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February 19, 2021

Sophie Maxwell, Chair
San Francisco Public Utilities Commission
525 Golden Gate Avenue, 13th Floor
San Francisco, CA 94012

RE: Follow up regarding the February 5, 2021 Workshop

Dear Chairwoman Maxwell and Members of the Commission:

On behalf of the Natural Resources Defense Council, San Francisco Baykeeper, The Nature Conservancy, and Golden State Salmon Association, we are writing to follow up regarding staff's presentation regarding their view of the scientific basis for the proposed Tuolumne River voluntary agreement at the Commission's workshop on February 5, 2021. We appreciate the Commission holding this second workshop and for inviting us to participate. However, we were deeply disappointed by staff's presentation, which provided misleading and scientifically unsound information to the Commission, and further demonstrated the lack of credible science underlying the proposal. In addition to documenting several of our scientific concerns regarding the presentation in this letter, we also request the following information:

- 1) We request that the Commission provide us and the public with the results of the District's Chinook Salmon model from runs that exclude the assumed effects of predator control measures.
- 2) We request that the Commission provide graphics that compare the flows *required* under the voluntary agreement with those *required* under the Bay-Delta for individual water years.

These concerns and requests for records are discussed in more detail below.

I. Staff's Continued Reliance on the Fish Population Model Results is Scientifically Unsound:

Despite the criticism of the fish population models by the recent independent scientific peer review and by state and federal agencies over many years, Commission staff presented the results of the model as though the model was valid and accurate, claiming that the model

shows that the proposed voluntary agreement would yield twice as many salmon for half the water. However, neither that statement nor the model results on which it is based are scientifically credible. Rather than meaningfully responding to the criticism from the independent scientific peer review or other critiques, staff cherry-picked a few statements from the peer review report while continuing to present the flawed modeling results.

As a result, the Commission was presented with misleading and scientifically unsound conclusions about the model and the proposed voluntary agreement. For instance, while it is true that the peer review found the salmon model was usable for some comparisons, as Commission staff claim on slide 92, the peer reviewers reached a radically different conclusion regarding the effects of the proposed voluntary agreement than what staff presented to the Commission. The peer reviewers concluded that the model demonstrates that increased flow provides high certainty of positive effects for salmon while other measures, including predator control and spawning habitat restoration, have “relatively low benefits compared to spring flow increases.” See peer review at ES-3.

Moreover, staff and consultants for the Commission admitted in the workshop that the assumptions regarding predator control were the dominant factor affecting fish production in the model, and they further admitted that without those assumptions fish production under the proposed voluntary agreement would be lower than under the Bay-Delta Plan. We appreciate staff’s candor that that these model assumptions drive the model’s results. However, these assumptions regarding predator control in the model (e.g., that removing 10% of the predators will increase salmon survival by 10%) are not scientifically credible and run counter to basic ecological principles.¹ Numerous peer reviewed publications have demonstrated that predator control programs are unlikely to result in significant improvements in salmon survival, a conclusion that the peer review report also reached. For instance, Michel et al 2020, which we presented in the first workshop, concluded that there was “no statistically significant evidence for an effect of predator removals or additions on survival rates of Chinook Salmon... or on predation rates ... despite a one-time reduction of approximately 40 to 70% of all predators.” In contrast, staff did not cite any peer reviewed scientific research in support of their assumption that removing 10 percent of the predators would increase salmon survival by 10 percent.²

¹ This hypothetical proportional relationship is unprecedented in natural systems -- predatory fish that are removed are generally replaced in part or completely by their competitors or by the smaller predators they had suppressed or would have eaten. Assuming a 1:1 relationship between predator suppression and improved salmon survival is completely unjustified.

² The predator exclusion weir proposal is also unsupported, ill-conceived, and inconsistent with the best available science. Any weir that effectively excludes predatory fish will likely exclude desirable fish from the Tuolumne (or restrict their necessary movements) as well, including Chinook Salmon, Steelhead, and Sturgeon.

State and federal agencies have repeatedly criticized and disagreed with the fish population models, as the State Water Resources Control Board noted in 2018:

However, the validity of the Districts' biological models is highly uncertain and remains challenged by outstanding agency comments that were not resolved in the final study reports for the juvenile fish production models (CDFW 2014a; NMFS 2014a; USFWS 2014; TID and MID 2013b, 2017a, 2017b, 2017c). California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (USFWS), and State Water Board documented disagreements with underlying model assumptions in multiple letters and comments in meetings regarding juvenile fish production models and the Districts' predation study and report (CDFW 2013a, 2013b, 2014b; NMFS 2014b; USFWS 2013a, 2013b; State Water Board 2013a, 2013b; Stillwater Sciences 2013; TID and MID 2013a, 2013b, 2016). Agency criticisms of the Districts' biological models include, but are not limited to, concerns that models do not recognize existing rearing and spawning habitat limitations or accurately represent temperature sensitivity, predation, and the effect of flow in establishing rearing and floodplain habitat benefits.

SWRCB 2018.³ Finally, staff also admitted that the *O. mykiss* model is designed around the needs of resident rainbow trout and does not account for the different needs of Central Valley Steelhead, a federally listed species under the ESA. The independent scientific peer review rejected the *O. mykiss* model as fatally flawed. The fact that the needs of this key species are ignored by this model is another reason why staff should not rely on it.

Staff's continued presentation of these fish population modeling results is misleading to the Commission and the public and is not consistent with the best available science. We encourage the Commission to reject these flawed model results, as other state and federal agencies have done. In addition, we request that the Commission provide us and the public with the results of the model runs that exclude the assumed effects of predator control measures, which staff and consultants discussed in the workshop.

II. Lack of Credible Scientific Support for the Proposed Habitat Restoration Measures

In addition to presenting misleading and scientifically invalid information regarding the fish population model, the presentation demonstrated an alarming lack of scientific support for the particular habitat restoration measures proposed in the voluntary agreement. In the abstract,

³ Available online at:

https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_planning/2018_sed/docs/comment_responses.pdf.

we agree that some habitat restoration activities can complement increased flows and that continued habitat restoration on the Tuolumne River is likely to occur in the future with or without a voluntary agreement. However, habitat restoration is not a substitute for adequate flows⁴, which provide a multitude of positive effects for fish and wildlife populations, in the Tuolumne, the San Joaquin, and through the southern Delta. Also, several of the habitat restoration measures proposed are unlikely to yield substantial benefits for salmon.

It is important to recognize, as we discussed in the first workshop, that there have been numerous habitat restoration projects completed on the Tuolumne River over the past several decades, but those projects have not demonstrated a significant improvement in salmon survival or escapement. Reports by the Commission's consultants have documented how several of these habitat restoration projects, such as the Special Run Pool 9 and 7/11 projects, were ineffective because of low instream flows.

Given the current amount and distribution of gravel spawning substrate on the Tuolumne River, staff's presentation admits that spawning habitat is not limiting the current Tuolumne River salmon population, and our own analysis supports this finding. Yet the proposed voluntary agreement includes several measures regarding spawning gravel that are neither scientifically sound nor likely to increase salmon populations. Why do staff continue to advocate spending money on habitat restoration measures that are unlikely to benefit salmon or other species in the absence of substantial flow improvements?

In addition, although our organizations support floodplain restoration, staff provided no explanation or analysis for the specific acreage of floodplain habitat restoration proposed in the voluntary agreement, when and how frequently that acreage would be inundated, and how that would compare to current conditions. The timing, frequency and duration of floodplain inundation are critical to ensuring that they benefit salmon, but there is little to no analysis of this, nor any evaluation of whether it is adequate to achieve specific biological objectives, including the Bay-Delta Plan's salmon doubling objective. The proposed acreage of floodplain habitat restoration and inundation appears woefully inadequate compared to other analyses that have been performed, such as evaluations using DWR's ESHE Model.

III. Strong Scientific Evidence that Increased Flows will Increase Salmon Survival:

In contrast to the lack of scientific evidence that spawning habitat restoration or predator control programs are likely to increase salmon survival, staff's presentation recognized that increased flow increases salmon survival in the Tuolumne River. For instance, slide 75 shows

⁴ For instance, in 2013 the California Department of Fish and Wildlife rejected a proposal to require 35 percent of unimpaired flow, explaining in part that, "...without additional flow, other non-flow actions will not compensate for the inadequacy of the Preferred Alternative."

that staff recognizes there is a significant and positive relationship between flow and survival in the Tuolumne River: as flows increase, survival of juvenile salmon increases. This is generally consistent with the peer-reviewed scientific literature and other research specific to the San Joaquin Valley's tributaries, which have repeatedly concluded that increased flow increases salmon survival.

IV. Staff's Concerns Regarding Hatchery Fish are Inconsistent with the Best Available Science:

Staff's presentation suggested that hatchery fish were limiting salmon production on the Tuolumne River, but their arguments lack merit. We agree that hatchery fish have, over time, come to represent a higher proportion of spawning fish on many Central Valley Rivers. But contrary to staff's argument, a preponderance of hatchery fish does not explain the pattern illustrated in Slide 51 of their presentation, which reveals that salmon returns to the Tuolumne declined more than on any other river in the Central Valley between the period 1967-1991 and the 1992-2011 period. If more hatchery fish were returning to the Tuolumne in recent years, then the salmon decline observed on the Tuolumne through this time period would be reduced.⁵

More importantly, an increase in the proportion of hatchery fish observed in the Tuolumne points to poor conditions on the Tuolumne River and the San Joaquin River downstream of their confluence. The difference between fish spawned in the wild and those spawned in a hatchery is that the latter do not experience incubation conditions of the natal river. If the hatchery fish are then trucked to a release point further downstream, then the hatchery fish also avoid experiencing conditions on the migratory pathway. Thus, if the success of hatchery fish relative to wild fish has increased through time, it is strong evidence that conditions experienced only by wild fish (i.e., in their spawning, rearing, and migration habitats) have deteriorated over time.

V. Lack of Clarity Regarding Required Flows Under the Voluntary Agreement:

During the workshop, staff suggested that the volume of instream flows required under the proposed voluntary agreement is approximately half of the flows required under the Bay-Delta Plan.⁶ The State Water Resources Control Board has likewise found that the proposal would

⁵ Removing from this graph the salmon streams that have hatcheries would not change the fact that the Tuolumne performed worse than any of the rivers that have no hatchery. Furthermore, the factors staff offers as alternative explanations for the Tuolumne's poor performance (e.g., conditions in the Delta and Ocean), are shared with other Central Valley tributaries – they cannot explain the exceptionally poor performance of salmon populations on the Tuolumne.

⁶ It is important to focus on required flows, rather than flows that may occur as a result of the reservoir filling, because although reservoir spills may benefit salmon, the frequency and

provide less than 20% of unimpaired flow in many years, and less than half of the flow required under the Bay-Delta Plan. Staff's presentation did not directly compare flows required under the proposed voluntary agreement with flows required under the Bay-Delta Plan, and we request that the Commission provide this analysis to improve the shared understanding of the proposal. Examining required flows in individual years is particularly important because the proposed voluntary agreement includes numerous offramps and caveats that result in lower instream flows, including: (1) the use of extremely conservative hydrologic forecasts (using a 90% exceedance forecast to determine required flows in February, March, and April, and a 75% exceedance forecast in May to determine flows for the rest of the year); and (2) elimination of the floodplain pulse flows in successive below normal, dry, or critically dry water year types.

Data on the volume and timing of flows under the proposed voluntary agreement is important not only to evaluate conditions in the Tuolumne River and their effects on salmon and other native fish species, but also how the proposed voluntary agreement would contribute to the significant increases in Delta inflow and outflow that the State Water Resources Control Board has found are necessary to protect and restore the health of the estuary. It does not appear that the proposed voluntary agreement meaningfully contributes to increasing Delta inflow or outflow in most years, and we note that the Tuolumne River models include no analysis of the needs of the Bay-Delta ecosystem.

We therefore request that the Commission provide graphics like those in slide 86, which compare the flows required under the voluntary agreement with those required under the Bay-Delta Plan for each of the following sample years, using the conservative hydrologic forecasting required under the proposal in each of these years: 1999, 2000, 2001, 2002, 2003, and 2004.

VI. Conclusion

We greatly appreciate the Commission organizing these workshops and engaging in dialogue with our organizations and other stakeholders. Although we do not expect that we will reach consensus, we believe these workshops are valuable in narrowing misunderstandings and highlighting areas of agreement. That said, we remain deeply disappointed by staff's continued reliance on the discredited fish population model results and the failure to meaningfully respond to the independent scientific peer review, and we hope that the Commission was not misled by staff's presentation. State and federal agencies have repeatedly rejected the flow volumes proposed in the proposed voluntary agreement as inadequate, mostly recently in the

magnitude of reservoir spills are likely to significantly decrease in the future as a result of factors such as the Sustainable Groundwater Management Act. Because reservoir spills are not required and are not reasonably certain to occur in the future, evaluation of the proposed voluntary agreement should focus on required flows.

*Letter to the SFPUC Regarding Staff Presentation at the February 5, 2021 Workshop
February 19, 2021*

State Water Resources Control Board's January 2021 water quality certification to the Federal Regulatory Energy Commission.

Thank you again for the opportunity to participate in the workshop. We look forward to evaluating the modeling results that we have requested in this letter and discussing next steps as the Commission considers how to develop a position on Bay-Delta issues that is based in the best available science.

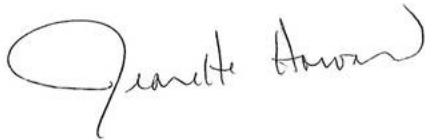
Sincerely,



Doug Obegi
Natural Resources Defense Council



Jonathan Rosenfield, Ph.D.
San Francisco Baykeeper



Jeannette Howard, Ph.D.
The Nature Conservancy



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