

August 19, 2021

Federal Regulatory Energy Commission  
Kimberly D. Bose, Secretary  
*Comments submitted via eFile on Ferc.gov*

Re: Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Lower Klamath Project Surrender and Removal; Project Nos. 14803-001 and P-2082-063

Dear Secretary Bose,

The undersigned organizations, as members of the Orca Salmon Alliance, a coalition working together to recover the endangered Southern Resident orca population by restoring the salmon they rely on, submit the following comments regarding threatened and endangered species to consider for the Environmental Impact Statement (EIS) on the removal of project works for the Lower Klamath Hydroelectric Project No. 14803.

We urge the Federal Energy Regulatory Commission (FERC) to consider the ecosystem-wide benefits that removal of the four Lower Klamath River dams will have not only throughout the Klamath watershed, but also in the connected ocean environment for species that depend on Klamath Basin salmon, including the endangered Southern Resident orcas. The expected recovery of Klamath spring Chinook following dam removal will increase the prey available for Southern Resident orcas in the coastal part of their range, an area that was recently designated as critical habitat for the Southern Residents.<sup>1</sup>

While the benefit to Southern Resident orcas should certainly be considered in any environmental analysis for Klamath River dam removal, we will also note that this topic has been intensely studied for over 15 years – by FERC, the California State Water Resources Control Board, the Oregon Department of Environmental Quality, and a thorough 2012 Environmental Impact Review/EIS conducted jointly by the Dept. of the Interior and CA Dept. of Fish and Wildlife.<sup>2</sup> **There is ample information supporting salmon and watershed recovery following dam removal and the subsequent benefits to water quality, the river environment, communities, and Tribes in the region.** The only significant change in environmental conditions since the dam removal stakeholder process began in the mid-2000s is the continued decline of Klamath River salmon and Southern Resident orcas, underscoring the need to promptly approve and move forward with dam removal. We urge FERC to rely on these existing studies and analyses to quickly approve dam removal and not further delay the process.

The Southern Resident orca community is a unique population of orcas that has been listed as endangered under the U.S. Endangered Species Act (ESA) since 2005 and Canada's Species At Risk Act (SARA) since 2003.<sup>3</sup> Genetically distinct from all other orca populations, the Southern Residents do not interbreed with and rarely interact with other orcas, and are the only orca population in U.S. waters listed under the ESA. They are part of the fish-obligate "Resident" ecotype of orcas and rely extensively

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<sup>1</sup> NOAA, Endangered and Threatened Wildlife and Plants; Revision of Critical Habitat for the Southern Resident Killer Whale Distinct Population Segment. 2021. Available: <https://www.federalregister.gov/documents/2021/08/02/2021-16094/endangered-and-threatened-wildlife-and-plants-revision-of-critical-habitat-for-the-southern-resident>

<sup>2</sup>Klamath Dam Removal Overview. 2012. Report for the Secretary of the Interior: An Assessment of Science and Technical Information, Department of Interior. Available: <https://www.fws.gov/arcata/fisheries/reports/technical/Full%20SDOR%20accessible%20022216.pdf>; [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/water\\_quality\\_cert/lower\\_klamath\\_ferc14803.html](https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/lower_klamath_ferc14803.html); <https://www.oregon.gov/deq/FilterDocs/ferc14803report.pdf>;

<sup>3</sup> National Marine Fisheries Service, Endangered Status for Southern Resident killer whales. 70 FR 69903; DFO (Fisheries and Oceans Canada). 2011. Recovery Strategy for the Northern and Southern Resident Killer Whales (Orcinus orca) in Canada. Species at Risk Act Recovery Strategy Series, Fisheries & Oceans Canada, Ottawa, ix +80pp

on salmon as their primary source of food. They are the only Resident population to fully inhabit the California Current ecosystem and frequent the outer coasts of Washington, Oregon, and California.<sup>4</sup>

Despite the research and conservation efforts initiated after their ESA listing, the Southern Residents have continued to decline, from 88 individuals at the time of their listing to just 74 today, a staggering loss in a relatively short time for a small population. They reached their lowest population abundance – 72 orcas – in more than 40 years of research in 2019, and remain perilously close to this low number.<sup>5</sup> NMFS has recognized them as one of nine marine species most at risk of extinction, and considers them a recovery priority #1: “a species whose extinction is almost certain in the immediate future because of a rapid population decline or habitat destruction.”<sup>6</sup> Recent analyses of the population project a continued downward trend over the next 50 years under status-quo conditions, and an almost 50% chance of extinction in the next 100 years.<sup>7</sup>

This unique population of orcas faces multiple threats to their survival and recovery, primarily prey depletion, toxic contamination, and disturbance from vessels and ocean noise.<sup>8</sup> However, it is widely recognized that the most significant limiting factor for their survival is the decline in quality and quantity of their primary prey – Chinook salmon. The Southern Resident orcas have survived on the abundant salmon runs of the Pacific Northwest and California for millennia, but as salmon have declined throughout the region, the orcas have suffered from the lack of available prey.

Research has established that Chinook comprises the majority of the Southern Residents' diet year-round, ranging from approximately 50% in the fall to 70-80% in the mid-winter & early spring to nearly 100% in the spring.<sup>9</sup> Coho and chum salmon are also seasonally important, and while their diet appears to diversify and include more variety of fish species during coastal foraging periods, Chinook is still the primary component, identified in over 65% of fecal samples collected in coastal waters.<sup>10</sup> The Southern

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<sup>4</sup> Emmons CK, Hanson MB, Lammers MO. 2021. Passive acoustic monitoring reveals spatiotemporal segregation of two fish-eating killer whale *Orcinus orca* populations in proposed critical habitat. *Endang Species Res* 44:253-261. <https://doi.org/10.3354/esr01099>; Krahn, M.M. et al. 2004. 2004 status review of southern resident killer whales (*Orcinus orca*) under the Endangered Species Act. NOAA Technical Memorandum NMFS-NWFSC-62, U.S. Department of Commerce, Seattle, Washington; Reynolds, J.E. H. Marsh & T.J. Ragen. 2009. Marine Mammal Conservation. *Endangered Species Research*. 7:23-28

<sup>5</sup> Population data from Center for Whale Research, [www.whaleresearch.com](http://www.whaleresearch.com)

<sup>6</sup> NOAA Fisheries. Species in the Spotlight: Southern Resident Killer Whale DPS

<sup>7</sup> Revision of the Critical Habitat Designation for Southern Resident Killer Whales: Final Biological Report. National Marine Fisheries Service, July 2021. Available: <https://www.fisheries.noaa.gov/west-coast/engangered-species-conservation/critical-habitat-southern-resident-killer-whales>; Southern Resident Killer Whales (*Orcinus orca*) 5-Year Review: Summary and Evaluation. National Marine Fisheries Service, December 2016; Murray et al. 2021. A cumulative effects model for population trajectories of resident killer whales in the Northeast Pacific. *Biological Conservation* (257):109124, <https://doi.org/10.1016/j.biocon.2021.109124>; Vélez-Espino, L. A. et al. 2014. Comparative demography and viability of northeastern Pacific resident killer whale populations at risk. 3084 v + 58p. Canadian Bulletin of Fisheries and Aquatic Sciences.

<sup>8</sup> Fisheries and Oceans Canada. *Action Plan for the Northern and Southern Resident Killer Whale (Orcinus orca) in Canada*. Species at Risk Act Action Plan Series. (Fisheries and Oceans Canada, Ottawa, 2017); National Marine Fisheries Service (NMFS) 2008. Recovery Plan for Southern Resident Killer Whales (*Orcinus orca*). NMFS, Northwest Region, Seattle, Washington; NMFS. 2014. Southern Resident Killer Whales: 10 Years of Research & Conservation

<sup>9</sup> Ford, M.J et al. 2016. Estimation of a Killer Whale (*Orcinus orca*) Population's Diet Using Sequencing Analysis of DNA from Feces. *PLoS ONE* 11(1): e0144956. doi:10.1371/journal.pone.0144956; Hanson M.B. et al 2021. Endangered predators and endangered prey: Seasonal diet of Southern Resident killer whales. *PLoS One*. Mar 3;16(3):e0247031. doi: 10.1371/journal.pone.0247031; Hanson, M.B. et al. 2010. Species and stock identification of prey consumed by endangered southern resident killer whales in their summer range." *Endangered Species Research*, 11(1):69-82

<sup>10</sup> Hanson M.B. et al 2021. Endangered predators and endangered prey: Seasonal diet of Southern Resident killer whales. *PLoS One*. Mar 3;16(3):e0247031. doi: 10.1371/journal.pone.0247031

Resident orcas consume Chinook from nearly every major river system between the Sacramento River in California and the Taku River in SE Alaska.<sup>11</sup>

Scientists have found a strong correlation between coastwide Chinook abundance and Southern Resident health indicators. As Chinook abundance declines, the orcas show reductions in growth rates, adult length, social cohesion, fecundity, and overall survival, as well as impaired individual body condition.<sup>12</sup> Perhaps most notably, a high rate of pregnancy failure in the population has been linked to nutritional stress, with 69% of detected pregnancies ultimately unsuccessful, severely impacting the population's ability to recover.<sup>13</sup> Southern Resident orcas likely target Chinook salmon due to their large size, high fat content – particularly in spring-run Chinook<sup>14</sup> – and consistent presence throughout the orcas' range, making them a preferred prey source even if other fish are more abundant and available.<sup>15</sup>

While the Southern Residents have some seasonality in their movements, historically using the inland waters of the Salish Sea during the summer and fall and moving into coastal waters in the winter and spring, their habitat use is dynamic, with foraging, breeding, calving, traveling, and resting occurring throughout their range. All three pods in the Southern Resident community use coastal waters year-round, with highest use during the winter and early spring months.<sup>16</sup> Data compiled from passive acoustic

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<sup>11</sup> *Ibid.*

<sup>12</sup> Revision of the Critical Habitat Designation for Southern Resident Killer Whales: Final Biological Report. National Marine Fisheries Service, July 2021. Available: <https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/critical-habitat-southern-resident-killer-whales>; Fearnbach, H. et al. 2018. "Using aerial photogrammetry to detect changes in body condition of endangered southern resident killer whales." *Endang Species Res* 35:175-180. <https://doi.org/10.3354/esr00883>; Ford, J.K.B. et al. 2005. "Linking prey and population dynamics: Did food limitation cause recent declines of 'resident' killer whales (*Orcinus orca*) in British Columbia." *Fisheries and Oceans*; Ford J.K.B et al. 2010. "Linking killer whale survival and prey abundance: food limitation in the oceans' apex predator?" *Biology Letters*, 6:139–142; Groskreutz et al. 2019. "Decadal changes in adult size of salmon-eating killer whales in the eastern North Pacific." *Endang. Species Res.* (40):183-188. <https://doi.org/10.3354/esr00993>; Stewart, J.D. et al. 2021. "Survival of the fittest: linking body condition to prey availability and survivorship of killer whales." *Ecosphere* 12(8): <https://doi.org/10.1002/ecs2.3660>; Ward E.J et al. 2009. "Quantifying the effects of prey abundance on killer whale reproduction." *Journal of Applied Ecology*, 46: 632–640

<sup>13</sup> Wasser S.K. et al. 2017. Population growth is limited by nutritional impacts on pregnancy success in endangered Southern Resident killer whales (*Orcinus orca*). *PLoS ONE* 12(6): e0179824 <https://doi.org/10.1371/journal.pone.0179824>

<sup>14</sup> Harsey and Kinziger, 2014, Diversity in sympatric chinook salmon runs: timing, relative fat content and maturation. *Environmental Biology of Fishes*. 98(1). DOI: 10.1007/s10641-014-0272-5; O'Neill, S.M. et al. 2014. Energy content of Pacific salmon as prey of northern and Southern Resident Killer Whales. *Endang. Species Res.* 25: 265–281.

<sup>15</sup> Ford J.K.B, G.M. Ellis, P.F. Olesiuk. 2005. Linking prey and population dynamics: did food limitation cause recent declines of 'resident' killer whales (*Orcinus orca*) in British Columbia? Department of Fisheries and Oceans, Research Document – 2005/042; Harsey, J.W and A.P. Kinziger. 2015. Diversity in sympatric chinook salmon runs: timing, relative fat content and maturation. *Environmental Biology of Fishes*. 98(1), 413-423; Stansby, M. E. 1976. Chemical characteristics of fish caught in the northeast Pacific Ocean. *Mar. Fish. Rev.* 38:1-11.

<sup>16</sup> Hanson, M.B. et al. 2013. "Assessing the coastal occurrence of endangered killer whales using autonomous passive acoustic recorders." *The Journal of the Acoustical Society of America*, 134(5), 3486-3495; Hanson, M.B., "Distribution and Diet of Southern Resident Killer Whales" (Northwest Fisheries Science Center, 2015), <https://tinyurl.com/ybkdwjje>; Hanson, M.B., et al. 2018. Modeling the occurrence of endangered killer whales near a U.S. Navy Training Range in Washington State using satellite-tag locations to improve acoustic detection data. Prepared for: U.S. Navy, U.S. Pacific Fleet, Pearl Harbor, HI. Prepared by: National Oceanic and Atmospheric Administration, Northwest Fisheries Science Center under MIPR N00070-17-MP-4C419. 8 January 2018. 33 p.; NOAA Fisheries. 2014. "Southern Resident Killer Whales: 10 Years of Research and Conservation"; See also National Marine Fisheries Science Center data and reports on Southern Resident tagging project, <https://tinyurl.com/vj4dcbs>; Northwest Fisheries Science Center: "Science to Inform SRKW Distribution and Diet." Presentation for Pacific Fishery Management Council, May 23, 2019. <https://tinyurl.com/rf6yao3>; Revision of the Critical Habitat Designation for Southern Resident Killer

monitoring, satellite tagging, opportunistic sightings and boat-based surveys show areas of “high occurrence” to include the mouth of the Columbia River and the northern California coast, and indicate that the movements of Southern Residents in coastal waters are likely driven by the seasonal timing of Chinook salmon returns to major river systems, including the Columbia, Klamath, and Central Valley Rivers.<sup>17</sup>

In recognition of the importance of coastal habitat to Southern Resident orcas and to increase protection for this highly endangered population, NMFS recently finalized the expansion of their designated critical habitat to include coastal waters down to Point Sur, California.<sup>18</sup> The area including the mouth of the Klamath River (“Area 4” – from the Oregon/California border to Cape Mendocino, CA) was noted to be an important foraging habitat for the orcas, with “prey resources” (quantity, quality, and availability) recognized as the area’s primary essential feature.<sup>19</sup> According to NMFS, this area includes two of the top 10 identified priority prey stocks for the Southern Resident orcas (Klamath River and Central Valley Chinook),<sup>20</sup> and NMFS estimates that Klamath River Chinook salmon may be as much as 45% of local salmon abundance available to Southern Residents in this area.<sup>21</sup>

Salmon populations in the Northwest and California hover at fractions of their historic abundance, on average returning at less than 3% of their historic numbers each year and extirpated from at least 40% of their historical habitat.<sup>22</sup> The development and alteration of salmon-supporting watersheds is one of the primary causes of declining salmon abundance, and increased efforts to restore habitat are vital to ensure that watersheds retain their capability to support salmon runs or rebuild their historic capacity. The high-fat spring-run Chinook, preferred by orcas, are likely disproportionately impacted by human use and development of river systems due to the extended time periods they inhabit rivers as juveniles and/or adults.<sup>23</sup> The four Lower Klamath dams have contributed to the decline of as much of 98% of the Klamath’s Chinook salmon abundance, especially spring Chinook, which likely substantially outnumbered

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Whales: Final Biological Report. National Marine Fisheries Service, July 2021. Available: <https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/critical-habitat-southern-resident-killer-whales>

<sup>17</sup> Hanson, M.B., et al. 2018. Modeling the occurrence of endangered killer whales near a U.S. Navy Training Range in Washington State using satellite-tag locations to improve acoustic detection data. Prepared for: U.S. Navy, U.S. Pacific Fleet, Pearl Harbor, HI. Prepared by: National Oceanic and Atmospheric Administration, Northwest Fisheries Science Center under MIPR N00070-17-MP-4C419. 8 January 2018. 33 p.; Revision of the Critical Habitat Designation for Southern Resident Killer Whales: Final Biological Report. National Marine Fisheries Service, July 2021. Available:

<https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/critical-habitat-southern-resident-killer-whales>

<sup>18</sup> Revision of Critical Habitat for the Southern Resident Killer Whale Distinct Population Segment. 86 FR 41668

<sup>19</sup> Revision of the Critical Habitat Designation for Southern Resident Killer Whales: Final Biological Report. National Marine Fisheries Service, July 2021. Available: <https://www.fisheries.noaa.gov/west-coast/endangered-species-conservation/critical-habitat-southern-resident-killer-whales>

<sup>20</sup> *Ibid.* and NMFS and WDFW. 2018. Southern Resident killer whale priority Chinook stocks report. 8 pp. Available:

[https://www.westcoast.fisheries.noaa.gov/publications/protected\\_species/marine\\_mammals/killer\\_whale\\_s/recovery/srkw\\_priority\\_chinook\\_stocks\\_conceptual\\_model\\_report\\_list\\_22june2018.pdf](https://www.westcoast.fisheries.noaa.gov/publications/protected_species/marine_mammals/killer_whale_s/recovery/srkw_priority_chinook_stocks_conceptual_model_report_list_22june2018.pdf).

<sup>21</sup> National Marine Fisheries Service ESA Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response. WCR-2019-11512, WCRO-2019-00113

<sup>22</sup> Lackey, R.T. 2000. Restoring Wild Salmon to the Pacific Northwest: chasing an illusion? pp. 91-145 in “What We Don’t Know about Pacific Northwest Fish Runs? An Inquiry into Decision-Making.” P. Koss and M. Katz, editors. Portland State University, Portland, Oregon; Levin, P. and M. Schiewe. 2001. Preserving salmon biodiversity. *Am. Sci.* 89, 220-227.

<sup>23</sup> Gustafson, R.S. et al. 2007. Pacific salmon extinctions: Quantifying lost and remaining diversity. *Conserv. Biol.* 21, 1009-1020; Levin, P. and M. Schiewe. 2001. Preserving salmon biodiversity. *Am. Sci.* 89, 220-227.

fall Chinook but have been extirpated from a large portion of their historical range due to the construction of these dams.<sup>24</sup> This run has further declined in recent years, with three of the six worst years on record occurring in the past decade.<sup>25</sup> Fishing on the fall run has been restricted in recent years and the stock was determined to be “overfished” in the fall of 2018.<sup>26</sup> The Upper Klamath-Trinity River Chinook stock is currently under consideration by NMFS to be listed under the ESA.<sup>27</sup>

In addition to threats from development and human use of river systems, climate change impacts are quickly intensifying and further threatening salmon populations on the West Coast and throughout the U.S. A recent study by NMFS on climate change impacts to U.S. salmon populations indicates the current trends in population “inevitably lead to extinction”.<sup>28</sup> Climate change impacts are expected to cause an additional 22% loss of current salmon habitat by 2090, with lower-elevation streams losing entire fish species due to rising temperatures and changing precipitation patterns.<sup>29</sup> In addition to this rapidly escalating threat, the entire West Coast is currently facing extreme drought conditions, which greatly increases risk to salmon survival now and in the short- and long-term.<sup>30</sup> This is directly impacting the Southern Resident orcas by reducing prey available now, as well as in the near future. Salmon are dying before they can spawn, reducing the abundance of the next generation of this year’s cohort, and juvenile salmon are suffering from the high in-river temperatures. The drought this year will have impacts on salmon abundance for years to come – and on the food available for Southern Resident orcas.

The detailed analyses completed in the 2012 California and Federal Environmental Impact Report/Environmental Impact Statement and the 2013 report from the Department of the Interior concluded that dam removal would have a net benefit on the Klamath and larger Pacific ecosystems, and could restore Klamath Chinook salmon by as much as 81%.<sup>31</sup> Removing these four dams and restoring the Klamath River is an essential step to ensure the lasting recovery of wild salmon in Oregon and California and the more than 130 other species that rely on them, including the Southern Resident orcas.

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<sup>24</sup> Klamath Dam Removal Overview. 2012. Report for the Secretary of the Interior: An Assessment of Science and Technical Information, Department of Interior. Available:

<https://www.fws.gov/arcata/fisheries/reports/technical/Full%20SDOR%20accessible%20022216.pdf>

<sup>25</sup> CA Department of Fish and Wildlife (CDFW). 2017. Klamath River basin fall Chinook Salmon spawner escapement, in-river harvest and run-size estimates, 1978–2016. Klamath/Trinity Program. CA Dept. Fish and Wildlife. Arcata, CA; CDFW 2017. Klamath River basin spring Chinook Salmon spawner escapement, in-river harvest and run-size estimates, 1978 –2016. Klamath/Trinity Program. CA Dept. Fish and Wildlife. Arcata, CA; “Klamath spring Chinook second lowest in twenty years, says annual survey.” Accessed 1/24/2019 <http://krctv.com/archive/klamath-spring-chinook-second-lowest-in-twenty-years-says-annual-survey>

<sup>26</sup> NOAA Fisheries. 2018 Status of the Salmon Stocks. Accessed 1/24/2019.

[https://www.westcoast.fisheries.noaa.gov/fisheries/salmon\\_steelhead/faqs\\_2018\\_status\\_of\\_salmon\\_stocks.html](https://www.westcoast.fisheries.noaa.gov/fisheries/salmon_steelhead/faqs_2018_status_of_salmon_stocks.html)

<sup>27</sup> NOAA Fisheries: Chinook Salmon. <https://www.fisheries.noaa.gov/species/chinook-salmon-protected>

<sup>28</sup> Crozier, L.G., Burke, B.J., Chasco, B.E. *et al.* Climate change threatens Chinook salmon throughout their life cycle. *Commun Biol* 4, 222 (2021). <https://doi.org/10.1038/s42003-021-01734-w>

<sup>29</sup> USGCRP, 2018: Impacts, Risks, and Adaptation in the United States: Fourth National Climate Assessment, Volume II [Reidmiller, D.R., C.W. Avery, D.R. Easterling, K.E. Kunkel, K.L.M. Lewis, T.K. Maycock, and B.C. Stewart (eds.)]. U.S. Global Change Research Program, Washington, DC, USA, 1515 pp. doi: 10.7930/NCA4.2018. See Chapter 24: Northwest & Chapter 8: Ecosystems.

<sup>30</sup>[https://www.nwrhc.noaa.gov/presentations/html/wy2021\\_ws/WS\\_Briefing\\_Page\\_20210506.pdf](https://www.nwrhc.noaa.gov/presentations/html/wy2021_ws/WS_Briefing_Page_20210506.pdf); <https://www.opb.org/article/2021/05/03/drought-forecast-oregon>; <https://www.drought.gov/states/california>

<sup>31</sup> Klamath Dam Removal Overview. 2012. Report for the Secretary of the Interior: An Assessment of Science and Technical Information, Department of Interior. Available:

<https://www.fws.gov/arcata/fisheries/reports/technical/Full%20SDOR%20accessible%20022216.pdf>; Klamath Facilities Removal Final Environmental Impact Statement/Environmental Impact Report. US Dept. of Interior/CA Dept. of Fish & Game. December 2012. Available: [http://kbifrm.psmfc.org/wp-content/uploads/2017/05/2012\\_0246\\_Klamath-Facilities-Dam-Removal-Final-EIS.pdf](http://kbifrm.psmfc.org/wp-content/uploads/2017/05/2012_0246_Klamath-Facilities-Dam-Removal-Final-EIS.pdf)

There has been extensive environmental review on the removal of project works for the Lower Klamath Hydroelectric Project. This project already has the approval and necessary permits from the states of Oregon and California, and it has been established that improving conditions in the river through dam removal will support salmon and Southern Resident orca recovery, Tribal communities and culture, and fishing and agricultural communities throughout the region.

Removing the Klamath River dams and moving forward with river restoration is already an urgent issue and is only increasing in necessity as climate change effects escalate. We urge FERC to accelerate and complete this review and approve dam removal as soon as possible.

Thank you for the opportunity to comment, and please contact [colleen.weiler@whales.org](mailto:colleen.weiler@whales.org) with any questions.

Regards,

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