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CA State Water Resources Control Board
ATTN: Ms. Michelle Siebal
Division of Water Rights – Water Quality Certification Program
PO Box 2000
Sacramento, CA 95812-2000
Email: WR401Program@waterboards.ca.gov

20 July 2018
Via Email

SUPPLEMENTAL COMMENTS
RE: Klamath – Proposed removal of Lower Klamath Project
Action: Draft Clean Water Act Sec. 401 Certification for KRRC

Dear Ms. Siebal:

In general, both PCFFA and IFR endorse and incorporate herein by reference the written comments to be submitted by the KRRC, which we have reviewed and approve. The KRRC comments help clarify some areas in the Draft Certification that are unclear, or which may be duplicative, and also provide some suggestions for how better to coordinate the California efforts with those of Oregon, which in several places (as indicated by the KRRC comments) do not fully overlap or which might even conflict.

Please consider these as our Supplemental written comments on behalf of the Pacific Coast Federation of Fishermen's Associations (PCFFA) and its sister organization, Institute for Fisheries Resources (IFR) regarding the issue of the proposed State of California 401 Certification for removal of the Lower Klamath Dams within the State of California (i.e., CopCo 1 & 2 and Iron Gate Dam). Please make them part of the permanent public record for this decision-making process. Although our two organizations generally support the separate KRRC comments, PCFFA and IFR are separate legal entities presenting these Supplemental written comments solely on their own behalves, and do not in any capacity speak for the KRRC.

PCFFA is the largest trade organization of commercial fishing families on the U.S. west coast, representing the economic interests of the west coast's mostly family-owned, commercial fishing fleet members, many of whom make all or part of their livelihoods from the harvesting of salmon whose origin is the Klamath River. Also, the west coast's intermingling stock salmon

fisheries all the way from Monterey, CA to the Oregon-Washington border are often closed or severely limited, based on "weak stock" management constraints often triggered by the depressed salmon runs of the Klamath River, which typically migrate and intermingle with other more abundant salmon stocks within those regions. As PCFFA's sister organization, IFR has also been working to restore damaged Klamath salmon runs, which were once the third largest salmon runs in the continental United States, since the mid-1980's. Additionally, many of both PCFFA's and IFR's members are PacifiCorp ratepayers and customers. Hence our two organizations and their members have multiple economic and community interests in the outcomes of this process.

PCFFA and IFR both strongly support the KRRC's efforts to remove the four Lower Klamath Hydropower Project FERC-licensed dams, including the three of the four dams (CopCo 1 & 2 and Iron Gate Dams) located in California, and which are the subject of the current dam removal project. Removal of these four Klamath Basin dams was agreed to in the Klamath Hydropower Settlement Agreement ("KHSA"), also signed by the dams' owner (PacifiCorp). Indeed, PCFFA and IFR are both signatory Parties to the original and amended KHSA documents as well.

General Comments on Draft 401 Certification

Firstly, it should be noted that many of the proposed actions in the Draft 401 Certification are already in the KRRC's most recently filed "Definite Plan," and thus already agreed to by KRRC – indeed, many of those measures were first proposed by the KRRC. There is thus already a large degree of pre-existing overlap and common purpose between the SWRCB and the KRRC on these issues.

Secondly, PCFFA and IFR's review of the SWRCB's 7 June, 2018, Draft 401 Certification's proposed mitigation and monitoring plans indicate that:

(a) SWRCB's selection of monitoring criteria, protocols and mitigations measures appears fair and reasonable, and represents a soundly based methodology for gathering important field data upon which to assesses and monitor water quality impacts, and upon which to make mid-operations corrections if necessary;

(b) The Draft 401 Certification requires a number of future robust, adaptive management plans which, under these circumstances, are all reasonable and prudent approaches, especially given the fact that a project of this magnitude may present unexpected difficulties;

(c) Various continency plans for rapid emergency responses in the event of spills, erosion or sediment control problems, and other issues, are all fair, reasonable and prudent measures, both to reduce the risk of such incident as well as to mitigation damages if they occur.

In other words, SWRCB Staff seem to have proposed the right mix of mitigation measures, monitoring systems and contingency planning mechanisms, as well as emergency response backup plans if necessary, in keeping with the scale and scope of this project. We therefore fully

support the SWRCB Draft 401 Certification as written and in its intent, other than any exceptions and recommendations made in the KRRC's written comments, which we likewise support.

We are also aware of the immense scientific opportunity that such a dam removal project represents in terms of continuous and long-term data collection and observation as the dams actually come down. Dams removals are becoming increasingly common (as well as necessary) as older infrastructure fails or is replaced by more modern (and more efficient) technologies, as is happening here. Whatever we can learn in terms of biological, water quality and engineering data from this Project will aid in assessing similar dam removal projects in the future. With that in mind, the KRRC and several independent scientific monitoring efforts are likely to broaden and expand upon the SWRCB-proposed Draft 401 Certification monitoring program in various ways. Additionally, there will be data collected from the removal of the Oregon portion of the Lower Klamath Project (i.e., J.C. Boyle Dam) that will also be monitored pursuant to a similar 401 Certification from the Oregon Department of Environmental Quality (DEQ). All that data will, of course, become public scientific record.

Responses to Sediment Issues Frequently Raised by Objectors to Klamath Dam Removals

On an initial note, looking at the prior Scoping Comments and other written comments from those (particularly Siskiyou County) who have traditionally opposed dam removals in the Klamath, many of their comments raised concerns related to water quality that have already been systematically analyzed and long-since debunked or rebutted by hard science.

In particular, we once again are likely to read or hear public comments in this process with alarmist language about the "massive amounts of mud" behind the dams, and of "toxic mud" supposedly sitting as "sediment time bombs" behind the dams. But in fact, as the prior NEPA/CEQA (2013) analysis of potential Klamath dam removal impacts indicated, multiple studies of the sediment trapped behind the dams have concluded that not only would most of the sediments released be naturally washed through the system to the sea within about 24 months, but that there are NO significant toxics in those sediments above and beyond natural background levels to be concerned about.

Concerns about sediment problems can be broken down into several areas of concern, each of which can be answered separately and were thoroughly answered in the scientific and engineering studies and/or official NEPA documents (see Dept. of Interior and State of California NEPA/CEQA EIS/EIR (April, 2013)) as footnoted and cited below. Also, a number of sediment containment and stabilization mitigation measures are contained in the recently released June 2018 KRRC "Definite Plan" that will assure that sediment and other short-term water quality impacts will be minimized or eliminated to the extent that is feasible, given that some short-term impacts are inevitable in order to achieve the many long-term water quality gains that would come from restoring the Klamath River's natural and free-flowing conditions.

The debunked sediment and other water quality related concerns most likely to be raised by other parties in this process who oppose dam removals can be summarized as follows:

"Massive amounts of toxic chemicals are in the sediments behind the dams." – Multiple studies and on-site surveys analyzing the chemical make-up of reservoir sediments have concluded that these sediments poses no risk to human health.[1, 2, 3, 4]

Opponents to river restoration often cite the Camp, Dresser, and McKee Study, which first assumes a worst-case sediment scenario, and then speculates that the high cost of such toxic sediment removal would push dam removal into the billions of dollars. However, this report was prepared before, and thus fails to acknowledge the results of, the many later studies referenced in footnotes herein which disprove that report's initial assumption that toxic contamination exists.

This "fake fact" assertion that there are toxic chemical concerns in sediments behind the dams has also been more officially debunked. For instance, the US EPA issued a letter dated 4 November, 2015, on just this issue, noting that multiple studies have shown that there is no significant concern about any toxic sediment problems in any of the reservoirs raised by any of several comprehensive studies. See ATTACHMENT A for a copy of that EPA letter for the record.

"20-30 million cubic yards of sediment behind the dams would wash out and devastate the lower river." – These numbers and their impacts are both greatly exaggerated. Only about 13.1 million cubic yards of sediments in total were actually trapped behind the dams by 2012, an amount that is expected to rise to about 15 million cubic yards by 2020. But of these sediments, only about one-third to two-thirds of the total volume (5 to 10 million cubic yards in 2020) would be expected to wash out to sea over 1 to 2 years, as the river becomes re-channelized, with the rest of these sediments to be replanted and stabilized as new river bank. The majority of those sediments that would naturally erode and are likely to wash out, however, are fine-grained and so would be easily mobilized by normal river flows and thus are not likely to be deposited in the river channel nor estuary for very long, if at all. In short, most of the mobilized sediment, as noted in the prior NEPA/CEQA (2013) analysis, would naturally wash out to sea within a couple of rainy seasons.

The less mobilized, larger gravel is also beneficial as it will likely help create gravel and cobble beds below the dams that are highly suitable for salmon spawning and rearing – indeed, the existing dams have systematically starved the lower river of natural recruitment of spawning and rearing gravel as much as 50 stream-miles downriver from Iron Gate Dam. (NEPA/CEQA (2013))

Alarmists warning of massive sediment erosion forget that rivers like the Klamath already, naturally, carry vast amounts of sediment out to sea as part of their natural baseline functioning.

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[1] Klamath River Dam and Sediment Investigation, California Coastal Conservancy, November 2006.
[2] Preliminary Review of 2006 Analytical Testing Data from Sediment Sampling Conducted at Iron Gate, Copco 1, and JC Boyle Reservoirs, in Klamath River, Oregon and California, California Coastal Conservancy, September 22, 2006.
[3] Klamath River Reservoirs - Preliminary Sediment Sampling Data and Background Info, United States Depart of Interior, October 2010.
[4] Technical memo: Dioxin in Sediments Behind the Dams on the Klamath River, NOAA Water Quality Program Coordinator Joe Dillon, April 8, 2008.

For instance, the Klamath River already normally carries an average water-year sediment load of about 5.834 million tons/year (which translates to 3.889 million cubic yards of sediment/year at a standard conversion rate of 1.5 tons/cubic yard density), which may be greater or lower depending on total rainfall. Sediment transport models in fact indicate that, left completely to natural processes, high concentrations of suspended sediments would occur immediately downstream of Iron Gate Dam for only two-to-three months immediately following reservoir drawdown and removal.

But in fact, multiple reservoir silt stabilization and reseeding/revegetation measures are proposed by KRRC to help keep the downstream sediment flow, and later erosion flows, to a minimum. Data cited in the *Definite Plan* (June, 2018) estimate that with these mitigation measures in place: "The Project could release up to 1.2 - 2.9 million metric tons of fine sediment (sand, silt, and finer) downstream from Iron Gate Dam (RM 193.1) over a two-year period (USBR 2011)."[5] In other words (except for a short-lived initial burst, which can be timed so as to avoid most impacts on migrating fish) additional sediment loads triggered by dam removals *would remain within the range of what already naturally occurs* in high-flow or wet water years.[6]

"Massive sediment plumes from dam removal will kill all the fish in the lower river for many years to come." -- There will clearly be some adverse sediment impacts on fish within the mainstem of the river for a short period of time, but as noted above, these sediments are expected to reach lethal levels for fish only for a short period of time during one single, first-year winter flushing event. The Executive Summary of the DOI Final NEPA/CEQA EIS/EIR (2013) notes:

> "While sediment release and other construction related activities during dam removal could cause short-term (1 to 2 years) adverse impacts on fisheries downstream from the Hydroelectric Reach, salmon and other aquatic resources would be expected to return to population levels observed prior to dam removal (in 2010 when the Notice of Preparation was issued) within 5 years……[7]

And of course, these estimates are for the Klamath River and all its dams as a whole, including a contribution by J.C. Boyle. But since the sediments trapped behind J. C. Boyle Dam are relatively minor, that contribution would not be substantial.

The plan for reservoir drawdown to be completed in the high-flow winter season within a single year (2021) is also designed to minimize negative effects of sediment surges on sensitive fish species, particularly federally listed coho salmon. Drawdown will be timed to avoid the major runs of fish, many of which (such as coho) only use the mainstem river briefly each year as a migration corridor, and would thus be safe within their usual tributary habitat during the lethal peak of the mainstem sediment surge.

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[5] Definite Plan (July 1, 2018), Appendix I (Aquatic Resource Measures), Sec. 2.3.1, citing U.S. Bureau of Reclamation [USBR]. 2011. Appendix E – an analysis of potential suspended sediment effects on anadromous fish in the Klamath Basin. Prepared for Mid-Pacific Region, Bureau of Reclamation, Technical Service Center, Denver, Colorado. 70 pp.

[6] DOI Final EIS (April 2013), Klamath Facilities Removal Final Environmental Impact Statement/Environmental Impact Report. (See particularly section 3.11.3.3 and Table 3.11-3).

[7] DOI Final EIS (April 2013), Executive Summary, pg. 39.

"Removing the Klamath dams would eliminate their flood control benefits." -- First off, the dams in question were never designed for flood control and thus provide little emergency water storage in the event of flood-level flows. At very best, the reservoirs could physically provide less than 7% attenuation of any 100-year flood event, and then only for a few hours' time, i.e., until their reservoirs were full.[8] At most, this might provide just a 10-hour delay in the peaking of any lower river flooding.

And while increased flood risk is only a problem for dams in California (i.e., not J. C. Boyle, which has no residences immediately downstream), the KRRC is taking this small additional flood risk very seriously! Among the various planned mitigation measures to minimize flood damage risk are: Mitigation Measures H-1 (install new river flow gages and improve predictive flooding models, thus increasing warning time to residents of any impending flood). New National Weather Service (NWS) warning systems can also be installed to give residents more accurate flood predictions as much as two days in advance.

"Elevated river levels due to sediment deposition caused by drawdown of the dams would raise river levels and greatly increase lower river flooding risks." -- As noted above, most of the additional sediments to be introduced into the river by dam removal are fine particles that suspend easily and are expected to wash though the river to the estuary fairly quickly. Any sediment deposition downstream of Iron Gate Dam would thus be minimal as well as short-lived. However, the reservoir drawdown plans were made with consideration for minimizing flood risks downstream. Controlled releases during reservoir drawdown would not be likely to increase flood risks because they would be kept well within the range of historic flows.[9]

Also, the magnitude of sediment deposition from dam removal is expected to be relatively small compared to sediment loading from other existing natural sources along the Klamath River. Likely the only measurable sediment deposition would occur in the reach from Bogus Creek to Cottonwood Creek. The NEPA/CEQA 2013 analysis models show that from Willow Creek to Bogus Creek, there would be about 1.5 feet of additional deposition, and from Cottonwood to Willow Creek less than 1 foot of additional deposition. Downstream from Cottonwood Creek deposition models show that deposition would not be appreciable, and ever less so as one progresses downriver.

Additionally, this sedimentation will occur primarily in pools and not in the riffle and bedrock sections that tend to control surface elevations. Because the sediment deposition would be small in comparison with the No Action/No Project Alternative (i.e., current *status quo*), it would not affect stream characteristics in a way that would substantively affect flood inundation or flood risks. But under dam removal, the 100-year floodplain inundation area downstream from Iron Gate Dam could change, albeit it slightly and then decreasingly as one goes downstream, between River Mile 190 and 171 (to Humbug Creek).

Based upon NEPA/CEQA (2013) inventory of structures downstream from Iron Gate Dam to Humbug Creek, only 24 residences are already within the existing 100-year flood plain. Less

[8] DOI Final EIS (April 2013), see pg. 3.6-32, especially Table 3.6-9. The greatest recent flood in the region occurred in 1964 – two years *after* the final dam at Iron Gate was constructed.
[9] DOI Final EIS (April 2013), see Section 3.6.4.3.2.

than 6 residences and other structures such as garages are outside of this flood plain, but may be put into the new 100-year floodplain at least temporarily after removal of the dams.[10]

Among the various planned mitigation measures to minimize flood damage risk are: NEPA/CEQA (2013) Mitigation Measure H-2 (The KRRC will work with willing landowners to develop and implement a plan to address any increased flood threat generated by changes to the 100-year flood inundation area as a result of the removal of the four facilities for permanent, legally established, permitted, habitable structures in place before dam removal. Such plans could include measures to move, modify, or elevate structures where feasible.)

KRRC's Definite Plan (June 2018) notes that the KRRC did an updated survey of habitable structures below Iron Gate Dam that might have increased flood risk due to dam removal, and the KRRC notes as follows:

> "KRRC only categorized the structures in the reaches between Iron Gate Dam (RM 193.1) and Humbug Creek (RM 174.0). This is because the tributaries below Iron Gate increasingly dominate the flood discharges as one travels downstream from Iron Gate, and the impact of dam removal on the 100-year flood is less than 0.5 foot below Humbug Creek..... A total of 34 habitable structures are located within the preliminary 100-year floodplain for current conditions between Iron Gate Dam and Humbug Creek. These 34 structures will be subject to an increased risk of flooding following dam removal when compared to existing flood elevations. An estimated 2 additional habitable structures would be subject to flooding during a 100-year event following dam removal when compared to the existing floodplain (see Figure 7.7-1). A total of 36 habitable structures would be located within the preliminary altered 100-year floodplain between Iron Gate Dam and Humbug Creek following dam removal. KRRC will work with the owners of these structures to move or elevate legally established structures, where feasible. FEMA will make the final determination of the future 100-year floodplain after dam removal, and the KRRC is coordinating with FEMA to initiate the map revision process."[11]

Comments on Specific Proposed Mitigation Measures and Conditions

Condition 3: Reservoir Drawdown. In footnote 19 (page 23) of the *Draft Water Quality Certification,* there is a reference to ongoing litigation against the USBR regarding minimum flows in the lower river to prevent *C. shasta* infestations, including the statement that: "Additionally, drawdown and dam construction shall be conducted so as not to interfere with instream flow requirements below Iron Gate Dam." Since the drafting of that document, however, additional water-related litigation has been filed by the Klamath Tribes of Oregon, which may also affect total volumes of water available in 2021 for flushing flows through the system. This new lawsuit is *Klamath Tribes, vs. US Bureau of Reclamation, et al.*, US Dist. Ct., Northern California (SF Division), No. 3:18-cv-03078-WHO. And while this lawsuit is still in its early stages, there is likely to be injunctive or other relief in this case within the next few months. Hence this case should also be included in footnote 19 by reference, thus including it in

[10] DOI Final EIS (April 2013), see pg. 3.6 -34
[11] Definite Plan (June 2018), Sec. 7.7.1 (pg. 269-270).

the prohibition in footnote 19 that: "Drawdown must not interfere with implementation of the flow requirements current at that time."

Condition 4: Anadromous Fish Presence. We appreciate the inclusion of followup monitoring to determine the timing and extent of recolonization of anadromous fish above the dams, once the dams are removed and volitional fish passage is re-established. However, as noted in the KRRC comments, once dam removal and associated restoration efforts has been fully accomplished the KRRC's existence will also terminate. Hence this condition should be removed, as it is inappropriate to request the KRRC to conduct operations during time frames after it has ceased to exist.

We recommend instead that any long-term monitoring of anadromous species recolonization or species abundance within the former hydroelectric reach should be undertaken as part of future management planning efforts by the responsible agencies including; CDFW, ODFW NMFS, and USFWS. It would be possible for the KRRC to contract with these agencies and to budget for the funding of such longer-term surveys, but the commitment cannot be so open-ended as proposed for such budgeting to be possible.

For KRRC budgeting and planning purposes it would be better to have a "date certain" of – as a suggestion consistent with what has been proposed – 4 consecutive years after the beginning of this monitoring program, i.e., a total of 7 years after completion of drawdown, rather than an open-ended process that could last indefinitely. This clearer language would allow the KRRC, whose existence is expected to end sometime after dam removal and associated restoration efforts are completed, to appropriately budget and contract this monitoring program out for the requisite number of years required.

Condition 7: City of Yreka Water Supply. The provisions in this section that require there to be no significant interruption of the City of Yreka's water supply are particularly important for the public's acceptance of this project. We believe that the KRRC has made the upgrading of the City of Yreka water supply with no interruptions of customer service to be a very high priority, and is in accordance with this provision. Making that provision specific in the Certification documents will also help put to rest baseless rumors and concerns that such an interruption would ever occur.

But it is important that the maximum outage period should be coordinated with City of Yreka, and thus some flexibility to negotiate with the City of Yreka in order to meet its needs is warranted here. We refer you to the KRRC comments for its suggestions on rewording to provide that the KRRC and City of Yreka must consult and agree on any expansions of that 12-hour period to provide an appropriate level of flexibility.

Condition 12: Hatcheries. We also support the proposed provisions with regard to hatchery management. In particular, provision (4) (dealing with hatchery operations in event of droughts or other water unavailability issues) is especially important with projected climate changes and periodic droughts, and should definitely be included in the conditions.

We would, however, like to clarify the language regarding the "consultation" process regarding the Hatcheries Plan and the required response to comments. It is unclear from the proposed text whether there would be public comment or whether there would be a CEQA

requirement for response to public comments, if any. We don't believe that to be the intent, or at least (if required) CEQA should be a separate process. We therefore suggest the following revision to limit required responses to the agencies named which have expertise in these areas:

> "Additionally, the Hatcheries Plan shall include comments received during this consultation process from the State Water Board, North Coast Regional Board, CDFW, and NMFS and identify how the Licensee has addressed the comments."

We believe that the KRRC will have similar suggestions in its written comments.

We also appreciate that there is some built-in flexibility in the creation of the Hatcheries Plan. There are several options for water supply and production goals that are still available to choose from, and the details of such a Plan are still being worked out with CDFG, so deferring the later decisions on such a Hatchery Plan to the Deputy Director and other relevant agencies to assess proposed interim changes is going to lead to better planning generally. It will also better lend itself to adaptive management in response to real-time conditions in-river.

It is also the case that Iron Gate/Fall Creek hatchery production need not necessarily cease at the end of 8 years after dam removal has been fully accomplished, only that the promised PacifiCorp funding for that production would cease. At the end of that 8-year PacifiCorp funding term, the reconstructed Iron Gate and Fall Creek Hatcheries should be left in a condition to continue production if that is decided upon by CDFG, based on conditions in the river and the rates of recolonization and associated natural production recovery.

Since our industry is highly dependent on the health of Klamath River fish production (both naturally and hatchery generated), it is our strong preference that the Iron Gate/Fall Creek hatchery complex phase down its production only as natural spawner production increases in areas now blocked by dams. In other words, some proportionality should be maintained between recolonization and recovery of natural production and reduced hatchery production. This process may take more than 8 years to complete, and it should be acknowledged that the original 8-year estimate was at most merely an educated guess.

In short, as river conditions and real-time salmon recolonization rates should dictate the hatchery production phase-out time frame, and these factors are by their nature unknown in advance (only estimated), the Hatchery Plan and CDFG should maintain some flexibility at to the termination dates of the Iron Gate/Fall Creek hatchery program. Otherwise our industry could face abrupt fall-offs in Klamath spawner numbers that would require major adjustments in fisheries management by the Pacific Fisheries Management Council (PFMC) and could cause severe and unexpected disruptions in harvestable salmon availability, including potential coast-wide at-sea salmon fishery closures that could devastate coastal fishing-dependent communities.

Condition 14: Water Supply Monitoring and Management. These provisions are also very important, especially the requirement to work with landowners to monitor and help minimize any adverse impacts on local landowner surface water diversions and groundwater supplies. It is in fact part of KRRC's mandate and mission to do everything in its power to work with local landowners on these issues, and to minimize any impacts dam removals may have on their surface water and groundwater withdrawal systems, but stating that intent as a requirement

in this Certification permit will also help allay many of the fears of local landowners around these issues.

That said, it should also be noted that the likely impacts to water intakes from dam removal would occur over a shorter duration than two years and over a much shorter distance (given the dilution effect of multiple downriver tributaries) than the 215+ miles from the California-Oregon border to the Pacific Ocean. The Detailed Plan (June 2018) and the studies cited therein estimated that sediment deposition would primarily affect the river channel from Iron Gate Dam to Cottonwood Creek. We therefore recommend reducing the duration and extent of monitoring required accordingly. We believe that the KRRC will propose similar changes.

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In summary, the Water Board should especially consider the many negative thermal impacts of the dams. These slack-water reservoirs soak up sunlight and thus stay much warmer than a natural, free-flowing river ever would. Additionally, the reservoirs now absorb, dilute and heat up cold water tributary flows (such as Jenny Creek, which now empties uselessly into Iron Gate Reservoir) that would historically have contributed cold water to a free-flowing river. By increasing water temperatures the dams (1) create ideal conditions for the breeding of toxic algae in the reservoirs, as well as good conditions for breeding fish parasites downstream, such as *Ceratonova shasta* and *Parvicapsula minibicornis* ; (2) dissolved oxygen (DO) levels in the reservoir and in the river are inversely proportionate to water temperature (i.e., when water temperatures go up, DO levels go down) – and low DO levels can smother fish and kill the river ecosystem; (3) massive algae blooms (of both toxic and non-toxic species) are much encouraged by conditions in the reservoirs, and these algae blooms suck DO out of the water as well as decay into sources of ammonia, which is at unnaturally high levels in the reservoirs generally and poisonous to fish. In short, the dams have created a highly degraded river ecosystem.

We believe that there is overwhelming evidence in the record that four-dam removal and the restoration of the Klamath River back to its original flow regimes will result in far more benefits and improvements in overall water quality of the river, as well as restoring the beneficial uses of restored fisheries and wildlife, than any other option. Furthermore, the short-term (mostly 2-years) of disturbance in the system will be well worth the much greater and long-term benefits, particularly since the adverse effects of those short-term impacts will be considerably mitigated. We support the issuance of the 401 Certification with the reasonable conditions proposed, and as proposed to be amended by the KRRC comments and our comments herein.

This concludes our supplemental written comments at this time. Thanks for the opportunity for public input, and please make this letter part of the record.

Sincerely,

Glen H. Spain

Glen H. Spain
NW Regional Director
PCFFA and IFR

PCFFA-CommentsCA401(07-22-18)

ATTACHMENT A – US EPA letter on Klamath sediments 4 November 2015.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

4 November 2015

Dennis Lynch
Associate Regional Director
Northwest Region
U.S. Geological Survey
11412 NW 8th Court
Vancouver, WA 98685

Subject: Overview of EPA's Evaluation of Sediment Quality Related to Possible Removal of Four Klamath River Dams

Dear Mr. Lynch –

This letter is in response to your request that the Environmental Protection Agency (EPA) summarize our involvement in the analysis of sediments in the Klamath River in Oregon and California, as those sediments relate to the potential removal of four hydropower dams currently operating on the Klamath River.

Although EPA Regions 9 and 10 have been actively involved in evaluating and addressing water quality problems in the Klamath Basin for many years, our level of participation increased substantially as your program performed its evaluation of the feasibility of dam removal as a part of the "Secretarial Determination" process laid out in the Klamath Hydropower Settlement Agreement and Klamath Basin Restoration Agreement (KHSA and KBRA).

With EPA Region 9 as lead, EPA staff provided substantial input to the design of the sampling plan for sediments behind the PacifiCorp's Klamath dams. We also participated directly in the evaluation of the resulting data. Ultimately, we determined that sufficient physical, chemical, and biological sediment quality information had been amassed to support a positive Secretarial Determination on removal of the dams[1]. More specifically, we concluded

1 While strongly supporting dam removal, our comment letter on the Draft EIS for Klamath Facilities Removal noted that some additional data collection may be needed for subsequent site-specific permit-level decisions by individual agencies.

overall that:

- the sediments behind the dams are relatively homogeneous, and levels of chemical contaminants in sediment largely fell below screening threshholds used to assess sediment disposition;
- the sediments likely to be released during dam removal are not likely to have significant contaminant-related effects on downstream fish, wildlife, or human receptors especially after mixing and dilution; and
- fish, wildlife, and human exposures to sediment contaminants would actually be reduced overall compared to the with-dams scenario (the No Action Alternative).

EPA's conclusions are consistent with the discussions presented in detail in the Sediment Evaluation Report[2], and in Section 4.4.9 (Chemicals in Reservoir Sediments) of the Secretarial Determination Findings of Technical Studies[3] (Secretarial Determination). Note especially the discussion and data included in the Sediment Evaluation Report in Chapter 3, Table 2 and Appendix A in the former, and the data included in Tables 4.4.9-1 and 4.4.9-2 in the latter, which summarize the findings of the investigation and which data formed the basis of EPA's comments.

The Klamath Dams sediment quality evaluation was based on a robust data set. Starting from the results of initial screening level investigations performed in 2006 by Gathard Engineering Consulting and Shannon & Wilson, Inc., under contract to the California Coastal Conservancy, EPA helped develop the more comprehensive sediment testing program that the Department of Interior performed under the Klamath Secretarial Determination process in 2009 – 2011. This program ultimately comprised 75 reservoir sediment samples and two Klamath River estuary sediment samples. This sediment sampling program considered multiple potential "chemical exposure pathways," and was designed to be representative of the sediments most likely to be released if the dams were removed, as well as to provide information about thinner "bench deposits" that may remain in place or be deposited along banks downstream.

The testing program was primarily structured in accordance with the state-federal sediment testing guidance manual for the Pacific Northwest, called the Sediment Evaluation Framework (SEF). This framework uses a stepwise process to sequentially identify, and focus increasing attention on, the contaminants and contaminant exposure pathways of most concern.

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2 CDM 2011e. Screening-Level Evaluation of Contaminants in Sediments from Three Reservoirs and the Estuary of the Klamath River, 2009-2011. Prepared for U.S. Department of the Interior Klamath Dam Removal Water Quality Sub Team Klamath River Secretarial Determination. CDM, Sacramento, CA, 155 p + Appendixes.

3 Department of Interior. 2012. Klamath Dam Removal Overview Report for the Secretary of the Interior, An Assessment of Science and Technical Information. US Department of Interior, US Department of Commerce, and National Marine Fisheries Service. Available online at https://klamathrestoration.gov/

As described in the Secretarial Determination, multiple evaluation steps were undertaken per the SEF:

- **Level 1:** Assessment of existing information, including the Stillwater data set, and development of the comprehensive follow-up sediment sampling plan.
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The testing done for the Klamath Dams sediment actually went well beyond the standard testing called for in the SEF. For example, the Klamath Dams sediment testing included many more potential contaminants than are typically evaluated, including many for which chemical screening levels are not provided in the SEF. The Klamath Dams sediment testing also gathered extra information concerning existing reservoir fish tissue contamination, a potential sediment-related contaminant exposure pathway associated with the No Action scenario of leaving the Dams in place.

Based on all these investigations, and EPA's experience evaluating and managing both highly contaminated and relatively un-contaminated sediments nationwide, we reached the overall conclusions listed above and strongly supported removal of the Klamath Dams. We continue to support the concept of removing these dams, and look forward to participating, as appropriate, in any detailed permit-level reviews that may be necessary as this project progresses.

You have also asked how the proposed dam removal project would be analyzed under the federal Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601, et seq. (Superfund). EPA has not conducted any formal Superfund evaluations of the proposed dam removal project, and nothing in this letter should be considered to be a waiver or release of liability under the Superfund program for any party. However, we are attaching for your information in Appendix A to this letter the most current MacDonald Consensus Probable Effects Concentrations (PEC) and Threshold Effect Concentrations (TEC) (MacDonald et al., 2000 or readily searchable at http://rais.ornl.gov/tools/eco_search.php). PEC values are intended to identify contaminant concentrations above which harmful effects are expected whereas TEC values identify concentrations below which harmful effects are not expected. Reservoir sediments with contaminant concentrations exceeding the PEC values would likely only present a risk to downstream receptors if the mobilized sediments were so highly contaminated as to cause water column concentrations violations of the state's water quality objectives or if downstream depositional areas were likely to become contaminated above the PEC values. Only then would the original reservoir sediments likely present an unacceptable risk upon mobilization and transport following dam removal.

We appreciate that your project is ambitious in scope and potentially has significant benefits for protecting aquatic resources and water quality in the Klamath Basin. Please feel free to contact me directly at (415) 972-3409, or Brian Ross at (415) 972-3475 if you have any questions about EPA's review of the sediment quality information collected to date for the Klamath Dams.

Sincerely,

Janet Hashimoto

for Nancy Woo
Associate Director
Water Division, R9

PACIFIC COAST FEDERATION of FISHERMEN'S ASSOCIATIONS

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5 July 2018
Via Email

RE: Klamath – Proposed removal of J.C. Boyle Dam
Action: Draft Clean Water Act Sec. 401 Certification for KRRC

Dear Mr. Stein:

These are followup written comments on behalf of the Pacific Coast Federation of Fishermen's Associations (PCFFA) and its sister organization, Institute for Fisheries Resources (IFR) to supplement our oral comments presented at the 12 June, 2018, public meeting in Klamath Falls. Please make them part of the permanent public record for this decision-making process.

PCFFA is the largest trade organization of commercial fishing families on the U.S. west coast, representing the economic interests of the west coast's mostly family-owned, commercial fishing fleet members, many of whom make all or part of their livelihoods from the harvesting of salmon whose origin is the Klamath River. Also, the west coast's intermingling stock salmon fisheries all the way from Monterey, CA to the Oregon-Washington border are often closed or severely limited, based on "weak stock" management constraints often triggered by the depressed salmon runs of the Klamath River, which typically migrate and intermingle with other more abundant salmon stocks within those regions. As PCFFA's sister organization, IFR has also been working to restore damaged Klamath salmon runs, which were once the third largest salmon runs in the continental United States, since the mid-1980's. Additionally, many of both PCFFA's and IFR's members are PacifiCorp ratepayers and customers. Hence our two organizations and their members have multiple economic and community interests in the outcomes of this process.

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The KRRC intends to submit its own, separate written comments to this process, and although our two organizations generally support those separate KRRC comments, PCFFA and IFR are separate legal entities presenting these written comments solely on their own behalves, and do not in any capacity speak for the KRRC.

Specific Comments on Draft 401 Certificate

Firstly, it should be noted that many of the proposed actions in the Draft 401 Certificate are already in the KRRC's most recently filed "Definite Plan," and thus already agreed to by KRRC – indeed, many of those measures were first proposed by the KRRC. There is thus already a large degree of pre-existing overlap and common purpose between DEQ and the KRRC on these issues.

Secondly, PCFFA and IFR's review of the Draft 401 Certificate's proposed mitigation and monitoring plans indicate that:

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In other words, DEQ Staff seem to have proposed the right mix of mitigation measures, monitoring systems and contingency planning mechanisms, as well as emergency response backup plans if necessary, in keeping with the scale and scope of this project. We therefore fully

support the DEQ Draft 401 Certification as written, other than any exceptions made (if any) in the KRRC's written comments.

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Responses to Issues Frequently Raised by Objectors to Klamath Dam Removals

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"Massive amounts of toxic chemicals are in sediments behind the dams." – Multiple studies and on-site surveys analyzing the chemical make-up of reservoir sediments have concluded that the sediment poses no risk to human health.[1, 2, 3, 4]

Opponents to river restoration often cite the Camp, Dresser, and McKee Study, which first assumes a worst-case sediment scenario, and then speculates that the high cost of such toxic sediment removal would push dam removal into the billions of dollars. However, this report was

[1] Klamath River Dam and Sediment Investigation, California Coastal Conservancy, November 2006.
[2] Preliminary Review of 2006 Analytical Testing Data from Sediment Sampling Conducted at Iron Gate, Copco 1, and JC Boyle Reservoirs, in Klamath River, Oregon and California, California Coastal Conservancy, September 22, 2006.
[3] Klamath River Reservoirs - Preliminary Sediment Sampling Data and Background Info, United States Depart of Interior, October 2010.
[4] Technical memo: Dioxin in Sediments Behind the Dams on the Klamath River, NOAA Water Quality Program Coordinator Joe Dillon, April 8, 2008.

prepared before, and fails to acknowledge the results of, the many later studies referenced in footnotes herein which disprove that report's initial assumption that toxic contamination exists.

This "fake fact" assertion that there are toxic chemical concerns in sediments behind the dams has also been officially debunked. For instance, the US EPA issued a letter dated 4 November, 2015, on just this issue, noting that multiple studies have shown that there is no significant concern about any toxic sediment problems in any of the reservoirs raised by any of several comprehensive studies. See ATTACHMENT A for a copy of that EPA letter for the record.

"20-30 million cubic yards of sediment behind the dams would wash out and devastate the lower river." – These numbers and their impacts are both greatly exaggerated. Only about 13.1 million cubic yards of sediments were actually trapped behind the dams by 2012, an amount that is expected to rise to about 15 million cubic yards by 2020. But of these sediments, only about one-third to two-thirds of the total volume (5 to 10 million cubic yards in 2020) are expected to wash out to sea over 1 to 2 years, as the river becomes re-channelized, with the rest of these sediments to be replanted and stabilized as new river bank. The majority of those sediments that are likely to wash out, however, are fine-grained and would be easily mobilized by normal river flows and so are not likely be deposited in the river channel nor estuary for very long, if at all. In short, most of the sediment, as DEQ notes in its analysis, would naturally wash out to sea within a couple of rainy seasons.

The less mobilized, larger gravel is also beneficial as it will likely help create gravel and cobble beds below the dams that are highly suitable for salmon spawning and rearing – indeed, the existing dams have systematically starved the lower river of natural recruitment of spawning and rearing gravel as much as 50 stream-miles downriver from Iron Gate Dam.

Alarmists warning of massive sediment erosion forget that rivers like the Klamath already, naturally, carry vast amounts of sediment out to sea as part of their natural baseline functioning.

For instance, the Klamath River already normally carries an average water-year sediment load of about 5.834 million tons/year (which translates to 3.889 million cubic yards of sediment/year at a standard conversion rate of 1.5 tons/cubic yard density), which may be greater or lower depending on total rainfall. Sediment transport models in fact indicate that high concentrations of suspended sediments would occur immediately downstream of Iron Gate Dam for only two-to-three months immediately following reservoir drawdown and removal, and that (except perhaps for a short-lived initial burst, which can be timed so as to avoid most impacts on migrating fish) additional sediment loads *would remain within the range of what already naturally occurs* in high-flow or wet water years.[5]

"Massive sediment plumes from dam removal will kill all the fish in the lower river for many years to come." -- There will clearly be adverse sediment impacts on fish within the mainstem of the river for a short period of time, but as noted above, these sediments are expected to reach lethal levels for fish only for a short period of time during one single, first-year flushing event. The Executive Summary of the DOI Final EIS/EIR (2013) notes:

[5] DOI Final EIS (April 2013), Klamath Facilities Removal Final Environmental Impact Statement/Environmental Impact Report. (See particularly section 3.11.3.3 and Table 3.11-3).

> "While sediment release and other construction related activities during dam removal could cause short-term (1 to 2 years) adverse impacts on fisheries downstream from the Hydroelectric Reach, salmon and other aquatic resources would be expected to return to population levels observed prior to dam removal (in 2010 when the Notice of Preparation was issued) within 5 years……[6]

And of course, these estimates are for the Klamath River and all its dams as a whole. Since DEQ is only concerned with the sediments entrapped behind J. C. Boyle Dam, and these sediments loads (as noted by DEQ in its analysis documents) are only a relatively small amount of the sediment load totals expected from dam removal, and the J. C. Boyle Dam is also the hydrologically highest dam in the Klamath Hydropower Project system, the total sediment impacts from the removal of the J. C. Boyles Dam do not represent a serious sediment impact.

The plan for reservoir drawdown to be completed in the high-flow winter season within a single year (2021) is also designed to minimize negative effects of sediment surges on sensitive fish species, particularly federally listed coho salmon. Drawdown will be timed to avoid the major runs of fish, many of which (such as coho) only use the mainstem river briefly each year as a migration corridor, and would thus be safe within their usual tributary habitat during the lethal peak of the mainstem sediment surge.

"Removing the Klamath dams would eliminate their flood control benefits." -- First off, the dams in question were never designed for flood control and thus provide little emergency water storage in the event of flood-level flows. At very best, the reservoirs could physically provide less than 7% attenuation of any 100-year flood event, and then only for a few hours' time, i.e., until their reservoirs were full.[7] At most, this might provide just a 10-hour delay in the peaking of any lower river flooding.

And while increased flood risk is only a problem for dams in California (i.e., not J. C. Boyle, which has no residences immediately downstream) nevertheless, the KRRC is taking even this small additional flood risk very seriously! Among the various planned mitigation measures to minimize flood damage risk are: Mitigation Measures H-1 (install new river flow gages and improve predictive flooding models, thus increasing warning time to residents of any impending flood). New National Weather Service (NWS) warning systems can also be installed to give residents accurate flood predictions as much as two days in advance.

"Elevated river levels due to sediment deposition caused by drawdown of the dams would raise river levels and greatly increase lower river flooding risks." -- As noted above, most of the additional sediments to be introduced into the river by dam removal are fine particles that suspend easily and are expected to wash though the river to the estuary fairly quickly. Any sediment deposition downstream of Iron Gate Dam would thus be minimal as well as short-lived. However, the reservoir drawdown plans were made with consideration for minimizing flood

[6] DOI Final EIS (April 2013), Executive Summary, pg. 39.
[7] DOI Final EIS (April 2013), see pg. 3.6-32, especially Table 3.6-9. The greatest recent flood in the region occurred in 1964 – two years *after* the final dam at Iron Gate was constructed.

risks downstream. Controlled releases during reservoir drawdown would not be likely to increase flood risks because they would be kept well within the range of historic flows.[8]

Also, the magnitude of sediment deposition from dam removal is expected to be relatively small compared to sediment loading from other existing natural sources along the Klamath River. Likely the only measurable sediment deposition would occur in the reach from Bogus Creek to Cottonwood Creek. The models show that from Willow Creek to Bogus Creek, there would be about 1.5 feet of additional deposition, and from Cottonwood to Willow Creek less than 1 foot of deposition. Downstream from Cottonwood Creek deposition models show it would not be appreciable, and ever less so as one progresses downriver.

Additionally, this sedimentation will occur primarily in pools and not in the riffle and bedrock sections that tend to control surface elevations. Because the sediment deposition would be small in comparison with the No Action/No Project Alternative (i.e., current *status quo*), it would not affect stream characteristics in a way that would substantively affect flood inundation or flood risks. But under dam removal, the 100-year floodplain inundation area downstream from Iron Gate Dam could change, albeit it slightly and then decreasingly as one goes downstream, between River Mile 190 and 171.

Based upon the most current inventory of structures downstream from Iron Gate Dam to Humbug Creek, over 24 residences are already within the existing 100-year flood plain. Less than 6 residences and other structures such as garages are outside of this flood plain, but may be put into the new 100-year floodplain after removal of the dams.[9]

Among the various planned mitigation measures to minimize flood damage risk are: Mitigation Measure H-2 (The KRRC will work with willing landowners to develop and implement a plan to address any increased flood threat generated by changes to the 100-year flood inundation area as a result of the removal of the four facilities for permanent, legally established, permitted, habitable structures in place before dam removal. Such plans could include measures to move, modify, or elevate structures where feasible.)

*****

This concludes our written comments at this time. Thanks for the opportunity for public input.

Sincerely,
Glen H. Spain
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NW Regional Director
PCFFA and IFR

PCFFA-CommentsOR401(07-05-18)

ATTACHMENT A – US EPA letter on Klamath sediments 4 November 2015.

[8] DOI Final EIS (April 2013), see Section 3.6.4.3.2.
[9] DOI Final EIS (April 2013), see pg. 3.6 -34

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

4 November 2015

Dennis Lynch
Associate Regional Director
Northwest Region
U.S. Geological Survey
11412 NW 8th Court
Vancouver, WA 98685

Subject: Overview of EPA's Evaluation of Sediment Quality Related to Possible Removal of Four Klamath River Dams

Dear Mr. Lynch –

This letter is in response to your request that the Environmental Protection Agency (EPA) summarize our involvement in the analysis of sediments in the Klamath River in Oregon and California, as those sediments relate to the potential removal of four hydropower dams currently operating on the Klamath River.

Although EPA Regions 9 and 10 have been actively involved in evaluating and addressing water quality problems in the Klamath Basin for many years, our level of participation increased substantially as your program performed its evaluation of the feasibility of dam removal as a part of the "Secretarial Determination" process laid out in the Klamath Hydropower Settlement Agreement and Klamath Basin Restoration Agreement (KHSA and KBRA).

With EPA Region 9 as lead, EPA staff provided substantial input to the design of the sampling plan for sediments behind the PacifiCorp's Klamath dams. We also participated directly in the evaluation of the resulting data. Ultimately, we determined that sufficient physical, chemical, and biological sediment quality information had been amassed to support a positive Secretarial Determination on removal of the dams[1]. More specifically, we concluded

1 While strongly supporting dam removal, our comment letter on the Draft EIS for Klamath Facilities Removal noted that some additional data collection may be needed for subsequent site-specific permit-level decisions by individual agencies.

overall that:

- the sediments behind the dams are relatively homogeneous, and levels of chemical contaminants in sediment largely fell below screening threshholds used to assess sediment disposition;
- the sediments likely to be released during dam removal are not likely to have significant contaminant-related effects on downstream fish, wildlife, or human receptors especially after mixing and dilution; and
- fish, wildlife, and human exposures to sediment contaminants would actually be reduced overall compared to the with-dams scenario (the No Action Alternative).

EPA's conclusions are consistent with the discussions presented in detail in the Sediment Evaluation Report[2], and in Section 4.4.9 (Chemicals in Reservoir Sediments) of the Secretarial Determination Findings of Technical Studies[3] (Secretarial Determination). Note especially the discussion and data included in the Sediment Evaluation Report in Chapter 3, Table 2 and Appendix A in the former, and the data included in Tables 4.4.9-1 and 4.4.9-2 in the latter, which summarize the findings of the investigation and which data formed the basis of EPA's comments.

The Klamath Dams sediment quality evaluation was based on a robust data set. Starting from the results of initial screening level investigations performed in 2006 by Gathard Engineering Consulting and Shannon & Wilson, Inc., under contract to the California Coastal Conservancy, EPA helped develop the more comprehensive sediment testing program that the Department of Interior performed under the Klamath Secretarial Determination process in 2009 – 2011. This program ultimately comprised 75 reservoir sediment samples and two Klamath River estuary sediment samples. This sediment sampling program considered multiple potential "chemical exposure pathways," and was designed to be representative of the sediments most likely to be released if the dams were removed, as well as to provide information about thinner "bench deposits" that may remain in place or be deposited along banks downstream.

The testing program was primarily structured in accordance with the state-federal sediment testing guidance manual for the Pacific Northwest, called the Sediment Evaluation Framework (SEF). This framework uses a stepwise process to sequentially identify, and focus increasing attention on, the contaminants and contaminant exposure pathways of most concern.

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2 CDM 2011e. Screening-Level Evaluation of Contaminants in Sediments from Three Reservoirs and the Estuary of the Klamath River, 2009-2011. Prepared for U.S. Department of the Interior Klamath Dam Removal Water Quality Sub Team Klamath River Secretarial Determination. CDM, Sacramento, CA, 155 p + Appendixes.

3 Department of Interior. 2012. Klamath Dam Removal Overview Report for the Secretary of the Interior, An Assessment of Science and Technical Information. US Department of Interior, US Department of Commerce, and National Marine Fisheries Service. Available online at https://klamathrestoration.gov/

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PACIFIC COAST FEDERATION of FISHERMEN'S ASSOCIATIONS

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Eugene, OR 97401
Email: Klamath401@deq.state.or.us

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Via Email

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Opponents to river restoration often cite the Camp, Dresser, and McKee Study, which first assumes a worst-case sediment scenario, and then speculates that the high cost of such toxic sediment removal would push dam removal into the billions of dollars. However, this report was

[1] Klamath River Dam and Sediment Investigation, California Coastal Conservancy, November 2006.
[2] Preliminary Review of 2006 Analytical Testing Data from Sediment Sampling Conducted at Iron Gate, Copco 1, and JC Boyle Reservoirs, in Klamath River, Oregon and California, California Coastal Conservancy, September 22, 2006.
[3] Klamath River Reservoirs - Preliminary Sediment Sampling Data and Background Info, United States Depart of Interior, October 2010.
[4] Technical memo: Dioxin in Sediments Behind the Dams on the Klamath River, NOAA Water Quality Program Coordinator Joe Dillon, April 8, 2008.

prepared before, and fails to acknowledge the results of, the many later studies referenced in footnotes herein which disprove that report's initial assumption that toxic contamination exists.

This "fake fact" assertion that there are toxic chemical concerns in sediments behind the dams has also been officially debunked. For instance, the US EPA issued a letter dated 4 November, 2015, on just this issue, noting that multiple studies have shown that there is no significant concern about any toxic sediment problems in any of the reservoirs raised by any of several comprehensive studies. See ATTACHMENT A for a copy of that EPA letter for the record.

"20-30 million cubic yards of sediment behind the dams would wash out and devastate the lower river." – These numbers and their impacts are both greatly exaggerated. Only about 13.1 million cubic yards of sediments were actually trapped behind the dams by 2012, an amount that is expected to rise to about 15 million cubic yards by 2020. But of these sediments, only about one-third to two-thirds of the total volume (5 to 10 million cubic yards in 2020) are expected to wash out to sea over 1 to 2 years, as the river becomes re-channelized, with the rest of these sediments to be replanted and stabilized as new river bank. The majority of those sediments that are likely to wash out, however, are fine-grained and would be easily mobilized by normal river flows and so are not likely be deposited in the river channel nor estuary for very long, if at all. In short, most of the sediment, as DEQ notes in its analysis, would naturally wash out to sea within a couple of rainy seasons.

The less mobilized, larger gravel is also beneficial as it will likely help create gravel and cobble beds below the dams that are highly suitable for salmon spawning and rearing – indeed, the existing dams have systematically starved the lower river of natural recruitment of spawning and rearing gravel as much as 50 stream-miles downriver from Iron Gate Dam.

Alarmists warning of massive sediment erosion forget that rivers like the Klamath already, naturally, carry vast amounts of sediment out to sea as part of their natural baseline functioning.

For instance, the Klamath River already normally carries an average water-year sediment load of about 5.834 million tons/year (which translates to 3.889 million cubic yards of sediment/year at a standard conversion rate of 1.5 tons/cubic yard density), which may be greater or lower depending on total rainfall. Sediment transport models in fact indicate that high concentrations of suspended sediments would occur immediately downstream of Iron Gate Dam for only two-to-three months immediately following reservoir drawdown and removal, and that (except perhaps for a short-lived initial burst, which can be timed so as to avoid most impacts on migrating fish) additional sediment loads *would remain within the range of what already naturally occurs* in high-flow or wet water years.[5]

"Massive sediment plumes from dam removal will kill all the fish in the lower river for many years to come." -- There will clearly be adverse sediment impacts on fish within the mainstem of the river for a short period of time, but as noted above, these sediments are expected to reach lethal levels for fish only for a short period of time during one single, first-year flushing event. The Executive Summary of the DOI Final EIS/EIR (2013) notes:

[5] DOI Final EIS (April 2013), Klamath Facilities Removal Final Environmental Impact Statement/Environmental Impact Report. (See particularly section 3.11.3.3 and Table 3.11-3).

> "While sediment release and other construction related activities during dam removal could cause short-term (1 to 2 years) adverse impacts on fisheries downstream from the Hydroelectric Reach, salmon and other aquatic resources would be expected to return to population levels observed prior to dam removal (in 2010 when the Notice of Preparation was issued) within 5 years……[6]

And of course, these estimates are for the Klamath River and all its dams as a whole. Since DEQ is only concerned with the sediments entrapped behind J. C. Boyle Dam, and these sediments loads (as noted by DEQ in its analysis documents) are only a relatively small amount of the sediment load totals expected from dam removal, and the J. C. Boyle Dam is also the hydrologically highest dam in the Klamath Hydropower Project system, the total sediment impacts from the removal of the J. C. Boyles Dam do not represent a serious sediment impact.

The plan for reservoir drawdown to be completed in the high-flow winter season within a single year (2021) is also designed to minimize negative effects of sediment surges on sensitive fish species, particularly federally listed coho salmon. Drawdown will be timed to avoid the major runs of fish, many of which (such as coho) only use the mainstem river briefly each year as a migration corridor, and would thus be safe within their usual tributary habitat during the lethal peak of the mainstem sediment surge.

"Removing the Klamath dams would eliminate their flood control benefits." -- First off, the dams in question were never designed for flood control and thus provide little emergency water storage in the event of flood-level flows. At very best, the reservoirs could physically provide less than 7% attenuation of any 100-year flood event, and then only for a few hours' time, i.e., until their reservoirs were full.[7] At most, this might provide just a 10-hour delay in the peaking of any lower river flooding.

And while increased flood risk is only a problem for dams in California (i.e., not J. C. Boyle, which has no residences immediately downstream) nevertheless, the KRRC is taking even this small additional flood risk very seriously! Among the various planned mitigation measures to minimize flood damage risk are: Mitigation Measures H-1 (install new river flow gages and improve predictive flooding models, thus increasing warning time to residents of any impending flood). New National Weather Service (NWS) warning systems can also be installed to give residents accurate flood predictions as much as two days in advance.

"Elevated river levels due to sediment deposition caused by drawdown of the dams would raise river levels and greatly increase lower river flooding risks." -- As noted above, most of the additional sediments to be introduced into the river by dam removal are fine particles that suspend easily and are expected to wash though the river to the estuary fairly quickly. Any sediment deposition downstream of Iron Gate Dam would thus be minimal as well as short-lived. However, the reservoir drawdown plans were made with consideration for minimizing flood

[6] DOI Final EIS (April 2013), Executive Summary, pg. 39.
[7] DOI Final EIS (April 2013), see pg. 3.6-32, especially Table 3.6-9. The greatest recent flood in the region occurred in 1964 – two years *after* the final dam at Iron Gate was constructed.

risks downstream. Controlled releases during reservoir drawdown would not be likely to increase flood risks because they would be kept well within the range of historic flows.[8]

Also, the magnitude of sediment deposition from dam removal is expected to be relatively small compared to sediment loading from other existing natural sources along the Klamath River. Likely the only measurable sediment deposition would occur in the reach from Bogus Creek to Cottonwood Creek. The models show that from Willow Creek to Bogus Creek, there would be about 1.5 feet of additional deposition, and from Cottonwood to Willow Creek less than 1 foot of deposition. Downstream from Cottonwood Creek deposition models show it would not be appreciable, and ever less so as one progresses downriver.

Additionally, this sedimentation will occur primarily in pools and not in the riffle and bedrock sections that tend to control surface elevations. Because the sediment deposition would be small in comparison with the No Action/No Project Alternative (i.e., current *status quo*), it would not affect stream characteristics in a way that would substantively affect flood inundation or flood risks. But under dam removal, the 100-year floodplain inundation area downstream from Iron Gate Dam could change, albeit it slightly and then decreasingly as one goes downstream, between River Mile 190 and 171.

Based upon the most current inventory of structures downstream from Iron Gate Dam to Humbug Creek, over 24 residences are already within the existing 100-year flood plain. Less than 6 residences and other structures such as garages are outside of this flood plain, but may be put into the new 100-year floodplain after removal of the dams.[9]

Among the various planned mitigation measures to minimize flood damage risk are: Mitigation Measure H-2 (The KRRC will work with willing landowners to develop and implement a plan to address any increased flood threat generated by changes to the 100-year flood inundation area as a result of the removal of the four facilities for permanent, legally established, permitted, habitable structures in place before dam removal. Such plans could include measures to move, modify, or elevate structures where feasible.)

*****

This concludes our written comments at this time. Thanks for the opportunity for public input.

Sincerely,
Glen H. Spain
Glen H. Spain
NW Regional Director
PCFFA and IFR

PCFFA-CommentsOR401(07-05-18)

ATTACHMENT A – US EPA letter on Klamath sediments 4 November 2015.

[8] DOI Final EIS (April 2013), see Section 3.6.4.3.2.
[9] DOI Final EIS (April 2013), see pg. 3.6 -34

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
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4 November 2015

Dennis Lynch
Associate Regional Director
Northwest Region
U.S. Geological Survey
11412 NW 8th Court
Vancouver, WA 98685

Subject: Overview of EPA's Evaluation of Sediment Quality Related to Possible Removal of Four Klamath River Dams

Dear Mr. Lynch –

This letter is in response to your request that the Environmental Protection Agency (EPA) summarize our involvement in the analysis of sediments in the Klamath River in Oregon and California, as those sediments relate to the potential removal of four hydropower dams currently operating on the Klamath River.

Although EPA Regions 9 and 10 have been actively involved in evaluating and addressing water quality problems in the Klamath Basin for many years, our level of participation increased substantially as your program performed its evaluation of the feasibility of dam removal as a part of the "Secretarial Determination" process laid out in the Klamath Hydropower Settlement Agreement and Klamath Basin Restoration Agreement (KHSA and KBRA).

With EPA Region 9 as lead, EPA staff provided substantial input to the design of the sampling plan for sediments behind the PacifiCorp's Klamath dams. We also participated directly in the evaluation of the resulting data. Ultimately, we determined that sufficient physical, chemical, and biological sediment quality information had been amassed to support a positive Secretarial Determination on removal of the dams[1]. More specifically, we concluded

1 While strongly supporting dam removal, our comment letter on the Draft EIS for Klamath Facilities Removal noted that some additional data collection may be needed for subsequent site-specific permit-level decisions by individual agencies.

overall that:

- the sediments behind the dams are relatively homogeneous, and levels of chemical contaminants in sediment largely fell below screening threshholds used to assess sediment disposition;
- the sediments likely to be released during dam removal are not likely to have significant contaminant-related effects on downstream fish, wildlife, or human receptors especially after mixing and dilution; and
- fish, wildlife, and human exposures to sediment contaminants would actually be reduced overall compared to the with-dams scenario (the No Action Alternative).

EPA's conclusions are consistent with the discussions presented in detail in the Sediment Evaluation Report[2], and in Section 4.4.9 (Chemicals in Reservoir Sediments) of the Secretarial Determination Findings of Technical Studies[3] (Secretarial Determination). Note especially the discussion and data included in the Sediment Evaluation Report in Chapter 3, Table 2 and Appendix A in the former, and the data included in Tables 4.4.9-1 and 4.4.9-2 in the latter, which summarize the findings of the investigation and which data formed the basis of EPA's comments.

The Klamath Dams sediment quality evaluation was based on a robust data set. Starting from the results of initial screening level investigations performed in 2006 by Gathard Engineering Consulting and Shannon & Wilson, Inc., under contract to the California Coastal Conservancy, EPA helped develop the more comprehensive sediment testing program that the Department of Interior performed under the Klamath Secretarial Determination process in 2009 – 2011. This program ultimately comprised 75 reservoir sediment samples and two Klamath River estuary sediment samples. This sediment sampling program considered multiple potential "chemical exposure pathways," and was designed to be representative of the sediments most likely to be released if the dams were removed, as well as to provide information about thinner "bench deposits" that may remain in place or be deposited along banks downstream.

The testing program was primarily structured in accordance with the state-federal sediment testing guidance manual for the Pacific Northwest, called the Sediment Evaluation Framework (SEF). This framework uses a stepwise process to sequentially identify, and focus increasing attention on, the contaminants and contaminant exposure pathways of most concern.

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2 CDM 2011e. Screening-Level Evaluation of Contaminants in Sediments from Three Reservoirs and the Estuary of the Klamath River, 2009-2011. Prepared for U.S. Department of the Interior Klamath Dam Removal Water Quality Sub Team Klamath River Secretarial Determination. CDM, Sacramento, CA, 155 p + Appendixes.

3 Department of Interior. 2012. Klamath Dam Removal Overview Report for the Secretary of the Interior, An Assessment of Science and Technical Information. US Department of Interior, US Department of Commerce, and National Marine Fisheries Service. Available online at https://klamathrestoration.gov/

As described in the Secretarial Determination, multiple evaluation steps were undertaken per the SEF:

- **Level 1:** Assessment of existing information, including the Stillwater data set, and development of the comprehensive follow-up sediment sampling plan.
- **Level 2A**: Chemistry assessment for ecological and human health, comparing past and recently collected sediment chemistry data to a broad range of marine and freshwater sediment screening guidelines used in various programs around the country, including both dredged material management programs and remediation programs.
- **Level 2B**: Biological assessment, comparing laboratory toxicity and bioaccumulation testing results to a range of appropriate ecological and human health screening levels.

The testing done for the Klamath Dams sediment actually went well beyond the standard testing called for in the SEF. For example, the Klamath Dams sediment testing included many more potential contaminants than are typically evaluated, including many for which chemical screening levels are not provided in the SEF. The Klamath Dams sediment testing also gathered extra information concerning existing reservoir fish tissue contamination, a potential sediment-related contaminant exposure pathway associated with the No Action scenario of leaving the Dams in place.

Based on all these investigations, and EPA's experience evaluating and managing both highly contaminated and relatively un-contaminated sediments nationwide, we reached the overall conclusions listed above and strongly supported removal of the Klamath Dams. We continue to support the concept of removing these dams, and look forward to participating, as appropriate, in any detailed permit-level reviews that may be necessary as this project progresses.

You have also asked how the proposed dam removal project would be analyzed under the federal Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. Section 9601, et seq. (Superfund). EPA has not conducted any formal Superfund evaluations of the proposed dam removal project, and nothing in this letter should be considered to be a waiver or release of liability under the Superfund program for any party. However, we are attaching for your information in Appendix A to this letter the most current MacDonald Consensus Probable Effects Concentrations (PEC) and Threshold Effect Concentrations (TEC) (MacDonald et al., 2000 or readily searchable at http://rais.ornl.gov/tools/eco_search.php). PEC values are intended to identify contaminant concentrations above which harmful effects are expected whereas TEC values identify concentrations below which harmful effects are not expected. Reservoir sediments with contaminant concentrations exceeding the PEC values would likely only present a risk to downstream receptors if the mobilized sediments were so highly contaminated as to cause water column concentrations violations of the state's water quality objectives or if downstream depositional areas were likely to become contaminated above the PEC values. Only then would the original reservoir sediments likely present an unacceptable risk upon mobilization and transport following dam removal.

We appreciate that your project is ambitious in scope and potentially has significant benefits for protecting aquatic resources and water quality in the Klamath Basin. Please feel free to contact me directly at (415) 972-3409, or Brian Ross at (415) 972-3475 if you have any questions about EPA's review of the sediment quality information collected to date for the Klamath Dams.

Sincerely,

Janet Hashimoto

for Nancy Woo
Associate Director
Water Division, R9