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This letter provides notice that the National Marine Fisheries Service (“NMFS”) and the Bureau of Reclamation (“Reclamation”) are in violation of the Endangered Species Act (“ESA”) and the Administrative Procedure Act (“APA”). The violations arise from Reclamation’s ongoing operation of the Klamath Project pursuant to the Biological Opinion issued by NMFS on March 29, 2019 regarding Klamath Project Operations from April 1, 2019 through March 31, 2024 (the “2019 BiOp”) as well as NMFS analysis in and issuance of the 2019 BiOp. This notice is provided pursuant to Section 11(g) of the ESA, 16 U.S.C. 1540(g).¹ The 2019 BiOp and Incidental Take Statement included therein (“2019 ITS”) violate the ESA and APA as further described in this letter. This notice provides Reclamation and NMFS “an opportunity to review their actions and take corrective measures” *Sw. Ctr. for Biological Diversity v. U.S. Bureau of Reclamation*, 143 F.3d 515, 520 (9th Cir. 1998). Specifically, prior to 2020 Project

¹ 16 U.S.C. 1540(g) does not require submission of a 60-day notice letter prior to challenging the lawfulness of the 2019 BiOp pursuant to the Administrative Procedure Act. [American Rivers v. National Marine Fisheries Serv.](#), 126 F.3d 1118, 1124-25 (9th Cir. 1997) However, the Tribe submits this letter as a protective measure in the event that a subsequent lawsuit is interpreted to seek relief pursuant to the ESA citizen suit provision as well as under the APA.

operations, NMFS must withdraw the 2019 BiOp and 2019 ITS and issue a new BiOp and ITS that adequately assess the impacts caused by the Klamath Project to SONCC coho and that provides flows adequate to prevent excessive take and jeopardy to that imperiled species. Reclamation has a substantive obligation to avoid actions that result in jeopardy. Reclamation's reliance on the flawed 2019 BiOp and 2019 ITS in its operation of the Klamath Project is arbitrary and capricious. Reclamation must cease operations under the 2019 BiOp and provide flows adequate to protect SONCC coho from jeopardy and excessive incidental take resulting from Project operations.

A. Summary of Prior Consultations and ESA Violations Regarding Klamath Project Management.

In 1997, NMFS listed Southern Oregon/Northern California (SONCC) Coho salmon as a threatened species under the Endangered Species Act (ESA). 62 Fed. Reg. 24588 (May 6, 1997). In listing SONCC Coho as threatened, NMFS explained that water diversions and water withdrawals, such as those resulting from Klamath Project operations, were major activities responsible for the decline of Coho salmon in Oregon and California. 62 Fed. Reg. 24592-93. In designating critical habitat for the SONCC Coho salmon under the ESA, NMFS described that "essential features" of Coho habitat include water quantity, velocity, and temperature. 64 Fed. Reg. 24,049, 24,059 (May 5, 1999).

Reclamation operates the Klamath Project pursuant to annual operating plans that designate or identify minimum flow levels in the Klamath River downstream of Iron Gate Dam. In 1999, Reclamation consulted with NMFS regarding the impacts of the 1999 Klamath Operations Plan on SONCC coho. In 1999, NMFS issued a Biological Opinion (the "1999 BiOp") that found that operation of the Klamath Project, and its associated water diversions, withdrawals, temperature impacts, and pollutant loadings would adversely affect listed Coho salmon. The 1999 BiOp describes how inadequate flows destroy usable fish habitat. The 1999 BiOp concludes that higher flows in the Klamath River are associated with increased juvenile salmon survival. Nevertheless, in the 1999 BiOp, NMFS found that operation of the Klamath Project was not likely to jeopardize SONCC coho.

In 2000, Reclamation's Klamath Operations Plan again specified minimum flow levels that varied on a monthly or bi-weekly basis, but Reclamation never completed the consultation required by the ESA. Reclamation's failure to follow the law led to litigation in which the Court agreed that Reclamation violated the law by failing to consult before implementing the 2000 Operations Plan. *Pacific Coast Fed'n of Fishermen's Ass'ns v. U.S. Bureau of Reclamation*, 138 F. Supp. 2d 1228 (N.D. Cal. 2001). The Court entered an injunction requiring specified flows for the protection of SONCC coho pending completion of consultation. *Id.*

On May 31, 2002, NMFS issued its Biological Opinion for Klamath Project operations for the time period of June 1, 2002 through March 31, 2012 ("2002 BiOp"). NMFS found the proposed operations of the Klamath Project likely to jeopardize the continued existence of SONCC Coho and adversely modify its designated critical habitat. NMFS identified Reasonable and Prudent Alternatives ("RPA") to the proposed action that it believed would avoid jeopardy

and adverse modification. In its Incidental Take Statement (“ITS”), NMFS found that “some level of incidental take [is] to occur due to the implementation of some of the actions outlined in the reasonable and prudent alternative.” 2002 BiOp, at 71. However, NMFS failed to quantify, either numerically or by extent, the incidental take permitted under the 2002 BiOp. NMFS also failed to evaluate whether this unspecified level of take, combined with the already-permitted levels of take for SONCC coho, would jeopardize the continued existence of the species.

The Hoopa Valley Tribe, PCFFA, and others filed suit challenging the 2002 BiOp and on July 15, 2003, the Court agreed with Plaintiffs that the 2002 BiOp, RPA, and ITS were arbitrary and capricious in violation of the ESA and APA. The Ninth Circuit Court of Appeals agreed that the short-term measures in the 2002 BiOp were arbitrary and capricious. *PCFFA v. U.S. Bureau of Reclamation*, 426 F.3d 1082 (9th Cir. 2005). On remand, the District Court directed NMFS and Reclamation to reinitiate consultation; NMFS to issue a new BiOp; and Reclamation to limit Project irrigation deliveries if they would cause flows in the Klamath River to drop below specified protective levels.

In 2007, Reclamation reinitiated consultation but, after NMFS issued a draft jeopardy BiOp, Reclamation requested that NMFS suspend the completion of the consultation. On March 18, 2010, NMFS issued its BiOp for the period 2010-2018 concluding that Reclamation’s proposed operations would likely jeopardize the continued existence of SONCC Coho.

On May 31, 2013, following reinitiation of consultation, NMFS (together with USFWS) issued a new BiOp covering Klamath Project operations for a ten-year period. NMFS concluded that the proposed action would not jeopardize the continued existence of the SONCC coho, but stated that incidental take would occur. Specifically, the 2013 BiOp and ITS states: “If the percent of *C. shasta* infections for Chinook salmon juveniles in the mainstem Klamath River between Shasta River and Trinity River during May to July exceed these levels (i.e., 54% infection via histology or 49% infection via QPCR), re-initiation of formal consultation will be necessary.” 2013 BiOp, at 391. Due to the small population size and limited sampling data for SONCC coho, NMFS used infection rates for Chinook salmon as a surrogate for infection rates and incidental take of SONCC coho.

In 2014, the infection rate of sampled juvenile Chinook salmon in the Klamath River upstream of the Trinity River confluence from May to July was estimated at 81%. In 2015, the infection rate of sampled juvenile Chinook salmon in the Klamath River upstream of the Trinity River confluence from May to July was estimated at 91%. Despite the significant exceedance of *C. shasta* infection rates, Reclamation and NMFS failed to reinitiate consultation despite being put on notice by the Hoopa Valley Tribe and others of their ESA violations.

The Tribe again sued and prevailed and obtained an order requiring reinitiation of consultation and an injunction that mandated release of surface flushing, deep flushing, and emergency dilution flows to mitigate disease levels caused by the Klamath Project. *Hoopa Valley Tribe v. NMFS*, 230 F. Supp. 3d 1106 (N.D. Cal. 2017).

This history of consultation and litigation is relevant now as it documents not only the significant impacts that Klamath Project operations have had on SONCC coho, both before and after being listing as threatened with extinction, and also the continued failure of Reclamation and NMFS to comply with the ESA with regard to Klamath Project operations. The 2019 BiOp continues in this deficient pattern, failing to adequately assess the impacts to SONCC coho, failing to prescribe necessary mitigation and conditions supported by the best available science, and rendering conclusions that are arbitrary, capricious, and otherwise unlawful. Rather than prescribe meaningful measures designed to avoid jeopardy, minimize take, and promote recovery of SONCC coho, Reclamation and NMFS have ignored and failed to utilize best available science and approved Project operations in a manner that will continue to imperil SONCC coho.

B. The No Jeopardy Conclusion in the 2019 BiOp is Arbitrary and Capricious.

Twenty-two years after being listed under the ESA, SONCC coho remain imperiled. In the 2019 BiOp, NMFS reports that “most of the 30 independent populations in the [SONCC Coho] ESU are at high risk of extinction because they are below or likely below their depensation threshold, which can be thought of as the minimum number of adults needed for survival of a population.” 2019 BiOp, p. 67. NMFS reports “an increasing number of previously occupied streams from which SONCC coho salmon are now absent.” *Id.* NMFS adds: “The genetic and life history diversity of populations of SONCC coho salmon is likely very low and is inadequate to contribute to a viable ESU, given the significant reductions in abundance and distribution.” *Id.* “The condition of SONCC coho critical habitat . . . has been degraded from conditions known to support viable salmonid populations.”

NMFS assessment of the condition of the SONCC Coho ESU relied substantially on the 5-year status review that NMFS published in 2016. The 2016 Status Review reported that twenty-four of thirty-one independent populations of SONCC coho remain at a high risk of extinction with the others at a moderate risk of extinction. 2016 Status Review, at p. 21. None of the populations were considered by NMFS to be at a low risk of extinction in the 2016 Status Review. 2016 Status Review, at p. 48. In the 2016 Status Review, NMFS states that: “All core populations (those intended to serve as anchors for recovery) are thousands of adults short of the numbers needed for them to play their role in recovery of the entire ESU. Our analysis of the ESA section 4(a)(1) factors indicates there is heightened risk to the SONCC coho salmon ESU’s persistence since our last status review in 2011.” 2016 Status Review, p. 48. According to the 2016 status review, populations of SONCC coho in the Shasta River (which has the longest duration of monitoring data) have continued to slightly decline (rather than recover) over the past fourteen years. 2016 Status Review, pp. 16-17. Given that the full effect of the disease impacts (81-91% sampled infection rate) suffered by juveniles in 2014 and 2015 was not fully accounted for in the 2016 status review, the current status of SONCC coho is perhaps even worse now than in 2016. In addition, NMFS released a viability analysis in 2016 that indicated that SONCC coho are considered likely to become endangered. Viability Analysis, p. 31. Of particular concern to NMFS was the low number of adults counted entering the Shasta River in 2014-2015. *Id.* “The lack of increasing abundance trends across the ESU for the populations with adequate data are of concern.” *Id.*

Adding to the already existing high risk of extinction reported by NMFS is the threat of climate change. NMFS states that climate change “could significantly impact ocean and freshwater habitat conditions (Intergovernmental Panel on Climate Change 2014), which affects survival of coho salmon. Of all the Pacific salmon species, coho salmon are likely one of the most sensitive to climate change due to their extended freshwater rearing. Additionally, the SONCC coho salmon ESU is near the southern end of the species’ distribution and many populations reside in degraded streams that have water temperatures near the upper limits of thermal tolerance for coho salmon.” 2019 BiOp, p. 68. NMFS says: “The threat to coho salmon from global climate change will increase in the future.” *Id.* p. 69. NMFS adds: “Overall, climate change represents a growing threat for the SONCC coho salmon ESU, and will change the resilience of coho salmon.” *Id.* NMFS reports that climate change will result in warmer water temperatures, increased water needs for fish, changes in migration timing, and increased disease risks. *Id.* at 91-92. Yet, in the 2019 BiOp, NMFS failed to adequately analyze or account for the impacts of Project operations in conjunction with NMFS dire assessment of climate change risks.

Over the past six years, NMFS has reported on the significant adverse impact that disease has on SONCC coho in the Klamath River. In its 2013 BiOp, NMFS explained that fish disease is a significant factor limiting survival and recovery of SONCC Coho in the Klamath River. 2013 BiOp, at pp. 220, 222, 341 (noting that “disease effects . . . likely have a substantial impact on the survival of juvenile coho salmon in [the Upper Klamath River reach].” “Of all the adverse effects of the [Klamath Project], NMFS believes that the disease risk from *C. shasta* is the most significant to coho salmon.” 2013 BiOp, p. 377. “NMFS believes that the high incidence of disease in certain years within the mainstem Klamath River results largely from the reduction in magnitude, frequency, and duration of mainstem flows from the natural flow regime under which coho salmon evolved.” 2013 BiOp, p. 341. The 2019 BiOp again documents the significant disease risk to coho, noting that high infection rates lead to high mortality rates. 2019 BiOp, pp. 99-100. NMFS again concludes that disease associated with the *C. shasta* parasite “is a key factor limiting salmon recovery in the Klamath River.” 2019 BiOp, p. 179. NMFS further concludes that the proposed action will exacerbate disease conditions in the Klamath River. In fact, “of all the adverse effects of the proposed action, NMFS believes that the disease risk from *C. shasta* is the most significant to coho salmon.” *Id.* at 216.

In the 2019 BiOp, after documenting the imperiled status of SONCC coho and the significant risks facing the species, NMFS documents the significant adverse effects that will result to SONCC coho from continued operation of the Klamath Project pursuant to the “Proposed Action.” First, NMFS reports that the Proposed Action will not provide for sufficient habitat to meet the conservation needs of juvenile coho salmon in most months of the year and for most water types. 2019 BiOp, p. 155. Second, NMFS reports that continued operations under the Proposed Action will contribute to increased disease. Specifically, NMFS says: “the proposed action will likely result in hydrologic conditions in the mainstem Klamath River that contribute to high *C. shasta* actinospore concentrations . . . which will likely increase the percentage of disease-related mortality to coho salmon fry in the mainstem Klamath River between Trees of Heaven (RM 172) and Seiad Valley (RM 129) in May to mid-June.” 2019 BiOp, p. 164. NMFS further reports that the proposed action would likely increase the

percentage of coho salmon fry in the mainstem Klamath River that experience sublethal effects of *C. shasta* infections, such as impaired growth, swimming performance, body condition, increased stress, and susceptibility to secondary infections, during April to mid-June. *Id.*

NMFS concludes that the “high incidence of disease for rearing coho salmon in certain years that feature low flows and relatively high water temperatures within the mainstem Klamath River results largely from the reduction in magnitude, frequency, and duration of mainstem flows from the natural flow regime in which fish evolved.” 2019 BiOp, at p. 167. “The proposed action will generally reduce the natural flow regime under which the fish evolved.” *Id.* NMFS also notes that decreased spring flows (resulting from the proposed action) will increase sublethal effects of *C. Shasta* infections during April to mid-June and also that the proposed action will decrease the frequency of peak flows above 10,000 cfs relative to the natural flow regime, “which will allow *C. Shasta* to proliferate in the mainstem Klamath River under certain environmental conditions (e.g., high water temperatures in the Klamath River and below average water years) and increase infection and disease-related mortality to coho salmon fry in the mainstem Klamath River especially during consecutive dry years.” *Id.*

After reporting that the majority of SONCC coho populations are at a high risk of extinction, that their habitat is degraded primarily due to the diminishment and modification of flows as compared to the natural flow regime, that the proposed action will facilitate additional habitat depletion and increased disease risks, and that climate change will make things noticeably worse during the time period analyzed in the 2019 BiOp, NMFS abruptly shifts its course in the 2019 BiOp to reach a wholly unsupported conclusion that the proposed action will not result in jeopardy to SONCC coho or adverse modification of their critical habitat. This conclusion is not adequately explained, nor is it supported by the facts found in the 2019 BiOp or the best available science.

NMFS rests the no jeopardy/no adverse modification conclusion primarily on the fact that the 2019 BiOp provides for a surface flushing flow each Spring and on potential habitat improvements that may result from projects funded under the Proposed Action. 2019 BiOp, pp. 198-217. NMFS’ no jeopardy/no adverse modification conclusion is arbitrary and capricious and would not likely be upheld by a court on judicial review.

In its no-jeopardy determination, NMFS determines that the release of a spring flushing flow will improve conditions for SONCC coho as compared to the 1981-2016 time period of record (the “POR”). *See* 2019 BiOp, pp. 212, 215. Yet, the POR includes nearly twenty years of unmitigated (pre-ESA listing) Project operations that resulted in woefully inadequate flow and habitat conditions for SONCC coho. Flows during the POR ultimately led to the listing of SONCC coho as threatened with extinction. Subsequent to the ESA-listing in 1997, Klamath Project operations have failed to provide any recovery to SONCC coho, primarily because of continued water diversions and withdrawals authorized by Reclamation and NMFS that alter the natural flow regime and reduce water available for SONCC coho.

The bulk of the analysis in the 2019 BiOp shows that SONCC coho are in grave danger of extinction and that the effects of the Proposed Action exacerbate that risk. The significant

adverse impacts of Project diversions on SONCC coho have been documented by NMFS for the past twenty years. Whether or not the release of a surface flushing flow will make things better than they were during the relatively recent years in the POR (years in which SONCC coho declined to near extinction) is not a rational or complete analysis of whether the proposed action will jeopardize SONCC coho.² In addition, the 2019 BiOp fails to include deep flushing flows and dilution flows that the best available science shows are effective and necessary for mitigation of disease impacts. The no-jeopardy/no adverse modification conclusion is not supported by the analysis or facts contained within the 2019 BiOp and is thus arbitrary and capricious and in violation of the APA.

C. The 2019 BiOp's Assessment of Whether the Proposed Action Will Reduce Appreciably the Likelihood of Recovery of the SONCC Coho is Arbitrary and Capricious.

Survival and recovery are not the same. *National Wildlife Fed'n (NWF) v. NMFS*, 524 F.3d 917, 931 (9th Cir. 2008). The Ninth Circuit has rejected Biological Opinions that rely on methodologies that fail to distinguish between survival and recovery. *Id.* Here, NMFS again makes that mistake as the 2019 BiOp merges its analysis of survival and recovery. On page 58 of the 2019 BiOp, NMFS states that its “jeopardy assessment focuses on whether a proposed action appreciably increases extinction risk, which is a surrogate for appreciable reduction in the likelihood of both the survival and recovery of a listed species in the wild.” Yet, extinction risk is synonymous with a failure to survive. Recovery is defined by 50 C.F.R. 402.02 as “improvement in the status of listed species to the point at which listing is no longer appropriate under the criteria set out in section 4(a)(1) of the Act.” A proposed action could appreciably reduce the chances for species recovery while simultaneously not appreciably increasing its extinction risk. For example, an action that results in maintenance of status quo populations or only slight reductions in population size over time may not increase extinction risk although it may appreciably reduce prospects for recovery. *See NWF v. NMFS*, 184 F. Supp. 3d 861 (D. Or. 2016) (noting “the Ninth Circuit has clarified that a species may be jeopardized even ‘if there is no appreciable reduction in survival odds’ because ‘a species can often cling to survival even when recovery is far out of reach.’”). NMFS’ failure to separate survival and recovery in its jeopardy analysis in the 2019 BiOp renders it arbitrary and capricious and unlawful.

Although NMFS provides estimated abundance levels in various populations, NMFS does not ever explain or analyze what “growth trends would be necessary in each population to ensure that the likelihood of recovery of the population or the listed species is not appreciably diminished.” *NWF v. NMFS*, 184 F. Supp. 3d at 872. The 2019 BiOp fails to provide any metrics for how recovery of SONCC coho should be analyzed or assessed. Thus, it is arbitrary and capricious for NMFS to conclude that the proposed action will not appreciably reduce the likelihood of recovery.

² Initial operations under the 2019 BiOp have failed to support NMFS’ view that disease risk would be lowered. Prevalence of infection samples in the first three weeks of May reached 83%, 87%, and 88%.

NMFS identified disease as a key factor limiting recovery of SONCC coho salmon in the Klamath River and confirmed that Project operations would continue to exacerbate disease risk due to the preclusion of deep flushing flows among other reasons. *See* 2019 BiOp, pp. 160-170. “Of all the adverse effects of the proposed action, NMFS believes that the disease risk from *C. shasta* is the most significant to coho salmon.” *Id.* at 216. Yet, NMFS concludes that the proposed action would not result in jeopardy because the annual release of a surface flushing flow would improve conditions comparable to the period of record defined by NMFS. *Id.* at 212, 216. This is not a complete or rational assessment of whether the proposed action will appreciably reduce prospects for recovery.

D. The 2019 BiOp Failed to Adequately Assess the Effects of Climate Change.

The 2019 BiOp reports on significant adverse effects that are expected to result to SONCC coho as a result of climate change. “Of all the Pacific salmon species, coho salmon are likely one of the most sensitive to climate change due to their extended freshwater rearing. Additionally, the SONCC coho salmon ESU is near the southern end of the species’ distribution and many populations reside in degraded streams that have water temperatures near the upper limits of thermal tolerance for coho salmon.” 2019 BiOp, p. 68. “The threat to coho salmon from global climate change will increase in the future.” *Id.* at 70. NMFS reports that climate change will “challenge the resilience” of SONCC coho. *Id.* “Anticipated temperature increases during the 2020s (generally corresponding to the period of effects of the proposed action) compared to the 1990s range from 0.9 to 1.4° F (0.5 to 0.8° C)” *Id.* at 90. Regarding impacts of climate change on snow-water equivalent in the next few years, the 2019 BiOp reports at p. 90:

“Reclamation (2011a) projects that snow water equivalent during the 2020s will decrease throughout most of the Klamath Basin, often dramatically, from values in the 1990s. Projections suggest that snow water equivalent will decrease 20 to 50 percent in the high plateau areas of the upper basin, including the Williamson River drainage. Snow water equivalent is expected to decrease by 50 to 100 percent in the Sprague River basin and in the vicinity of Klamath Falls. In the lower Klamath Basin, Reclamation projects decreases in snow water equivalent between 20 and 100 percent.”

Snow water equivalent is the amount of water that will be released from the snowpack when it melts. Nowhere in the BiOp does NMFS explain the effect on SONCC coho from reduction in snow water equivalent of up to 100% from values in the 1990s (which were already lower than in past decades). The 2019 BiOp confirms that snow water equivalent levels have been dropping in the Klamath Basin over several decades. 2019 BiOp, p. 97.

NMFS concludes: “Climate change may at best complicate recovery of coho salmon, or at worst hinder their persistence.” 2019 BiOp, p. 92. “In terms of future climate change effects on coho salmon in the Klamath Basin, NMFS believes that within the period of effects of the proposed action, climate changes will have noticeable additional effects on coho salmon or its critical habitats beyond what has been occurring.” *Id.* “NMFS believes that within the period of the effects of the proposed action, climate change will continue to have noticeable effects on

coho salmon and its critical habitat in the action area and effects may increase through changes to runoff, decreased snow water equivalent, decreased snowpack, and warmer air and water temperatures.” *Id.* at 200. “[f]uture climate change effects on coho salmon in the Klamath Basin within the period of the effects of the proposed action, may have noticeable additional effects on coho salmon beyond what has been occurring.” *Id.*

Despite this dire report of the expected effects of climate change, which are occurring now and will result in increased air and water temperatures and potentially dramatic reductions in snow water equivalent, shifts toward increased rates of sublimation, and resultant decreases in average spring-time flows, NMFS effectively ignores this additive effect in its jeopardy analysis. Again, NMFS simply focuses on the fact that a release of a surface flushing flow will provide protection as compared to the flow regime during the period of record analyzed by NMFS. Yet, NMFS jeopardy analysis fails to account for the additional effects of climate change. Thus, whether or not a surface flushing flow, which reflects a relatively minor adjustment to status quo Project operations, will compare favorably to the harmful operations during the period of record does not answer the question of whether more is necessary to mitigate against the effects of climate change over the next five years and beyond. Nor does NMFS address how climate change may reduce the effectiveness and anticipated benefits of the flow regime in the proposed action including the surface flushing flow.

E. The 2019 BiOp Is Not Consistent with the Best Available Science.

A biological opinion is arbitrary and capricious and will be set aside when it has failed to articulate a satisfactory explanation for its conclusions or when it has entirely failed to consider an important aspect of the problem.” *Greenpeace v. NMFS*, 80 F. Supp. 2d 1137, 1147 (W.D. Wash. 2000). Alternatively, a biological opinion may also be invalid if it fails to use the best available scientific information as required by 16 U.S.C. 1536(a)(2). *Id.* at 1150.

In 2016, following the 2014 and 2015 take exceedances, U.S. Fish and Wildlife Service (“FWS”) biologists developed technical memoranda summarizing recent studies and the best available science relating to *C. shasta* infections in the Klamath River. The technical memoranda provided fish managers with a contemporary understanding of the science relating to *C. shasta* in the Klamath River and provided a scientific basis to inform and support resource management decisions. A Disease Technical Advisory Team (DTAT) of fish biologists, hydrologists, and other experts convened to evaluate the FWS memoranda and other data and to prepare up-to-date recommendations on how to reduce fish disease levels and infection rates in the Klamath River to acceptable levels.

In November 2016, a DTAT subgroup produced a draft Guidance Document that contains specific recommended measures to reduce *C. shasta* infection.³ As NMFS had previously recognized in the 2013 BiOp, DTAT identified the relationship between Project operations, low and altered flow regimes in the Klamath River, and incidence of fish disease. In

³ Hillemeier et al., Measures to Reduce *Ceratanova shasta* Infection of Klamath River Salmonids: A Guidance Document (January 2017) (“Guidance Document”).

the Guidance Document, DTAT identified several types of actions that could be implemented immediately that would have a high likelihood of reducing the infection prevalence and severity of *C. shasta* in the Klamath River. These measures involve additional flow releases at specific times and based on specific triggers designed to disrupt the agents that cause fish disease in the Klamath River. The Guidance Document concludes: “The technical memoranda developed by the DTAT clearly demonstrate that disease rates can best be controlled by disrupting the habitat of *M. speciosa* and diluting *C. shasta* spores with increased flows. Perfecting the magnitude, duration, and intervals of these increased flow releases will be achieved over time through adaptive management practices; however, Klamath fisheries are in dire need of measures to alleviate high disease rates immediately.” Guidance Document, p. 18. DTAT presented the Guidance Document to NMFS, BOR, and others on November 9, 2016. The Guidance Document was finalized in January 2017.

The Guidance Document provided six specific recommendations designed to reduce disease in SONCC coho. First, annually provide surface flushing flows of at least 6,030 cfs for 72 hours between November 1 – April 30 (Measure 1). Second, provide deep flushing flows of 11,250 cfs over a 24-hour period between February 15 and May 31 at least every other year (Measure 2). Third, provide safe, short-term peak flows of magnitudes higher than 11,250 cfs whenever possible (Measure 3). Fourth, hold in reserve 50,000 acre-feet of water for purposes of implementing spring disease dilution and disruption flows if certain disease thresholds were met (Measure 4). If the thresholds were met, the dilution flow reserve would be used to achieve flows of at least 3,000 cfs below Iron Gate Dam. The fifth recommendation was to provide flow in late fall and early winter to redistribute salmon carcasses and myxospores (Measure 5). The sixth recommendation related to hatchery operation release strategies to minimize overlap with peak *C. shasta* disease levels. Guidance Document, pp. 8-17.

In *Hoopa Valley Tribe v. NMFS*, plaintiff sought an injunction to implement Measures 1, 2, and 4 from the Guidance Document during the reinitiated consultation. NMFS and BOR opposed the measures on grounds that the Guidance Document was in draft form and that it had not been subject to peer review. See Case No. 16-cv-4294, Dkt. 93, Federal Defendants’ Opposition to Plaintiff’s Motion for Partial Summary Judgment, p. 19 (arguing against implementation of Guidance Measures because they were contained in “a draft document that has not been peer reviewed according to the Department of the Interior’s Integrity of Science and Scholarly Activity Policy”

The Declaration of Jared Bottcher, Case No. 16-cv-4294, Dkt. #93-1, p. 4 further explained:

“The Department of the Interior issued its Integrity of Science and Scholarly Activity Policy on December 16, 2014 (Policy 305 DM 3; AR000598-614). The purpose of the Policy is to establish the expectations for how scientific and scholarly information considered in Departmental decision making is handled and used. In accordance with this Policy, Reclamation must ensure that scholarly information considered in decision making is robust, of the highest quality, and the result of as [sic] rigorous scientific and scholarly processes as can be achieved. The Policy applies to all Department of Interior employees, including political appointees, as

well as contractors, cooperators, partners, permittees, lessees, grantees, and volunteers, when they engage in, supervise, manage, or influence scientific and scholarly activities, or communicate information about the Department’s scientific and scholarly activities, or utilize scientific and scholarly information in making agency policy, management, or regulatory decisions . . . Reclamation believes that the draft Guidance Document authored by the Tribes as part of the disease management planning effort, which may be used in future decision making related to the operation of the Klamath Project and the Klamath River, requires additional, appropriate review consistent with this Policy.”

In its order dated February 8, 2017, the Court found that: “Plaintiffs have convincingly shown that their proposed injunctive flows are based on the best available science and incorporate comments and feedback from experts in the field.” *Hoopa Valley Tribe v. NMFS*, 230 F. Supp. 3d at 1144. The Court ultimately adopted an injunction order incorporating Guidance Measures 1, 2, and 4 for interim implementation pending completion of the reinitiated consultation ordered by the Court. During implementation of the injunction flow in 2017 and 2018, the reported annual prevalence of infection was 26% and 20% respectively, which were two of the lowest recorded infection rates since the monitoring program began in 2009. 2017 was a comparably wet year, but 2018 was not. Both surface flushing and emergency dilution flows were implemented pursuant to the injunction in 2018.

The Guidance Document was subsequently evaluated in a peer review process. In August 2018, Atkins North America released its Summary Report of Independent Peer Reviews for Bureau of Reclamation [re] “Measures to Reduce Ceratanova shasta Infection of Klamath River Salmonids: A Guidance Document.” “The Guidance Document review was conducted to evaluate the best scientific data available for management guidance actions to mitigate the effects of *C. shasta* infection in Klamath River coho and Chinook salmon downstream of the Iron Gate Dam.” Summary Report, p. 3. Reclamation asked the peer reviewers to respond to specific questions including the following: “Are the management measures contained within the Guidance Document supported by the best available science and monitoring data?”

The peer review concluded: “Overall, the reviewers agreed that the Guidance Document was comprehensive [and] scientifically sound The recommended management measures are well supported by available scientific data” Summary Report, p. 8. “All three reviewers agreed the science and monitoring data used to support development of the management measures in the Guidance Document used the best available data.” *Id.*, p. 10.

The reviewers were also asked to rank the order of anticipated effectiveness of the management measures in the Guidance Document. All three reviewers agreed that deep flushing flows (Guidance Measures 2 and 3) were expected to have the greatest influence on reducing prevalence and severity of *C. shasta* infections. Summary Report, p. 8. Two reviewers found surface flushing flows to be third most effective, while one reviewer found dilution flows (Guidance Measure 4) to be third most effective. All reviewers confirmed scientific support for dilution flows although there was concern that the volume proposed for dilution flows may be inadequate. Summary Report, pp. 8 – 9; 13.

Despite being identified in the peer review as the most effective measure for reducing disease from *C. shasta*, the 2019 BiOp does not impose deep flushing flows as a requirement of the BiOp. While the 2019 BiOp notes that a suite of hydrologic conditions must be present in order to implement deep flushing flows, the 2019 BiOp does not conclude that such flows are impossible or infeasible to implement. The 2019 BiOp notes that one of the factors that make such flows difficult to implement is the annual diversions by the Project, which could be reduced or prohibited as necessary to comply with the ESA. 2019 BiOp, p. 134. Although the Guidance Document recommended 11,250 cfs as the ideal amount of water to release for deep flushing flows, the Guidance Document provided a range of flows (8,700 cfs to 11,250 cfs) that would provide the benefits associated with deep flushing flows. While NMFS concluded in the 2019 BiOp that flows of 11,250 cfs would be difficult to implement (assuming continued Project diversions), it failed to explain why it omitted a requirement to implement deep flushing flows within the range of 8,700 cfs to 11,250 cfs. Deep flushing flows in that range, although not reaching 11,250 cfs were implemented in 2017 and 2019. Release of deep flushing flows as a protective condition is feasible, as recently demonstrated in 2017 and 2019. The failure to require deep flushing flows, which is currently thought to be the most effective measure for reducing *C. shasta*, is not supported by best available science and is arbitrary and capricious.

Nor does the 2019 BiOp require any reserve of water for emergency dilution flow purposes, which were found to have substantial scientific support in the peer review Summary Report. NMFS provides no explanation as to why it is not incorporating Guidance Measure 4 or any dilution flows as a required condition. NMFS does explain that Project Operations will reduce spring flows, which “means less actinospore dilution, which will likely increase the density of actinospores in the May through June weeks following the surface flushing flow event.” 2019 BiOp, p. 166. May through June is when a large portion of the coho juvenile outmigration occurs and the time-period in which they are at most risk of exposure from *C. shasta*. See 2013 BiOp, p. 391 (explaining that May to July encompasses the peak and the majority of the *C. shasta* disease risks for coho salmon fry and juveniles). The failure to include Guidance Measure 4 or some variation of that Guidance Measure requiring water for emergency dilution flows is not supported by best available science and is arbitrary and capricious. In addition, the failure to analyze the merits of Guidance Measure 4 and dilution flows generally and to explain the scientific rationale for not including such measures (which are confirmed to be supported by best available science as described in the Summary Report) is arbitrary and capricious.

In summary, NMFS failed to include and failed to analyze measures which are confirmed to be effective for reducing disease to SONCC coho, which is the most significant risk facing juvenile SONCC coho. This deficiency renders the 2019 BiOp unlawful.

F. The Incidental Take Statement Is Arbitrary and Capricious and Not In Compliance with the ESA.

The 2019 Incidental Take Statement is arbitrary, capricious, and unlawful because it allows Reclamation to take (through direct mortality) as many as 49% of the SONCC coho that migrate from the Shasta River each year. This is a significant increase in the allowable

mortality as compared to the 2013 BiOp and the 2019 BiOp/2019 ITS fails to explain why an increase in allowable mortality is appropriate or how mortality of up to 49% of a SONCC coho population would not result in jeopardy. Nor does the 2019 BiOp/2019 ITS explain the level of mortality that is expected throughout the SONCC coho ESU if the Shasta River population suffers 49% annual mortality.

This 2019 ITS is also arbitrary, capricious, and in violation of the ESA because it would allow 100% of all SONCC coho to be infected with disease without requiring re-initiation of consultation. In the 2019 ITS, reinitiation is required only if the prevalence of mortality exceeds 49%. Yet, under the ESA, “take” is not limited to mortality but also includes harm. It is undisputed that SONCC coho are harmed when they are infected with *C. shasta*. For example, fish infected with *C. shasta* suffer sub lethal effects. They may be weakened and more likely to suffer mortality from predation or from secondary infections. By measuring incidental take only by estimates of mortality levels, NMFS is unlawfully removing harm from the definition of take. Moreover, by ignoring prevalence of infection, which was the standard under the prior ITS, NMFS would allow 100% of SONCC coho to suffer infection without triggering re-initiation. Chinook (the surrogate for SONCC coho) suffered prevalence of infection of 81% and 91% in 2014 and 2015. Under the new ITS, those levels of infection (or even 100% infection) would be permissible and not require re-initiation. This is arbitrary, capricious, and unlawful.

NMFS fails to adequately explain why it is acceptable to allow up to 100% prevalence of infection of SONCC coho in the current ITS when a maximum of 49% prevalence of infection was previously prescribed. Nor does NMFS adequately address or explain whether allowance of 49% annual mortality of SONCC coho would result in jeopardy. Given the high risk of extinction facing SONCC coho and NMFS acknowledgement that disease from *C. shasta* is the greatest risk facing SONCC coho, it is implausible that allowing 49% of a population to die annually from this one cause is consistent with the agencies’ obligation to ensure survival and recovery of the species.

NMFS also failed to utilize best available science in its Incidental Take Statement. In its 2013 BiOp, NMFS utilized a Prevalence of Infection standard to measure incidental take of SONCC coho resulting from disease. The 2013 BiOp set a surrogate for incidental take, which was measured as no more than 49% prevalence of infection of Chinook. This surrogate was based on the long-standing monitoring program that measured disease levels in sampled Chinook populations. Chinook were used as a surrogate due to the low numbers of SONCC coho and the general similarities in how disease affects Chinook and coho. This standard triggered reinitiation of consultation if the prevalence of infection exceeded 49%. The Prevalence of Infection standard relied on the actual sampling of fish in real-time to determine the infection rates based on an existing monitoring program which had been in place since 2009 and remains in place.

The 2019 BiOp changes the standard for measuring incidental take from prevalence of infection (“POI”) to prevalence of mortality (“POM”) based solely on a “preliminary draft model” that has not been subject to peer review. Reliance on this “preliminary draft model” to set the standard for incidental take, especially where there is an existing valid standard (i.e., ‘prevalence of infection’) for measuring incidental take is not consistent with best available

science and is arbitrary and capricious. In addition, none of the existing scientific literature suggests that the POI standard should be replaced. Som et al. (USFWS 2016a) explained that: “The well-designed and long-term nature of this monitoring program [i.e., monitoring POI] lead to its adoption as a metric of annual *C. shasta* infection severity and incidental take of federally listed Coho Salmon in the Klamath River.” USFWS 2016a, p. 5. Nor does the FY 2017 Investigational Report (cited as True et al 2017) suggest that the POI standard should be changed to POM. The True (2017) report did note certain levels of infection that were “highly likely to result in mortality” in certain temperatures. The “preliminary draft model” used to create the new incidental take standard is not included in the 2019 BiOp. The assumptions used to generate estimates of mortality are critical. In addition, focusing solely on Coho outmigrating from the Shasta River is not appropriate given the extremely low numbers in that population as compared to the Scott River populations who are also affected by disease. The POI monitoring program used monitoring data points along the river as opposed to just Shasta River. In summary, NMFS and Reclamation have violated the APA and ESA as well as their own policies regarding peer review and scientific integrity by using and relying on a non-peer reviewed “preliminary draft model” to set the incidental take standard.

The incidental take statement and jeopardy analysis also fails to account for other sources of take of SONCC coho including some that are authorized by NMFS, including but not limited to the allowance of a 13% annual exploitation rate of SONCC coho through incidental harvest in the ocean fishery. In the 2019 BiOp and ITS, NMFS does not provide any assessment of the total amount of incidental take that is authorized by NMFS in various BiOps under its authority. Nor is it able to provide an assessment of how many SONCC coho remain in the wild. Without knowing how many SONCC coho remain and how much total incidental take is authorized, it is not possible for NMFS to rationally conclude that the proposed action will not result in jeopardy.

G. NMFS’ Reliance on Uncertain Mitigation Measures is Arbitrary and Capricious.

Instead of requiring additional flow which NMFS own analysis shows is necessary to provide adequate habitat and to reduce disease and other threats to SONCC coho, NMFS relies on a series of proposed mitigation measures which are uncertain to occur. Mitigation measures may be relied upon only where they involve “specific and binding plans” and “a clear, definite commitment of resources to implement those measures.” *NWF v. NMFS*, 184 F. Supp. 3d at 873.

Throughout its analysis of effects on critical habitat, NMFS relies on restoration activities proposed by Reclamation, including a proposal to fund \$700,000 in restoration activities in 2019 and 2020 and \$500,000 in 2012-2023. See 2019 BiOp, pp. 118, 195. Despite relying on this proposed mitigation funding throughout the BiOp, NMFS acknowledges at p. 290 that the funding proposed by Reclamation for mitigation projects in 2019-23 is “subject to the availability of future funding and annual appropriations.” Thus, these mitigation measures, which are used by NMFS to support its no-jeopardy determination are not “reasonably specific, certain to occur”; nor are they “enforceable obligations.” *NWF v. NMFS*, 184 F. Supp. 3d at 873. Reliance on mitigation measures that depend on speculative funding is arbitrary and capricious.

H. Conclusion

Based on the above, the Tribe urges you to rescind the 2019 BiOp and, prior to the 2020 season, reinstate formal consultation and prepare a new BiOp that provides adequate protections for SONCC coho based on the best available science, specifically including provisions for deep flushing flows and dilution flows, which are critical to reduction of disease in SONCC coho. If a new BiOp and ITS cannot be put in place prior to the 2020 season, Reclamation should return to its operations under the 2013 BiOp as modified by the terms of the injunction entered by Judge Orrick in *Hoop Valley Tribe v. NMFS* pending completion of an adequate Biological Opinion.

Sincerely,

MORISSET, SCHLOSSER, JOZWIAK & SOMERVILLE

A handwritten signature in black ink, appearing to read "Thomas P. Schlosser". The signature is fluid and cursive, written over a white background.

Thomas P. Schlosser
Thane D. Somerville
Attorneys for Hoopa Valley Tribe