazard or create an obstruction to debris during high winter flow.
4.8.5	4.8-12	28	The following comment is from the Angeles NF. Every recreational use imaginable was represented in the East Fork of the San Gabriel River prior to the enactment of the State law prohibiting the issuance of suction dredging permits and suspending the operation of suction dredges permitted for use under the program. This concentrated use results in extreme pressure on the natural resources of the area and on public service providers. High numbers of Forest users involved in suction dredge mining, prolonged unauthorized occupancy, and other dispersed recreational opportunities along the East Fork caused parking issues, dumping and trash issues, health and safety issues, overuse of a picnic area located adjacent to the River, and resource damage. With this as background, the Forest suggests that the State has underestimated the incremental demand associated with suction dredge mining on public services and transportation/traffic.
4.10.1	4.10-3	5	The DSEIR incorrectly characterizes suction dredge mining on federal lands as a “recreational” activity. Federal law does not authorize or allow suction dredge mining on federal lands. The only authority for a person to engage in suction dredge mining on federal lands is when those lands are open to mineral entry and location under the U.S. mining laws. The U.S. mining laws only authorize mining, including suction dredge mining, for commercial purposes.
4.10.2	4.10-6	5	Healthy watersheds and sustained ecosystems should be added to the list of surface resources on national forests.
4.10.2	4.10-6	16	Add “valid” existing mining rights...
4.10.2	4.10-6	17	Only a mining claimant with valid existing rights, that is, who had the discovery of a valuable mineral deposit within the mining claim as of the date the federal lands were withdrawn through the present time, could conduct any mining activity, including prospecting and exploration. The mining claimant would have to be able to demonstrate to the Forest Service that he had valid existing rights and if so, have an approved plan of operations by the Forest Service before the mining claimant could conduct mining activities on his mining claim.
4.10.2	4.10-6	19	Delete “the same” and replace with “a similar”.
4.10.2	4.10-6	20-22	The threshold for exceeding casual use on NFS land includes many resource issues including, but not limited to, long-term encampment, use of closed roads, access, wildlife and fisheries issues, other recreational activities, cultural resources and water quality.

4.10.2	4.10-6	22-28	Delete entire section discussing Administrative Passes as the SEIR is incorrect regarding the assertion that Administrative Passes may serve as an authorization for mining related activity. This is a pass to allow free parking for mineral operators on the Angeles, Cleveland and San Bernardino NFs and does not replace requirements for a notice or a plan. The Title 36 Code of Federal Regulations (CFR) 228 Subpart A provides the correct guidance as to when a notice or plan is required. If the proposed mining related activities might cause a significant disturbance of surface resources, then the operator must file a notice of intent to operate with the District Ranger. If the District Ranger determines that the proposed or existing activities will likely cause a significant disturbance of surface resources, the District Ranger will require the operator to submit a proposed plan of operations. The proposed operations may not proceed until the proposed plan is approved and a reclamation bond is provided to the Forest Service. In addition, State requirements for compliance with the Clean Water Act will become part of the approved plan of operations.
4.10.4	4.10-10	4-10	Although this comment is in the alternatives section, this comment pertains to all alternatives. The draft regulations allow suction dredging in many areas that are withdrawn and no longer open to mineral entry and location. As the Forest Service has emphasized in our December 27, 2007 and our December 4, 2009 letters to the CDFG, the issuance of suction dredging permits in areas withdrawn from mineral entry is in conflict with federal law and has resulted in conflicting regulations for the suction dredge miners and a minerals administration quagmire for the Forest Service. The clear inconsistency between federal and state law creates administrative, legal, and enforcement complications for the Forest Service and confusion or dredge operators. Lines 5 through 7 on page 4-10 in the SEIR are inconsistent with past Forest Service comments.

4.10.4	4.10-10	10	As a result of the recent information published in the USGS Reports (USGS Open-File Reports 2010-1325A and 2010-1325B) and the water quality impacts disclosed in section 4.2.5 of the SEIR, there are likely to be significant impacts to water quality due to suction dredging operations in some streams. As such, it is likely that administration of proposed suction dredging activities will add substantially to the workload in the Forest Service minerals administration program. Activities that are likely to cause a significant disturbance of surface resources require an environmental analysis, compliance with CWA, possible consultation with affected tribes, and authorization through a plan of operations (36 CFR 228.4) for each operation. Many of these operations would occur in 303(d) listed impaired waters on NFS land that are listed due to mercury and sediment contamination. The Forest Service and State of California permitting process requires a NEPA analysis and Clean Water Act Section 401 Water Quality Certification and Regional Water Quality Board Waste Discharge Requirements for each plan of operations at each site. This would be a tremendous increase in workload for both the Forest Service and the State Regional Water Quality Control Boards (Boards). If the Boards do not respond to the Reports of Waste Discharge from the dredging operators, the Forest Service would have to wait 120 days for the de facto Board authorization. The processing of many suction dredging plans of operations would require Section 106 compliance for cultural resources for Forest Service authorization and consultation with the tribes.
6.2.2	6-3	36	Mitigation of many of the significant impacts to water quality could have been incorporated into the Proposed Program by classifying CWA 303(d) listed streams for mercury and turbidity as Class A rather than including them in a separate alternative.
6.3.3 (& 6.3)	6-11 (& Table 6-1, p. 6-5)	27	The impacts to Cultural Resources under the Water Quality Alternative would be substantially less than the Proposed Program Alternative due to the decreased area available for suction dredging and should be included in this section.
6.3.3 (&6.3)	6-11 (& Table 6-1, p. 6-5)	38	The impacts to Transportation and Traffic under the Water Quality Alternative would be substantially less than the Proposed Program Alternative due to the decreased area available for suction dredging. As per our comments in section 4.8.5, page 4.8-12, it appears that the State has underestimated the incremental demand associated with suction dredge mining on public services and transportation/traffic.
6.4	6-16	12	Even a small minority of suction dredgers operating out of compliance with the regulations can cause significant impacts and require an inordinate amount of administrative and enforcement efforts on the part of the Forest Service, Regional Water Quality Control Boards and CDFG.

6.5	6-17	15	See comment above regarding section 6.3.3, page 6-11, line 38, we believe the Water Quality Alternative would have a discernable reduction in impacts to transportation and traffic in some areas.
6.5	6-17	16	The rationale provided in the SEIR for not selecting the Water Quality Alternative was not readily apparent, particularly considering the reduction in impacts and the legal and the additional administrative implications resulting from suction dredging in 303(d) listed streams.

Subject: E Branch N Fork Feather River
Date: Tuesday, May 10, 2011 9:55:37 AM PT
From: Tom Wess
To: mstopher@dfg.ca.gov

Mr. Stopher,

This correspondence is regarding three issues.

- 1) The proposed class E rating for the Feather River North Fork (Tributaries) and
- 2) The number of Dredging permits allowed each year.
- 3) Dredging near the stream bank

Regarding item 1:

On Page 47 of Appendix L the proposed Class rating for the Feather River North Fork (Tributaries) is E due to the Foothill Yellow Legged Frog.

The California Department of Fish and Game CNDDDB site identifies the species that exist in a given quadrant. The listings for Caribou, Twain and Crescent Mills (see attached CA F&G CNDDDB Viewer). Does not list the presents of the Foothill Yellow Legged Frog. The East Fork of the North Fork Feather River runs through these quads. The web site address is: http://imaps.dfg.ca.gov/viewers/cnddb_quickviewer/app.asp

A cross check with the Berkeley Mapper shows the nearest FYLF to be over 16 miles downstream (near Cresta) from the branch of the East Fork and two near Meadow Valley, which is in a different watershed. Attached is a copy of the page from the Berkeley Mapper web site showing the location and identification number of the find

There are no reports of findings of the FYLF in the area, the frog is listed "Near Threatened (NT)" and not listed on the endangered species list, therefore, should not be used to restrict the dredging season for the Tributaries of the North Fork Feather River.

I request the Class be changed to a Class D (July 1 through January 31) to allow for a more reasonable time for dredging.

Regarding item 2:

Table ES-1 Comparison of 1994 and Draft Updated Regulations Page 1 lists the Number of Permits under the Draft Update Provisions as a "Maximum of 4000 permits".

As a placer mine owner it is imperative to our ability to mine (using the most effective and least detrimental to the stream and shoreline) that we are able to obtain a dredging permit. If the number is limited to 4000 or less we could be denied the right to mine using this method. Panning is not mining, it is prospecting. Without a dredge we would need to

set up a sluice box and dig into the stream bank shoveling material into the sluice. This historic type of mining makes more of an impact on the stream banks and deposits more foreign sediment into the stream.

If the amount of permits are limited, will claim owners be given preference? First come first serve? Or are we subject to a drawing or lottery system? Our right to mine using dredging should not be determined by a game of chance.

There are five members of our family which operate the dredge at times. This would require five permits to operate one dredge. The number of permits issued does not correctly represent the number of actual dredges in operation. A similar example would be having one car with five drivers. Only one car is on the road. Five permit numbers would also be required to be posted on the side of the dredge itself to comply with the new provision on page 2 "The suction dredge operator's permit number must be affixed to all permitted dredges at all time.....". This is not reasonable.

I request the amount stay the same as 1994 with a "No Limit" amount of permits issued.

Regarding item 3:

Under the 1994 Provisions we were allowed to dredge near the bank but not into the bank. Our stream is narrow and the Draft Updated Provisions (page 3 of Table ES-1) calls for "No dredging within 3 feet of the lateral edge of the current water level, including at the edge of instream gravel bars or under any overhanging banks". Some places of our stream are 7 to 10 feet wide with solid bedrock on one or both sides. If the Draft Provisions were enacted we would only be legal in a 1 to 3 foot strip of stream channel.

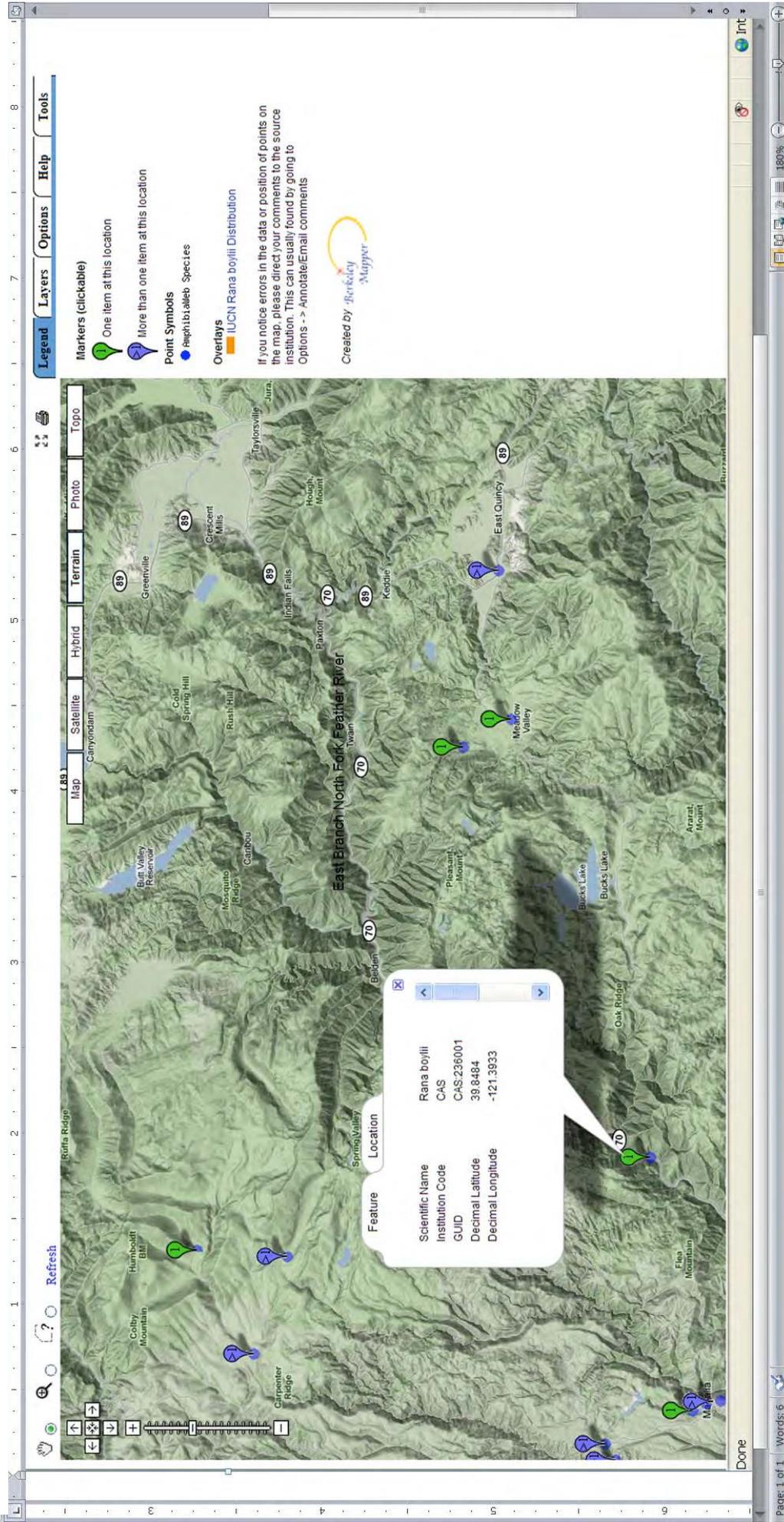
I request no change from the 1994 Provisions.

Respectfully submitted,

Thomas A Wess.
Claim Owner
Plumas County, CA

Record	QUADNAME	ELMCODE	SCINAME	COMNAME	FEDSTATUS	CALSTATUS	DFGSTATUS	CNPPLIST
1	Caribou	ABNKC01010	Pandion haliaetus	osprey	None	None	WL	
2	Caribou	ABNKC10010	Haliaeetus leucocephalus	bald eagle	Delisted	Endangerec	FP	
3	Caribou	AMACC01020	Myotis yumanensis	Yuma myotis	None	None		
4	Caribou	CTT51120CA	Darlingtonia Seep	Darlingtonia Seep	None	None		
5	Caribou	PDAST8H182	Packera eurycephala var. lewisrosei	Lewis Rose's ragwort	None	None		1B.2
6	Caribou	PDBET02030	Betula glandulosa	dwarf resin birch	None	None		2.2
7	Caribou	PDBRA06090	Boechera constancei	Constance's rock-cress	None	None		1B.1
8	Caribou	PDCRA0A030	Sedum albomarginatum	Feather River stonecrop	None	None		1B.2
9	Caribou	PDFAB0F9J0	Astragalus webberi	Webber's milk-vetch	None	None		1B.2
10	Caribou	PDFAB2B1A0	Lupinus dalesiae	Quincy lupine	None	None		4.2
11	Caribou	PDLAM180L0	Monardella stebbinsii	Stebbins' monardella	None	None		1B.2
12	Caribou	PDLAM180W0	Monardella follettii	Follett's monardella	None	None		1B.2
13	Caribou	PDONA050Q2	Clarkia mildrediae ssp. mildrediae	Mildred's clarkia	None	None		1B.3
14	Caribou	PDPOR04020	Lewisia cantelovii	Cantelow's lewisia	None	None		1B.2
15	Caribou	PDRHA0C010	Rhamnus alnifolia	alder buckthorn	None	None		2.2
16	Caribou	PDRHA0H061	Frangula purshiana ssp. ultramafica	Caribou coffeeberry	None	None		1B.2
17	Caribou	PMCYP03CE0	Carex sheldonii	Sheldon's sedge	None	None		2.2
1	Twain	CTT51120CA	Darlingtonia Seep	Darlingtonia Seep	None	None		
2	Twain	PDASTE0A020	Oreostemma elatum	tall alpine-aster	None	None		1B.2
3	Twain	PDBRA06090	Boechera constancei	Constance's rock-cress	None	None		1B.1
4	Twain	PDFAB0F9J0	Astragalus webberi	Webber's milk-vetch	None	None		1B.2
5	Twain	PDFAB2B1A0	Lupinus dalesiae	Quincy lupine	None	None		4.2
6	Twain	PDLAM180W0	Monardella follettii	Follett's monardella	None	None		1B.2
7	Twain	PDSCR1L4Y0	Penstemon personatus	closed-throated beardtongue	None	None		1B.2
8	Twain	PMCYP092E0	Eleocharis torticulmis	California twisted spikerush	None	None		1B.3
1	Crescent Mills	ABNKC10010	Haliaeetus leucocephalus	bald eagle	Delisted	Endangerec	FP	
2	Crescent Mills	ABNKC12060	Accipiter gentilis	northern goshawk	None	None	SSC	
3	Crescent Mills	ABNMK01014	Grus canadensis tabida	greater sandhill crane	None	Threatened	FP	
4	Crescent Mills	ABPAE33040	Empidonax traillii	willow flycatcher	None	Endangered		
5	Crescent Mills	AMACC01110	Myotis volans	long-legged myotis	None	None		
6	Crescent Mills	CTT51120CA	Darlingtonia Seep	Darlingtonia Seep	None	None		
7	Crescent Mills	IICOL58010	Atractelmis wawona	Wawona riffle beetle	None	None		
8	Crescent Mills	PDASTE0A020	Oreostemma elatum	tall alpine-aster	None	None		1B.2
9	Crescent Mills	PDBRA06090	Boechera constancei	Constance's rock-cress	None	None		1B.1
10	Crescent Mills	PDCAB01010	Brasenia schreberi	watershield	None	None		2.3
11	Crescent Mills	PDDRO02010	Drosera anglica	English sundew	None	None		2.3
12	Crescent Mills	PDFAB0F9J0	Astragalus webberi	Webber's milk-vetch	None	None		1B.2
13	Crescent Mills	PDFAB2B1A0	Lupinus dalesiae	Quincy lupine	None	None		4.2
14	Crescent Mills	PDLAM180W0	Monardella follettii	Follett's monardella	None	None		1B.2
15	Crescent Mills	PDROS0X0Q0	Ivesia webberi	Webber's ivesia	Candidate	None		1B.1
16	Crescent Mills	PMCYP03CE0	Carex sheldonii	Sheldon's sedge	None	None		2.2
17	Crescent Mills	PMCYP092E0	Eleocharis torticulmis	California twisted spikerush	None	None		1B.3
18	Crescent Mills	PMCYP0N010	Rhynchospora alba	white beaked-rush	None	None		2.2
19	Crescent Mills	PMCYP0N080	Rhynchospora capitellata	brownish beaked-rush	None	None		2.2
20	Crescent Mills	PMPOT03081	Potamogeton epihydrus	Nuttall's ribbon-leaved pondweed	None	None		2.2

Locations of the Foothill Yellow-Legged Frog in Plumas and Eastern Butte County. Rana boylei None located in the East Branch North Fork Feather River.



Water	Description	Class	Action Species
Multiple Waters	All rivers and streams in the County, unless otherwise noted	H	N/A
Antelope Lake (Tributaries)	All waters draining to Antelope Lake	A	Sierra Nevada yellow-legged frog
Big Ravine	Mainstem and all tributaries	A	Sierra Nevada yellow-legged frog
Boulder Creek (Little North Fork of Middle Fork Feather River tributary)	Mainstem and all tributaries	A	Sierra Nevada yellow-legged frog
Cooks Creek	Mainstem and all tributaries	A	Sierra Nevada yellow-legged frog
Dark Ravine	Mainstem and all tributaries	A	Sierra Nevada yellow-legged frog
Fall River	Mainstem and all tributaries	A	Sierra Nevada yellow-legged frog
Feather River, Middle Fork (Mainstem)	Mainstem	D	Foothill yellow-legged frog
Feather River, Middle Fork (Tributaries)	All tributaries, unless otherwise noted	E	Foothill yellow-legged frog
Feather River, North Fork (Mainstem)	Mainstem from Plumas-Butte County Line to East Branch of North Fork Feather River	D	Foothill yellow-legged frog
Feather River, North Fork (Tributaries)	All tributaries, unless otherwise noted	E	Foothill yellow-legged frog
Feather River, South Fork	Mainstem	D	Foothill yellow-legged frog
Feather River, South Fork	All tributaries, unless otherwise noted	E	Foothill yellow-legged frog
Frazier Creek	Mainstem and all tributaries	A	Sierra Nevada yellow-legged frog
Gray Eagle Creek	Mainstem and all tributaries	A	Sierra Nevada yellow-legged frog
Grizzly Creek	Mainstem and all tributaries	A	Sierra Nevada yellow-legged frog
Last Chance Creek	Mainstem and all tributaries	A	Sierra Nevada yellow-legged frog
Lights Creek, West Branch	Mainstem and all tributaries	A	Sierra Nevada yellow-legged frog
Mill Creek	Mainstem and all tributaries	A	Sierra Nevada yellow-legged frog

Subject: Suction Minins

Date: Tuesday, May 10, 2011 7:02:21 PM PT

From: Scott whitehair

To: dfgsuctiondredge@dfg.ca.gov

Department of Fish and Game,

The proposed regulations are far too limited and restrict all suction dredge miners throughout California as well as others who come to California to spend their vacation and money in the rural areas. Your proposal for many of the streams and rivers are too restrictive to allow any kind of activity as the times permitted are set too short or the wrong time of the year due to weather. Many of the current streams that have a season would be withdrawn from suction mining prevent us from working them. The size limitations for dredges prevents us from using our current equipment and making our work worthwhile. On site inspection for using a motorized winch prevent us from moving rocks as safely as we could be. Many would move them by hand and risk injury. This inspection would take far too long as we may move locations quite often. 4000 permits is far too little for the state to allow. The more permits are issued the more money you will have in fees and revenue.

Scott Whitehair
3046925088

SUCTION DREDGE PERMITTING PROGRAM
Draft Subsequent Environmental Impact Report (DSEIR)
Comment Form

Name:	ROBERT V. WILLIAMS
Mailing Address:	686-885 DELWOOD WAY SUSANVILLE, CA. 96130
Telephone No. (optional):	530-919-3995
Email (optional):	

Comments/Issues:	MR STOPHER,
<p>MYSELF & WIFE ARE 50% OWNERS OF THE OLD GLADSTONE MINE IN SHASTA COUNTY, 4 MILES EAST OF FRENCH COLLECT. THE PROPERTY IS 364 ACRES, COMPRISED OF 19 PATENTED MINING CLAIMS. I PURCHASED A 3rd DREDGE AND ALL THE NECESSARY EQUIPMENT ABOUT 4 YEARS AGO, MY SON GOT A DREDGING PERMIT AND USED THE EQUIPMENT 1 SEASON. NOW IT SEEMS UNFAIR WE CAN NO LONGER DO OUR RECREATIONAL DREDGING OF CLINIC CREEK ON OUR OWN PROPERTY. I BELIEVE IN PROTECTING THE ENVIRONMENT AND THIS TOTAL BAN ON DREDGING ISN'T RIGHT.</p>	

Please use additional sheets if necessary.

SUBMIT WRITTEN COMMENTS (POSTMARKED BY 05/10/11) TO:

Mail: Mark Stopher
 California Department of Fish and Game
 601 Locust Street
 Redding, CA 96001

THANK YOU, FOR YOUR CONSIDERATION
 ON THIS ISSUE,
 Respectfully,
 RW Williams

Subject: 2011 suction dredging SEIR comments from ronald wilson 21612 161st ave E Graham Wa 98338

Date: Tuesday, May 10, 2011 10:01:56 PM PT

From: ronald wilson

To: dfgsuctiondredge@dfg.ca.gov

dfgsuctiondredge@dfg.ca.gov

To Mark Stopher; California Department Fish and Game

These are my comments on the current 2011 SEIR regarding suction dredging.

My first comment addresses the legality of this action on your part.

The 1866 mining law GRANTED (grants are not returned or taken at the grantors whim) mineral on federal mineral lands to the citizens of the United States for a very good reason, that being that large company's and foreign entities could not gain control over the wealth of the country and the citizens there of. I would say that California Fish and Game would also be grouped among those that would illegally attempt to gain control of United States citizens private wealth (valuable minerals) being held by the courts as private property. This appears to be an attempt by California Fish and Game to defraud private property owners of their valuable property by illegal regulations. The State of California only has to refer to the severance clauses of all federally enacted law to find the severance clauses in each that sever the mineral law of 1866, 1872 from each. Being a citizen of Washington State and having financial interest in this SEIR and demanding that I be treated fairly and not be defrauded of my property and rights as a citizen, I strongly object to your actions.

In your proposed rules, I can see Washington Department of Wildlife has their absurd ideas into your proposal in order to stymie and create straw man arguments to cloud the issue and waste time and effort.

The ridiculous 3/32 screen covering on intake clearly gives this away. If you are not dredging eggs and small fish because of dredging seasons, then what other reason would suffice, algae bruising maybe. Concerning hours of operation,

It is ridiculous that fish need to swim at night because they might be scared, although they hang around the dredge outlet all day to feed on edibles coming their way. Regarding the 3' from the bank rule, the next problem we have is blocking the stream with a dredge so that nothing can pass, not even a fish. I thought they were to scared to go by, with the dredge acting as a dam, (blocking the stream) it would seem that after water backing up with thousands of tons of water might dislodge the dredge I could go on because I have heard all these silly ideas from WDFW and others already, but maybe you get the idea that these arguments are not worthwhile.

Moving on to 3" letters on a dredge, if I were to float a tub in the stream and shovel gravel into it and process it some way, would 3" letters be required???

As for the six locations that I might want to go to, what business is that of anyone. The mineral law is for a mans profit on his labors and where I might recover those minerals is proprietary information for me alone.

The state of California has done grievous injury to all citizens by this ill conceived moratorium on dredging. The first being done to a person's rights and then to well being by be attacked by the state for no reason other then a political agenda. This has caused great angst and financial loss especially to those already hard hit because of past wrongs being put on them.

The proper thing to do would be some common sense guidelines to go by and at the very minimum a return to the 1994 SEIR and even that is onerous and does not observe the law of the land.

I might remind you that that land that was reserved for Indian reservations is no different then land being reserved for valuable minerals and those citizens (not government agencies) that seek them. You should tell the tribes that you wish to make rules for them. Everyone equal under the law.

Thank you for the chance to help you to return to being a law abiding agency and common sense.

Ronald Wilson
21612 161st Ave E
Graham WA, 98338

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