

**APPENDIX A—ALTERNATIVES, INFORMATION, AND ANALYSES
SUBMITTED DURING SCOPING**

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ALTERNATIVES, INFORMATION, AND ANALYSES SUBMITTED DURING SCOPING

A.1 ALTERNATIVES SUBMITTED DURING SCOPING

A.1.1 Provide Fish Passage with Dams in Place

Numerous commenters recommended keeping the dams in place and providing fish passage through the project reservoirs using fish ladders, tunnels, and/or a Whooshh fish passage system. This alternative may require federal takeover or transfer of the project license to another entity. While most of the commenters provided limited details on how upstream and downstream fish passage would be provided, several of the approaches and technologies suggested were discussed in detail during scoping for the California Water Board's 2020 Environmental Impact Report (EIR).

Maintaining the project dams and providing fish passage would avoid potential impacts of reservoir drawdown and dam removal on fish and other aquatic life via downstream sediment transport. Power generation would continue, and the project reservoirs would continue to provide the benefits that they afford for local residents, including serving as important water sources for fire suppression needs. However, keeping the dams in place would not adequately address the long-term trends of declining water quality and increases in disease incidence, and important historical anadromous fish habitat would remain inundated, including cold-water springs that provide important thermal refugia.

Currently, the only dams with fish passage facilities on the Klamath River are Keno Dam and J.C. Boyle Dam, but these fishways do not meet current passage criteria and would be unlikely to provide effective passage for anadromous fish. Prior analysis of alternatives that include volitional fish passage with dams remaining in place concluded that there are significant technical and economic challenges, and that they would fail to address the factors that jeopardize the long-term survival of salmon and steelhead runs on the Klamath River. In the 2007 environmental impact statement (EIS) on PacifiCorp's relicensing proposal, the Federal Energy Regulatory Commission (FERC or Commission) concluded that providing fish passage with the reservoirs in place could cause stress or mortality for upstream and downstream migrating fish from seasonally poor water quality conditions, consumption of juvenile salmon by predatory fish in project reservoirs, and injuries or cumulative stress from passing through multiple fish ladder and screening facilities (FERC, 2007). The Commission also noted that, with volitional passage without dam removal, modeling indicated that smolts/juveniles migrating downstream from Iron Gate would suffer an estimated mortality rate of 66 percent (see table 3-74 in the 2007 EIS).

Fish cannons (a system developed by Whooshh Innovations), which can be used to move individual fish over obstacles by transporting them in pressurized tubes, were

raised as potential methods to allow fish passage with dams remaining in place during scoping for the California Water Board EIR (California Water Board, 2020). Fish cannons present several implementation challenges at the Lower Klamath Project. Even if it is assumed that passage at J.C. Boyle Dam would be provided by a separate facility, the distance separating Iron Gate Dam and Copco No. 1 Dam (6 miles), along with the height of Iron Gate Dam (173 feet), are prohibitive to current fish cannon technology. To date, the longest distance and height of successful transport using fish cannon technology was 1,700 feet in length and 165 feet in height at Cle Elum Dam in Washington. Thus, if fish cannons were used at one or more Lower Klamath Project dams, they would most likely have to be used in combination with other fish passage facilities at the dams where the technology is not feasible. Furthermore, the National Marine Fisheries Service (NMFS) has not identified fish cannons as a type of conventional fish passage facility, so their use at the project dams would be experimental (NMFS, 2011). To date, no implementation of fish cannon technology has successfully demonstrated safe, timely, or effective passage for listed anadromous species, and NMFS has not approved a design. Thus, consistent with NMFS (2011) guidance on fishway facility design standards, their use would require design and development of a conventional fish passage facility at each dam where experimental fish cannons would be used. Lastly, providing passage in either the upstream or downstream direction would require a means to attract or divert fish to a location where they could be loaded individually into tubes of the appropriate diameter relative to their size. For these reasons, fish cannons are considered unfeasible as a method for fish passage at the project.

Potential methods for providing downstream fish passage would generally include fish screens capable of diverting outmigrating fish from the river into bypass structures such as tunnels or cannons. Guiding fish to the downstream passage route would likely be at least as costly as the upstream systems. Predation on outmigrating smolts by warm-water fish species (e.g., bass and perch) in the reservoirs would also limit the benefit of providing fish with access to habitat upstream. Trapping and hauling juvenile fish for release downstream could limit the potential for predation but would require handling and hauling fish in unnatural conditions that could affect swimming performance, increase disease transmission risks, and even lead to fish mortality (Colvin et al., 2018; Kock et al., 2021). Constructing downstream fish passage facilities to divert fish as they enter each reservoir in order to limit predation would be more costly to design and construct because the entire river flow, and not just the powerhouse flow, would need to be screened (and would be subject to the river's entire debris load during high flow events).

Digging a long tunnel (e.g., the proposed Shasta tunnel referenced in some comments) to guide migrating fish entirely around the dams would also not solve the water quality problems created by the dams, would be of uncertain effectiveness, and would likely be far more expensive than dam removal. The California Water Board (2020) EIR concluded that there is no engineering support for such a tunnel, which would have to burrow for many miles through rugged country and under dozens (perhaps hundreds) of properties for which there is no existing right-of-way or legal access. We

assume that such a tunnel would be a large, culvert-like structure, which could result in higher water velocities with changes in elevation that could potentially prevent and impair fish passage. According to Mefford (2011, as cited in California Water Board, 2020), providing fish passage through a 4.75-mile tunnel proposed in this alternative would be risky and there would be little flexibility to easily modify the structure if fish avoid using the tunnel. Additionally, because a tunnel would not maintain the ecological function of the stream to promote fish passage, it would not adhere to NMFS's conventional fish passage design guidelines (NMFS, 2011).

Keeping the four dams in place would also not meet the need for timely action to address deteriorating water quality conditions and the increasing incidence of diseases that are causing substantial fish kills. It would not address many other impacts of the project, including the seasonal shift in water temperature, sediment starvation of the reach downstream of Iron Gate Dam, the inundation of historical cool-water refugia, adverse effects on water quality from blue-green algae blooms in the reservoirs, and the contribution of these effects to fish disease. Finally, prior analysis suggests that the costs of operating the dams with fish passage would exceed the costs of removing them. The Klamath Dam Removal Overview Report (Interior and NMFS, 2013) states that, based on PacifiCorp's analyses, capital costs of providing fish passage at the four dams (in 2010 dollars) would be in excess of \$400 million, and annual operating and maintenance costs would be in excess of \$60 million. Escalated to 2021, this would be \$515 million in capital costs and annual operating and maintenance costs in excess of \$77 million. This makes it unlikely that the United States or another entity would be willing to take over and operate the dams. For all these reasons, we do not consider continued dam operation with fish passage to be a reasonable alternative.

A.1.2 Remove Iron Gate Dam and Copco No. 2 Dam and Provide Fish Passage at Copco No. 1 Dam

Mark Dana suggested removing Iron Gate Dam and Copco No. 2 Dam and providing fish passage through or around Copco No. 1 Reservoir. This would allow Copco No. 1 Reservoir to continue to serve as a source of water for fire suppression and preserve the aesthetic values, recreation, and wildlife habitat that is provided by the reservoir.

Relative to the proposed action, leaving two dams in place would reduce the amount and duration of sediment release, reduce construction impacts and waste disposal, and thus reduce the overall short-term impacts from dam removal. However, leaving J.C. Boyle and Copco No. 1 Dams in place would limit the extent of water quality improvement, reduce the amount of mainstem habitat that is restored (including cold-water refugia), and would not reduce predation on outmigrating smolts by warm-water fish during migration through the J.C. Boyle and Copco No. 1 Reservoirs.

Providing for volitional fish passage would remain a substantial engineering challenge, as discussed above in section A.1.1, with no guarantee of success. The

greatest challenge would involve constructing a fish tunnel or other passage system to pass outmigrating juvenile salmon downstream, which would require a large fish screening system to guide them into the tunnel or bypass, or an extensive collection system. It would take several years of study, design, and permitting to develop a system capable of safely diverting fish over a wide range of inflow, debris loads, and water quality conditions.

In summary, removing Iron Gate and Copco No. 2 Dams and providing fish passage at Copco No. 1 Dam would only partially meet the project purpose and objectives of advancing the preservation and long-term restoration of the natural fish populations in the Klamath River Basin, providing timely improvements to water quality, ameliorating conditions underlying high disease rates among Klamath River salmonids, and restoring anadromous fish passage to viable habitat currently made inaccessible by the Lower Klamath Project dams. Thus, we do not consider a two-dam removal scenario to be a reasonable alternative.

A.1.3 Phased Dam Removal

Siskiyou County requested an analysis of a “Phased Approach Alternative” that would remove the dams one at a time. After the initial dam is removed and the health of the environment is adequately monitored and determined to meet a certain biological threshold, the second upstream dam could be removed, and so on. Siskiyou County stated that this would provide a more scientifically driven approach to dam removal and ensure that sensitive environmental resources are protected from unproven, potentially catastrophic action.

A phased approach to dam removal would reduce the concentration of sediments released during dam removal because sediments would be released over an extended timeframe. Additionally, depending on the amount of time between dam removals, this alternative could allow for evaluation of model assumptions and restoration approaches. However, the California Water Board’s (2020) analysis of phased dam removal (over three to seven years) indicates that this approach would extend the period of sediment release over multiple years and significantly increase the mortality of fish populations in the Klamath River. Dam removal across multiple years and resulting elevated suspended sediment concentrations would extend, rather than limit, adverse effects on fish because the increased duration of impact would occur across more life stages and/or additional year-classes of salmon and steelhead (Stillwater Sciences, 2011). Thus, although the maximum suspended sediment concentration would be reduced, phased dam removal would extend the period of adverse impacts and be less likely to advance the long-term restoration of the salmonids and other native fish populations in the Klamath River. The Yurok Tribe, Karuk Tribe, and numerous other agencies, non-governmental organizations (NGOs), and individuals expressed an urgent need for rapid approval and implementation of dam removal to protect Klamath salmon runs from deteriorating water quality conditions and increased disease incidence.

We conclude that phased removal would limit progress towards preserving and advancing the long-term restoration of salmonids and other fish populations in the Klamath River Basin and would not meet the need for timely action required to address deteriorating water quality conditions and associated increases in salmon disease incidence. Thus, we do not consider a phased dam removal scenario to be a reasonable alternative.

A.1.4 Experimental Drawdown

Chrissie Reynolds suggested drawing the reservoirs down for a period of three years to see if that would improve conditions and allow salmon to survive above the reservoirs. Under this alternative, some structures would remain in place, and the construction footprint would be reduced compared to the proposed action. No details were provided about the methods to be used for providing fish passage or managing reservoir area sediments.

Assuming that provisions for fish passage would be included in this alternative, it could partially meet the purpose and objectives of the proposed action. However, providing upstream and downstream volitional fish passage would be a major challenge, as discussed above in section A.1.1. Fish passage would need to be installed at the Lower Klamath Project dams prior to reservoir drawdowns, but it is uncertain if it would be feasible to design fish passage systems that allow upstream and downstream passage under all hydrologic conditions and reservoir elevations. Constructing fish passage facilities would also require substantial time and money for their design and construction, which would further delay recovery of Lower Klamath River anadromous fishes and their habitat, and risk their demise due to the delay in water quality improvements and addressing the factors that contribute to fish kills from disease outbreaks.

Drawing down the reservoirs without implementing measures to stabilize sediments could result in greater impacts from high suspended sediment concentrations downstream of the dams. In addition, unless the discharge capacity of the dam outlet structures were increased substantially, the reservoirs would refill during high flow events and cause erosion of additional sediments from the reservoir areas. Thus, during high flows, an experimental drawdown alternative would result in elevated suspended sediment concentrations over an extended period, which would adversely affect fish and other aquatic biota. For these reasons, we do not consider experimental drawdown to be a reasonable alternative.

A.1.5 Repurpose the Reservoirs for Environmental Purposes

Mark Dana suggested that the reservoirs could be repurposed to allow stored water to be used for environmental purposes, including providing flushing flows, modifying flows to better support different life stages of salmon, and/or providing flood control.

Keeping the dams in place under this alternative would prolong ongoing adverse effects on anadromous fish. Even if fish passage were provided (see discussion in section

A.1.1), anadromous fish access to historical habitat would be limited, including to the low-gradient riverine habitat under Copco No. 1 and Iron Gate Reservoirs that was historically important for salmonid spawning and rearing. Salmonid access to cold-water springs within the hydroelectric reach that once provided refugia during the summer would continue to be reduced. Also, it is assumed that the Iron Gate Fish Hatchery would continue producing juvenile salmon, which could continue to exacerbate fish disease associated with high densities of juvenile and adult anadromous fish downstream of Iron Gate Dam. High water temperatures in the river and reservoirs would continue to promote parasites and predatory fish, and there have been no specific management actions proposed that could achieve the temperature targets assigned to Copco No. 1 and Iron Gate Reservoirs under the Klamath River Total Maximum Daily Loads (TMDLs). Numerous flow measures have been implemented over the years at the project dams to better support the different life stages of salmonids, but numbers of fish remain at significantly suppressed levels and fish kills continue with increased frequency and severity. Thus, although some effects could be mitigated through flow modifications, the project dams would directly and indirectly decrease the survival and reproduction of native, cold-water salmonids. Furthermore, implementing additional flow measures to better support different life stages of salmon would require several years of study and evaluation, and would not meet the need for timely action required to address adverse water quality conditions and disease incidence. In contrast, there is a high degree of certainty, based on the available science and lack of contrary studies, that dam removal would benefit Chinook salmon, coho salmon, and steelhead by improving water quality, reducing disease incidence, and providing access to historical habitat upstream of Iron Gate Dam (Dunne et al., 2011; Goodman et al., 2011; Hamilton et al., 2011; Hendrix, 2011; and Lindley and Davis, 2011).

A.1.6 Establish Additional Reliable Storage Facilities and Implement Juniper Removal Projects

Gerald Bacigalupi suggested an alternative that includes establishing additional reliable water storage facilities within the Klamath River Basin, including increasing storage capacities of high-elevation lakes, and implementing juniper removal projects.

Several options to build new reservoirs have been explored over the years. The U.S. Bureau of Reclamation's (Reclamation) 2016 *Klamath River Basin Study* provides a summary of previously identified water storage options (Reclamation, 2016). Potential options were identified and developed in the 1990s through the Klamath Basin Water Supply Initiative, a public input process involving potentially affected state, local, and Tribal interests and concerned stakeholders (e.g., potential new storage in the Long Lake Valley [Reclamation, 2010]). The *Initial Alternatives Information Report, Upper Klamath Basin Offstream Storage Study* (Reclamation, 2011) further investigated options, including an aquifer storage and recovery groundwater option at Gerber Reservoir and a hybrid option involving aquifer storage and recovery at Clear Lake and surface storage at a new dam (to be named Boundary Dam). Reclamation, under

authority of the Klamath Basin Water Supply Enhancement Act of 2000 (Public Law 106-489), studied the feasibility of increasing storage capacity in the Upper Klamath River Basin and Reclamation's Klamath Irrigation Project through surface or groundwater supplies (CRS, 2005). Reclamation explored options to expand the storage capacity of Upper Klamath Lake, identifying six primary options for expanding the lake onto adjacent lands. These lands could store an additional 100,000 acre-feet of water, but the reservoir would be shallow, and half of the water held in this additional storage could be lost to evaporation. To date, progress has been limited toward achieving these options because there are several uncertainties associated with expanding storage at Upper Klamath Lake. For example, water releases from the expanded storage could be limited by reservoir elevation requirements established by the U.S. Fish and Wildlife Service (FWS) to protect Endangered Species Act (ESA)-listed suckers in the reservoirs (CRS, 2005).

The commenter that recommended additional storage be established by increasing storage capacities of high-elevation lakes pointed to recommendations in the California Department of Water Resources (California DWR) 1991 *Scott River Flow Augmentation Study* (California DWR, 1991). However, that report does not recommend increasing storage of high-elevation lakes; on the contrary, California DWR (1991) recommends against developing the lakes studied because there are not enough benefits to offset the negative aspects of the proposal. Reasons cited as to why the proposal is impractical include: (1) over two-thirds of the high-elevation lakes studied are in federally designated wilderness where development is not permitted; (2) site access would make several lakes very challenging [and costly] to enlarge; (3) water management would be difficult due to a large number of sources; and (4) aesthetic values would be affected. These reasons justify not considering new high-elevation lake storage as a sufficient alternative to dam removal. Thus, after many investigations, no viable storage options have been identified after a benefit-cost analysis.

Western juniper trees have expanded across the Klamath Basin. If allowed to encroach on sagebrush steppe communities, riparian areas, and other lands, juniper competes with other vegetation for water, space, sunlight, and available soil nutrients, causing significant abiotic and biotic effects (Bedell et al., 1993). Kuhn et al. (2008) conclude that due to the semi-arid environment where juniper occurs, a significant watershed-scale increase in water yield resulting from widespread juniper treatment in the Klamath Basin would be unlikely. However, more recent studies have found that juniper-dominated rangelands have earlier snowmelt runoff and less streamflow relative to sagebrush-dominated catchments, and juniper removal can yield higher runoff and spring flow rates. To quantify whether juniper removal results in increased stream flows, Deboodt et al. (2008) conducted a 15-year paired watershed study that examined how removing junipers affects hydrologic processes in eastern Oregon shrublands, finding significant increases in late season spring flow by 225 percent, increased days of recorded groundwater by an average of 41 days, and increased availability of late season soil moisture (Deboodt et al., 2008). This study and other investigations (Durfee and Ochoa,

2021; Kormos et al., 2017; Ochoa et al., 2014, 2018) provide support for implementing juniper removal to increase water supply and water availability for plant growth. We anticipate that juniper removal will continue across the Klamath Basin, providing many ecosystem benefits such as sagebrush restoration, fuels management, wildlife habitat enhancement, increased water availability, and reduced soil erosion. Additional research may shed more light on the issue of hydrologic responses to juniper removal.

New water storage projects in the vicinity of the Lower Klamath Project, by itself or combined with large-scale juniper removal, would not be a practical alternative to achieve the objectives of the proposed action. Because no viable options for new water storage projects have yet been identified, it would take years to determine feasibility and implement, and would not serve to address deteriorating water quality conditions and associated salmon disease issues in a timely manner. Furthermore, these actions would not meet the underlying project purpose of restoring anadromous fish passage to viable habitat currently made inaccessible by the Lower Klamath Project dams. Therefore, we conclude that the water storage and juniper removal alternative is not technically feasible to meet the purpose of taking action in this proceeding.

A.1.7 Increase Flows Provided from Sources with Good Water Quality

Gerald Bacigalupi suggested an alternative could include increasing flows provided from sources with good water quality (e.g., Lake Shastina or groundwater sources). This may include trading with lower quality water from the Upper Klamath Basin. Tricia Plass and Tom Connick also recommended restoring flows in the Trinity River, which is currently diverted from Lewiston Reservoir to Whiskeytown Lake in the Sacramento River Basin for the Central Valley Project.

As one example, transferring water from Lake Shastina would involve constructing a conveyance to transfer water from Iron Gate Reservoir (or J.C. Boyle Reservoir or Keno Reservoir) to the Shasta River watershed as irrigation supply in exchange for Lake Shastina discharges to go directly into the Shasta River rather than being used as irrigation supply first. In this example, releasing water from Lake Shastina would improve water quality and fish habitat in the downstream reaches of the Shasta River, but is unlikely that Lake Shastina could provide a sufficient amount of water to improve water quality in the Klamath River (38 miles downstream from Dwinnell Dam and Reservoir). Also, in this example, or other proposed water transfer scenarios, there would be no guarantee of having reliable water supplies into the future and there would likely be challenges to constructing new canals or other conveyances. Lastly, the California Water Board (2020) states that there are currently no project proponents with authority to implement such water transfers.

Increasing flows in the Klamath River from other sources is also complicated by disputes dealing with competing water rights. Management of the Trinity River, the largest tributary of the Klamath River, has been a topic of ongoing debate and litigation. Until the late 1990s, nearly 90 percent of the water in the Trinity River was exported to

the Central Valley, but a NMFS Record of Decision in 2000 increased flows in the Trinity River. This was opposed by the Central Valley Project water users and resulted in the case *Westlands Water District v. U.S. Department of the Interior*. A 2004 court decision in this case directed Reclamation to release into the Trinity River the amount of water called for in NMFS's 2000 Record of Decision (CRS, 2005). Litigation over Trinity River water continues today between the Hoopa Valley Tribe, Westlands, and Interior.

For the reasons discussed above, this alternative, whether it involves the Shasta River, Trinity River, or other potential water sources, is likely unworkable given the current level of conflict among water users. Even if feasible, such water transfers would only improve water quality in localized areas and not address the water quality issues related to toxins from blue-green algae in the project reservoirs. Also, this alternative also would not meet the underlying project purpose of restoring anadromous fish passage to viable habitat currently made inaccessible by the Lower Klamath Project dams, including cold-water refugia and spawning habitat inundated by the reservoirs. For all the reasons above, we do not consider a water transfer alternative to be a reasonable alternative.

A.1.8 Reduce Predator Abundance, or Restrict/Ban Commercial Fishing

Tricia Plass recommended reducing the predator population (sea lions) at the mouth of the Klamath River, and Tom Connick recommended that commercial salmon fishing be suspended until the salmon population recovers.

Predation of anadromous salmonids by sea lions, seals, and cormorants and other seabirds certainly affects migrating salmon and steelhead in the Klamath River. In particular, seals and sea lions are a documented predator within the Klamath River Estuary and nearshore environment. A summary of investigations into California sea lion and Pacific harbor seal impacts on salmonids on the West Coast is provided by Scordino (2010), which confirms that seals and sea lions (pinnipeds) can have negative impacts on salmonids in certain situations, and Pacific harbor seal and California sea lions have increased dramatically since the 1970s (Chasco et al., 2017). However, the Yurok Tribal Fisheries Program conducted investigations on seal and sea lion predation on fall-run Chinook salmon in the Lower Klamath River from 1997 to 1999. Predation rates for the entire fall Chinook salmon run during 1998 and 1999 ranged from 2.3 to 2.6 percent with California sea lions being responsible for 89.8 to 93.5 percent of this predation (Williamson, 2001a, 2001b). This suggests that pinniped predation rates may not be a primary contributor to salmon mortality. The levels of California sea lion predation observed could have more significant adverse effect when returns of fall Chinook salmon are small. However, it is worth noting that salmonids of the Klamath River Basin have coexisted with pinnipeds within Pacific Ocean ecosystems for thousands of years. Also, seals and sea lion are protected under the Marine Mammal Protection Act, so hazing or lethal removal of seals and sea lions requires federal approval from NMFS, and it is unknown if such actions would be permitted. NMFS (2020) recently evaluated the

Bonneville Power Administration's proposal to remove sea lions in the Columbia River, which would test the efficacy of lethal removal of sea lions to reduce predation impacts on salmon and steelhead, but results of this effort would not be known for several years. In conclusion, there is limited evidence for the efficacy of predator control to increase salmon and steelhead abundance, there is currently no funding or project proponent to implement it, there are regulatory obstacles that would need to be overcome, and the proposed action would not preclude future predator control activities.

Restricting or banning commercial fishing would have economic impacts on coastal communities that depend on fishing. Commercial fishermen and their communities have already experienced adverse impacts from decreases in fish numbers and subsequent harvest limitations. Interior and California DFG (2012) reported that the removal of Lower Klamath Project facilities at all four dam complexes would result in positive regional economic benefits due to increases in the commercial ocean fishery.

In addition, this alternative would not meet the objective of restoring anadromous fish passage to viable habitat currently made inaccessible by the Lower Klamath Project dams. It would also not address downstream project-influenced water quality conditions, including seasonal shifts in water temperature; the blockage of spawning gravel recruitment downstream of Iron Gate Dam; nuisance and/or noxious phytoplankton blooms, including blue-green algae blooms within and downstream of the reservoirs; and the contribution of these impacts to fish disease. Thus, we do not consider predator removal to be a reasonable alternative to dam removal.

A.1.9 Build More Hatcheries

Tricia Plass and Jennifer Dickinson recommended increasing hatchery production as a cost-effective way to augment salmon runs.

Klamath River Renewal Corporation's (KRRC) proposed alternative includes a Hatcheries Management and Operations Plan, which following dam removal, includes moving hatchery operations from the Iron Gate Hatchery to Fall Creek Fish Hatchery and performing necessary upgrades to replace operations at Iron Gate Fish Hatchery. We discuss KRRC's proposed plan for hatchery operations in section 3.4.3.8, *Effects of Changes in Hatchery Operations*. Hatcheries have played a major role in supplying Pacific salmon and trout to the region, estimated by Flagg et al. (2000) as contributing 70-80 percent of coastal fisheries. However, the extent that hatchery salmon have negatively impacted wild salmon populations and their recovery has been debated for decades in the Pacific Northwest (see Brannon et al., 2004). Hatcheries are now understood to be one of the factors causing wild salmonid stocks to decline. A summary of the ecological, genetic, and behavioral impacts of hatcheries on wild salmonids is provided in Flagg et al. (2000) and Einum and Fleming (2001). The NMFS (2021) Biological Opinion on the proposed action discusses hatcheries as a factor negatively impacting salmon in the Klamath Basin. California DFW and PacifiCorp (2014) listed the following eight potential mechanisms for potential negative impact to coho salmon:

(1) competition for food and space between natural and hatchery coho salmon yearlings; (2) predation of wild salmonid young-of-the-year by hatchery yearlings; (3) disease transfer between hatchery and natural coho salmon stocks; (4) influencing outmigration behavior of natural coho salmon; (5) incidental coho salmon catch in Chinook salmon and steelhead fisheries; (6) artificial selection of spawners leading to fewer effective spawners; (7) loss of genetic diversity or replacement of natural stocks, and (8) inbreeding and out-breeding depression. A model by California DFW and PacifiCorp (2014) indicates that the release of 75,000 coho salmon juveniles from Iron Gate Hatchery has the potential to cause up to 6 percent mortality of wild coho salmon juveniles through increased predation, competition, and disease. However, the cumulative negative impacts of hatcheries on wild salmon in the Klamath River Basin is difficult to quantify.

Steelhead and salmon in certain drainages are dependent on hatchery production to various degrees, but continued reliance on hatcheries to offset declining salmon without dam removal would not meet the objective of long-term restoration of natural fish populations in the Klamath River Basin. Increasing the number of salmon released from hatcheries without the restoration of fish passage would increase the density of fish carcasses and disease transmission to wild adults (Naish et al., 2008; Levin et al., 2001; Belchik et al., 2004; Sergeant et al., 2017). Furthermore, more hatchery production would not necessarily equate to increased populations because salmon and steelhead abundance is affected by ocean conditions and other unquantified associated factors. Thus, we do not consider increased hatchery production to be a reasonable alternative to the proposed action.

A.1.10 Improve Water Quality via Treatment

Jennifer Dickinson recommended that the Commission focus on how to mitigate the effects of the existing dams, including addressing water quality conditions with treatment.

Under current conditions, water quality in the mainstem of the Klamath River in both California and Oregon is listed as impaired for the following parameters: temperature, sedimentation, pH, organic enrichment, dissolved oxygen, nutrients, and toxic algae (microcystin), and ammonia. There is a direct cause-and-effect link between the project dams and water quality (see section 3.3, *Water Quality*, of the EIS).

Several nutrient treatment options have been identified, which include wetland treatment systems, wastewater treatment systems, algae/biomass removal, ambient water treatment systems, sediment nutrient sequestration, sediment removal, wetland restoration, oxidation technologies, and diffuse source treatment systems (WQST, 2011, cited in Interior and NMFS, 2013). The Klamath Basin Restoration Agreement included large water quality monitoring programs and research to inform the dam removal process. The amended KHSA, which specifies provisions for the interim operation of the Lower Klamath Project by PacifiCorp prior to implementation of dam removal, includes several

existing and ongoing interim measures to improve water quality. IM-10 includes a basin-wide technical conference for stakeholders and experts to explore nutrient removal technologies (including treatment wetlands), and IM-11 provides funding to conduct research on addressing water quality issues. PacifiCorp has implemented many studies and pilot projects as part of IM-11, as described in the KHSA Implementation Report (PacifiCorp, 2020). Working with the Interim Measures Implementation Committee, PacifiCorp developed a list of priority project categories for water quality improvement, including diffuse source treatment wetlands, natural wetlands restoration, riparian fencing and grazing management, and irrigation efficiency and water management. While specific projects are in development, PacifiCorp continues to carry out studies under IM-11, including several studies on cyanobacteria (PacifiCorp, 2020). Examples of these studies include evaluating the ability of physical mixing to reduce cyanobacteria growth within Mirror Cove in Iron Gate Reservoir and genetic analysis of *Microcystis* populations in Copco No. 1 and Iron Gate reservoirs (PacifiCorp, 2016a), and an assessment of potential algae harvesting and removal techniques at Link River Dam (PacifiCorp, 2016b). Lastly, the KHSA includes IM-15, which requires PacifiCorp to fund baseline water quality monitoring from Upper Klamath Lake to the Klamath River Estuary at the Pacific Ocean. The water quality monitoring under IM-15 entered its twelfth year in 2020.

Following dam removal, the Klamath River would likely still experience high levels of nutrients and organic matter originating from upstream sources, unless measures are implemented by other entities to reduce nutrient input. Given the high inputs to project waters, nutrients would continue to persist in project-area waters in the absence of water treatment by other parties, especially water entering the Klamath River from the Link River and the Klamath Irrigation Project. Dam removal, however, would diminish conditions that support planktonic algae like *Microcystis*, *Aphanizomenon flos-aquae*, and other species that cause blooms in project reservoirs. These algal communities would be diminished because such algae do not thrive in free-flowing reaches with turbulent conditions, such as would exist without project dams. Therefore, the geographical extent of Klamath River impairment would likely be reduced with removal of the Lower Klamath Project dams.

Without dam removal, water treatment solutions would require several years of study, design, and permitting work. For example, to address water temperature, Reclamation has spent significant resources on the design, performance testing, and monitoring of selective withdrawal structures and temperature curtains to meet temperature objectives at various facilities. After reviewing various temperature control options for reservoir release flows, Reclamation (2019) found that “major infrastructure modifications are expensive to build and maintain. Operations-based approaches have competing priorities and limited flexibility. More tools are needed to provide management techniques that are appropriate for specific applications.”

In summary, the persistent water quality issues in the Lower Klamath Project are complex, and investigations to resolve them are ongoing. However, numerous studies

demonstrate that dam removal would be an effective solution to greatly improving water quality in the hydroelectric reach and the Lower Klamath River. By itself, water treatment does not meet the need for timely action required to address water quality conditions and salmon disease incidence or to restore anadromous fish passage to viable habitat currently made inaccessible by the Lower Klamath Project dams. In addition, treatments to reduce water temperatures could be very energy-intensive and costly. Thus, this alternative is not considered a reasonable alternative to the proposed action.

A.1.11 Retain the Dams for Another 50 Years and Develop a New Plan

Deb Gilliam recommended keeping the dams for another 50 years while we establish a new plan. No changes in project facilities or operations were suggested.

Section 3.4.2 of the EIS provides a summary of existing conditions for aquatic resources, including the water quality issues and reduced anadromous fish populations that would be expected to continue under this alternative. Leaving all reservoirs in place would not allow any improvement in water quality conditions, and historical habitat would remain inundated, including cold-water springs that provide important thermal refugia. Disease problems associated with high densities of fish carcasses downstream of Iron Gate Dam would likely persist and increased water temperatures in the river and its reservoirs would encourage warm-water parasites and predators. This alternative would not meet the need for timely action required to address water quality conditions and salmon disease incidence. See also our response above under *Continued Operations with Environmental Management*.

A.2 INFORMATION AND ANALYSES SUBMITTED DURING SCOPING

A.2.1 Project Purpose

Comment: Siskiyou County and several other commenters stated that the purpose and need for the project stated in KRRC's Definite Plan and the Commission's Notice of Intent statement are improperly narrow, essentially precluding any alternative that has the potential to reduce environmental impacts other than dam removal. One commenter noted that the California Water Board's EIR includes the following, broader list of goals: (1) improve the long-term water quality conditions associated with the Lower Klamath Project in the California reaches of the Klamath River, including water quality impairments due to *Microcystis aeruginosa* and associated toxins, water temperature, and levels of biostimulatory nutrients; (2) advance the long-term restoration of the natural fish populations in the Klamath River Basin, with particular emphasis on restoring the salmonid fisheries used for subsistence, commerce, Tribal cultural purposes, and recreation; (3) restore volitional anadromous fish passage in the Klamath River Basin to viable habitat currently made inaccessible by the Lower Klamath Project dams; and (4) ameliorate conditions underlying high disease rates among Klamath River salmonids. Other commenters stated that even the EIR's goal of restoring volitional fish passage is problematic in that it would not be met by alternatives such as providing passage via trapping and trucking salmon to upstream areas or increasing hatchery production.

Response: We have adopted a broad statement of purpose and need that does not preclude options other than dam removal (see section 1.3, *Purpose and Need*). A series of alternatives (A1.1-A.1.11) were considered; however, none of these were considered a reasonable alternative to the proposed action and were not considered further for environmental analyses (see section 2.0, *Proposed Action and Alternatives*). Consequently, the draft EIS considered three alternatives; (1) the proposed action (KRRC's proposal); (2) the proposed action with staff modifications; and (3) no -action (continued project operation with no changes). The no-action alternative includes ongoing measures to mitigate for some of the adverse effects of the Lower Klamath Project facilities and hydroelectric operations. Thus, alternatives other alternatives besides dam removal have been considered.

Increasing hatchery production and providing passage via means other than dam removal have been considered (see A.1.9). Steelhead and salmon in certain drainages are dependent on hatchery production to various degrees, but continued reliance on hatcheries to offset declining salmon with no dam removal would not meet the objective of the preservation and long-term restoration of natural fish populations in the Klamath River Basin. Increasing the number of salmon released from hatcheries without the restoration of fish passage would increase the density of fish carcasses and disease transmission to wild adult and juvenile salmon. Furthermore, more hatchery production would not necessarily equate to increased populations because salmon and steelhead abundance is affected by ocean conditions and other unquantified associated factors affect salmon and steelhead abundance. Thus, we do not consider increased hatchery production to be a reasonable alternative to the proposed action (see appendix A, A.1, *Alternatives Submitted During Scoping*).

A.2.2 Effects on Wells and Water Supply to Municipalities, Agriculture, and Wildlife Refuges

Comment: Many commenters expressed concern of the proposed action on nearby wells and the limited scope of KRRC's proposed mitigation. In their letter filed on August 12, 2021, Mark and Lisa Fischer raised several questions about factors that could add to the cost of restoring well production and the hardships that may occur until adequate well production is restored.

Response: KRRC's California Water Management Plan and Oregon Groundwater Well Management Plan propose short- and long-term measures to return the production rates of affected groundwater wells to existing conditions and would mitigate potential effects on private well owners who choose to participate in KRRC's proposal to monitor effects on well production (see section 3.2.3.4, *Short- and Long-term Effects on Groundwater Supply Wells*).

Comment: Many commenters stated that, with increasing droughts in the region, more dams should be built to store water instead of removing them, and that draining the

reservoirs will waste the water that they contain. Several commenters expressed concern regarding impacts to people, farms, livestock, and wildlife due to loss of water.

Response: Reclamation's 2016 *Klamath River Basin Study* provides a summary of previously identified water storage options that have been explored over the years. To date, progress has been limited toward achieving these options, and no viable storage options have been identified after a cost-benefit analysis of increasing storage capacities of high-elevation lakes points (see A.1.6, above).

Comment: Many commenters stated that the proposed action violates the Klamath River Basin Compact, whose purposes include the orderly, integrated, and comprehensive development, use, conservation, and control for various purposes, including, among others: the use of water for domestic purposes; the development of lands by irrigation and other means; the protection and enhancement of fish, wildlife and recreational resources; the use of water for industrial purposes and hydroelectric power production; and the use and control of water for navigation and flood prevention.

Response: Water supply in the Klamath River Basin is controlled by existing water rights, irrigation demands, and environmental flow requirements (see section 3.2.3.3, *Effects of Changes in Water Quantity on Water Supply Diversions and Water Rights*). None of the water rights for the Lower Klamath Project facilities are for seasonal water storage or irrigation purposes (see section 3.2.2.2, *Surface Water Rights, Water Supply, and Water Demand*). The States of Oregon and California, Oregon and California Departments of Fish and Wildlife, federal agencies, including Interior and NMFS, and water users (Klamath Water Users Association [KWUA]) signed the Klamath Power and Facilities Agreement in 2016. This agreement affirmed the parties' desire to address important settlement implementation, negotiations, and/or dispute resolution related to the Lower Klamath Project. This and other agreements do not violate the Klamath River Basin Compact. Furthermore, we conclude that the proposed action is the most viable option for the protection and enhancement of fish, wildlife and recreational resources.

Comment: KWUA noted that the operable storage in PacifiCorp's reservoirs is often used to provide releases to the Klamath River to limit the releases from Upper Klamath Lake, and that this "borrowing" practice, which is undertaken for environmental purposes, would not be possible if the operable storage in the PacifiCorp reservoirs is eliminated. Representative LaMalfa noted that this borrowing practice has been important for protecting waterfowl in the Tule Lake National Wildlife Refuge and suckers in Sump 1B.

Response: Existing storage within the Lower Klamath Project reservoirs is sometimes used to support Reclamation in meeting minimum instream flows downstream of Iron Gate Dam (see section 3.2.2.2). We acknowledge that the proposed action would permanently remove the storage available for this "water borrowing" agreement. As such, during extreme dry water years the proposed action would potentially result in reduced supplemental deliveries of 10,000 to 20,000 acre-feet of water used for consumptive uses, or 8.5 percent of the historical irrigation demand for the region.

However, the Lower Klamath Project has no obligation to apply the water stored in the project reservoirs to meet Reclamation's Biological Opinion requirements (see section 3.2.3.3, *Effects of Changes in Water Quantity on Water Supply Diversions and Water Rights*). In addition, based on reservoir evaporation estimates (11,000 acre-feet of water per year) and the expected evapotranspiration (4,800 acre-feet of water per year) that would occur in the same reaches, the proposed action could result in a net gain of up to 6,200 acre-feet of water per year for the Klamath River (see appendix E in Reclamation, 2012b).

Comment: Siskiyou County stated that the EIS should evaluate effects on water supply, noting that City of Yreka and communities of Hornbrook, Copco Village, and Beswick, among many others, rely on groundwater and surface water supply from the Klamath River. The City of Yreka commented that the construction of a new hatchery at Fall Creek, which will divert water and is proposed to rear and release endangered species, could, in the future, cause further restrictions on Yreka's right to take water under its consumptive water permit. Yreka noted that according to California, Oregon and the United States Code, municipal water use has the highest priority of any other use, including those uses related to fish and wildlife considerations. Yreka requested that: (1) its water transmission pipeline be replaced in a manner that is safe and secure from external threats that could cause any interruption in municipal water service; (2) the EIS include a discussion of the decommissioning or repurposing of the hatchery at the end of the proposed eight-year operating period, and the funding of that decommissioning; and (3) that chemical imprinting techniques be used to encourage coho salmon produced at the hatchery to return to streams other than Fall Creek to avoid having the coho return solely to Fall Creek, which Yreka is concerned may lead to its designation as critical habitat. In addition, Yreka noted that Interior and California DFG (2012) has requested that penstock roads be returned to native grades, and Yreka requests that all roads to their diversion facility, including penstock roads, and to Fall Creek Hatchery, remain accessible by ordinary maintenance vehicles.

Response: KRRC's California Water Management Plan and Oregon Groundwater Well Management Plan would provide short- and long-term measures to return the production rates of affected groundwater wells to existing conditions and would mitigate potential effects on private well owners who choose to participate in KRRC's proposal to monitor effects on well production (see section 3.2, *Water Quantity*). In section 3.4.3.8 of the draft EIS, *Effects of Changes in Hatchery Operations*, we recommend that KRRC and the resource managers consider the City of Yreka's recommendation to imprint coho salmon to return to other tributaries, and also to allocate a portion of the juvenile salmon produced at Fall Creek Hatchery for outplanting to other tributaries to accelerate the recolonization process. We also recommend that KRRC revise the Hatchery Management Operations Plan to clarify whether ownership of the facility would be transferred to the State of California or another entity. Water supply has been fully evaluated in the EIS (section 3.2, *Water Quantity*).

Concerns about water supply to the City of Yreka and others are addressed in KRRC's Water Supply Management Plan that proposes to construct a new, fully operational replacement water supply pipeline and implement the measures outlined in its California Public Water Supply Management Plan. This would ensure that the City of Yreka has an adequate supply of water and the water supply amount diverted from Fall Creek would not change. In addition, the California Water Board's 401 condition 8 would ensure any potential water supply outages due to project deconstruction are short in duration and mitigated for with additional water supplies. Furthermore, KRRC's proposal to coordinate with the California Water Board and the Oregon Department of Environmental Quality (Oregon DEQ) and undertake short- and long-term measures to return the production rates of affected groundwater wells to conditions existing prior to the proposed action would mitigate potential impacts on private well owners (see section 3.2.3.3, *Effects of Changes in Water Quantity on Water Supply Diversions and Water Rights*). As noted in section 3.8.3.4, *Road Management and Traffic*, existing roads required to operate and maintain the Fall Creek facility that are also used by the City of Yreka to manage their water supply system would not be affected, and the roads would continue to be maintained in an operable condition for maintenance vehicles.

Comment: Reclamation recommended that the Water Quantity section of the EIS evaluate any temporary flow control measures that may be needed during the various phases of decommissioning. KWUA stated that the negative effects to agriculture and wildlife refuges from reasonably foreseeable, increased regulatory burdens (such as screening diversions) resulting from species occupying or migrating in new areas must be analyzed and considered, as must any demand for Klamath River flows to flush sediment or otherwise facilitate the proposed action or its overall objectives.

Response: Please see our responses to comments on the draft EIS in appendix L for comments L.4.3-1, L.4.4-2, L.4.4-3, and L.8-2.

A.2.3 Effects on Flood Control

Comment: Several commenters expressed concern that removal of the dams would cause downstream flooding, and several commenters asked whether the dams could be modified to improve flood control. Pacific Coast Federation of Fishermen's Associations (PCFFA) noted that the analysis in Interior and NMFS's 2013 EIS/EIR indicates that the reservoirs provide less than 7 percent attenuation of any 100-year flood event, and then only for a few hours' time (i.e., until their reservoirs are full). Conversely, Gerald Bacigalupi contended that the dams provide substantial (26.7 percent) flood protection based on historic hydrographs.

Response: The controlled flow release that would occur during drawdown of the project reservoirs would not increase short-term flood risks downstream of the projects because these flows would be well within the range of historical flows recorded in each reach. If KRRC expects excess flows (i.e., flood conditions) during drawdown, it would continue to use each facility's spillway as a fail-safe for overflow situations and would

retain flood flows using the newly available storage capacity due to reservoir drawdown (see section 3.2.3.2, *Effects of Changes in Water Quantity on Downstream Flooding*).

Our analysis in section 3.2.3.2 indicates that the Lower Klamath Project dams would have no effect on the magnitude of major flood events, since the reservoirs provide a very limited amount of active storage¹ and the reservoirs fill to capacity very quickly during major flood events. After the reservoirs are filled to capacity, they pass all inflow and provide no buffering of peak flows in the Lower Klamath River.

A.2.4 Effects on Water Quality

Comment: Several commenters expressed concern that removing the dams would adversely affect downstream water temperatures and nutrient levels and the opportunity to use reservoir storage to provide flushing flows to reduce disease incidence. Some commenters state that water quality was poor historically and improved after the dams were constructed. One commenter stated that FERC should require PacifiCorp to mitigate water quality issues. PCFFA stated that Interior and NMFS's 2012 EIS/EIR concluded that the dams: (1) slow down and allow excessive heating of water in the reservoirs behind the dams, as well as concentrate nutrients in these artificially created warm-water lakes, encouraging the widespread growth of toxic blue-green algae in the reservoirs; (2) destroy the effectiveness of numerous cold-water springs that once provided refugia for cold-water fish such as salmon during the summer months (i.e. those springs are now under heated reservoir waters); (3) increase the average water temperatures of the river and its reservoirs in various ways that encourage warm-water parasites and predators, and directly and indirectly decreasing the survival rates of native, cold-water salmonids downriver until well below Iron Gate Dam. One commenter stated that a tagged salmon study confirmed a higher survival of salmon in the area directly below Iron Gate Dam than within any other reach above the coastal influence, supporting local experience that salmon disease is actually lessened by the dams.

Response: Under the proposed action the project reservoirs would be converted into riverine reaches resulting in more normative temperature regime within the former reservoir reaches and in the Klamath River downstream from the project. The proposed action would release nutrients (total N and total P) stored in the reservoirs' sediments during and following drawdown with a less than significant short-term effect because nutrients would be exported quickly through the system. Long-term effects resulting from conversion of the reservoirs to riverine reaches are expected to have the beneficial effect of nearly eliminating the seasonal release of nutrients from deep anoxic reservoir waters that cause phytoplankton algae blooms (including blue-green algae blooms) and periods of low DO levels (see section 3.3.3.3, *Nutrients, Dissolved Oxygen, and pH*; section 3.3.3.4, *Microcystin*). Review of water quality conditions shows that current

¹ Approximately 98 percent of the active surface water storage along the Klamath River is provided by Upper Klamath Lake behind Link River Dam.

water quality conditions have declined significantly compared to historical conditions and continue to deteriorate (see section 3.3, *Water Quality*). The comments by PCFFA are supported by review of past and current water quality conditions within and downstream of the project.

The proposed action would reduce fish disease in the Lower Klamath River in the long-term by: (1) providing access to additional cool-water refuges for salmonids; (2) reducing the density of fish carcasses and the concentration of disease pathogens through access to additional suitable habitat; (3) eliminating phytoplankton produced in the project reservoirs as a food source for the polychaete host of the myxozoan parasites *Ceratonova shasta* (*C. shasta*) and *P. minibicornis* that infect and cause regular substantial salmonid mortality; and (4) restoring sediment transport processes in the Lower Klamath River that would reduce algal mats that provide favorable polychaete habitat that in turn would reduce myxozoan parasitic infections of salmonids (see section 3.4.3.2, *Effects on Diseases Affecting Salmon and Steelhead*).

A.2.5 Toxic Algae/microcystin

Comment: One commenter noted that a study of Iron Gate and Copco No. 1 Reservoirs found that there were no health consequences were experienced by people recreating on the lakes, and in over one hundred years of dams in place not a single case of toxicity was ever reported to the regional health department that originated from either the lakes or the river. Another commenter stated there have been no fish die-offs from blue-green algae blooms within the lakes, nor “toxic” impacts to birds and animals who inhabit the shoreline. Several commenters believed that warning signs posted around Copco No. 1 Reservoir warning to avoid swimming or eating fish due to toxic algae were a scare tactic designed to reduce support for retaining the dams.

Response: Some blue-green algae species (e.g., *Anabaena flos-aquae* and *Microcystis aeruginosa*) produce algal toxins (e.g., microcystin) that can reach levels that are harmful to humans, fish, and mammals (see section 3.3.3.4, *Microcystin*). Blooms of *Microcystis aeruginosa* currently occur seasonally each year resulting in microcystin attain levels determined to have the potential to affect human health in Copco No. 1 and Iron Gate Reservoirs and the Lower Klamath River. We have not located any documentation of microcystin-related adverse health effects in humans or animals that are specifically associated with the project reservoirs. However, the lack of such information does not diminish the risks that are associated with contact with or consumption of water and/or aquatic organisms (e.g., fish and mussels) with high microcystin concentrations.

A.2.6 Effects of Sediment Movement and Suspended Sediment

Comment: Numerous commenters were concerned about the potential adverse effects of sediment movement (including high levels of suspended sediment and toxins in sediments) on downstream biota, property, and navigation. Siskiyou County commented that impacts from downstream sedimentation could last for years, and the suspended

sediments analysis in the EIS should assess the worst-case scenario and possible negative impacts to salmonids (steelhead, Chinook salmon, and coho salmon) and other riverine and estuarine species. Representative LaMalfa noted that Interior and NMFS's liability report (Camp Dresser & McKee, Inc., 2008) identifies seven additional unquantifiable liabilities associated with the sediment behind J.C. Boyle, Copco No. 1, and Iron Gate Dams, and that the complete cleanup of this sediment was estimated to cost more than \$4 billion. PCFFA noted that this report and cost estimate was prepared prior to multiple studies being conducted that show there are no significant concerns about toxic sediment problems in any of the reservoirs, as indicated in a letter from the U.S. Environmental Protection Agency (EPA) dated November 4, 2015 (included as Attachment A to PCFFA's comment letter). PCFFA also noted that EPA's letter also states that in general, detections of potential toxic chemicals in sediment core samples were generally within the range of natural background levels and were all well below the range of significant concern for human health. PCFFA also noted that Interior and California DFG's 2012 EIS/EIR concluded that the dams trap and hold coarse sediments that would normally be recruited to the river to provide good spawning and rearing habitat, thus impoverishing natural spawning and rearing gravel recruitment as far downriver as 50 miles below Iron Gate Dam.

Response: Drawdown of the reservoirs and dam removal would result in the suspension and mobilization of fine sediments from the reservoirs, which would cause elevated suspended sediment concentrations in the hydroelectric reach and the Lower Klamath River and some deposition of fine sediment in and adjacent to the river channel and in the Klamath River Estuary. Increased sediment loads for a short period of time would have adverse effects on anadromous fish below the project. The proposed action would have effects of contaminants (chemicals of potential concern) ranging from no adverse effect from long-term exposure to the sediment deposits on the reservoir terrace and/or riverbank on terrestrial biota to minor or limited effects from short-term exposure to reservoir sediments flushed downstream (see section 3.3.3.1, *Suspended Sediment and Contaminants*). This supports comments by PCFFA's comments and addresses LaMalfa concerns. For a discussion of reservoir drawdowns, sediment evacuation, sediment concentrations, contaminants, and flows, within the hydroelectric reach and downstream of Iron Gate Dam in the Klamath River to the estuary, reference is made to section 3.1.3.2, *Effects from Mobilization of Sediments*; section 3.1.3.3, *Effects of Coastal Sediment Deposition on Navigation*; section 3.3.3.1, *Suspended Sediment and Contaminants*; section 3.2.3.1, *Effects of Project Deconstruction Activities on Water Quantity*; and section 3.4.3.3, *Effects of Changes in Suspended Sediment Concentrations on Aquatic Resources*.

Comment: PCFFA noted that Interior and California DFG's 2012 EIS/EIR concludes that the dams trap and hold coarse sediments that would normally be recruited to the river to provide good spawning and rearing habitat, thus impoverishing natural spawning and rearing gravel recruitment as far downriver as 50 miles below Iron Gate Dam.

Response: Dam-released sediment and resupply would increase the proportion of sand in the channel bed and decrease median bed substrate size, which would have short-term, adverse effects on the spawning habitat for anadromous fish downstream of Iron Gate Dam. Long-term effects in the river channel of this reach would be beneficial for the aquatic ecosystem as natural sediment transport processes are restored.

A.2.7 Urgency for Action to Protect Salmon Runs

Comment: The Yurok Tribe, Karuk Tribe, and numerous agencies, NGOs, and individuals expressed an urgent need for rapid implementation of dam removal to protect Klamath River salmon runs from deteriorating water quality conditions and the increased incidence of diseases affecting salmon and steelhead. The Yurok Tribe requested that FERC enlist outside services to help compile and use the existing record to expedite analysis and complete a final EIS no later than April 2022 to enable preparatory work necessary for reservoir drawdown. The Yurok Tribe stated that another year of delay could lead to the tipping point beyond which we can save Klamath River salmon, and states that in 2021, an entire year-class of salmon was lost to *C. shasta*. Numerous commenters urged FERC to move quickly to approve the proposed action to protect salmon runs by: (1) providing access to additional habitat, including cold-water springs (many of which are currently inundated by the reservoirs), that will provide access to areas of thermal refuge and reduce crowding of salmon that contributes to disease outbreaks; and (2) improving water quality conditions, including reducing the incidence of toxic algae blooms. These commenters also noted that: (1) restoring the salmon runs and water quality is of great cultural importance to the Tribal communities that reside along the Lower Klamath River; (2) retaining the dams would be more costly to ratepayers than removing them; (3) the proposed action has been through multiple previous environmental reviews; (4) several rounds of scoping meetings have been conducted to identify the issues that need to be considered; (5) the effects of dam removal have been evaluated in dozens of studies, including many that have been peer-reviewed; and (6) KRRC has worked closely with stakeholders to develop management plans to minimize adverse environmental impacts.

Response: Our analysis of effects of the proposed action on salmon and steelhead fisheries is provided in section 3.4, *Aquatic Resources*. We agree that the salmon fishery is at risk of collapse due to the ongoing trend of increasing water temperatures and other conditions that cause regular fish disease outbreaks inflicting substantial mortality to juvenile and adult salmon in the Lower Klamath River. The proposed action would reduce fish disease in the Lower Klamath River by: (1) providing access to additional cool-water refuges for salmonids; (2) reducing crowding of juvenile and adult salmon in the Lower Klamath River through access to additional suitable habitat and reduced reliance on hatchery production; (3) eliminating phytoplankton produced in the project reservoirs as a food source for the polychaete host of the myxozoan parasite *C. shasta* and *P. minibicornis* that infect and cause regular substantial salmonid mortality; and (4) restoring sediment transport processes in the Lower Klamath River that would reduce

algal mats that provide favorable polychaete habitat that in turn would reduce myxozoan parasitic infections of salmonids (see section 3.4.3.2, *Effects on Diseases Affecting Salmon and Steelhead*).

A.2.8 Upstream Limit of Anadromous Fish Distribution Prior to Construction of Copco No. 1 Dam

Comment: Numerous commenters cited evidence of a lava reef near the site where Copco No. 1 Dam was constructed that may have prevented salmon from accessing upstream habitat. One commenter stated that the Siskiyou County Water Users' Association conducted sonar depth soundings to confirm the presence of a lava reef in Copco No. 1 Reservoir near the Copco No. 1 Dam, and some commenters believed the reef would be a barrier if the reservoir were drained. Representative LaMalfa commented that when J.C. Boyle began work on the Copco No. 1 Dam, he made several notes that contain a diagram of the proposed construction which depicts a 31-foot-tall basalt dam roughly one-fifth mile upstream from the current site of Copco No. 1 Dam. Boyle also noted the geological evidence that an ancient 130-foot-tall andesite dam once blocked the river near this site.

PCFFA stated that geologists have long been aware that a natural lava reef did indeed partially block the Klamath River and form a broad lake in the Upper Klamath Basin about 140,000 years ago but was hydrologically long-gone through natural erosion by the time the Copco No. 1 Dam was built in 1918. One commenter summarized the findings of reports that reviewed historical documentation of the pre-dam distribution of salmon, most of which indicate there were abundant runs of salmon beyond Iron Gate Dam as far as the Sprague River above Upper Klamath Lake.

One commenter noted that an archaeological study, often cited as proof of anadromous fish presence in the Upper Klamath River Basin, found only 8 likely bones (otoliths) from anadromous fish out of 15,000 fish bones, and that these otoliths likely came from salmon traded from downriver Tribes. He further noted that a report prepared in 1851 stated that the Klamath's coastal Yurok and Hoopa Tribes routinely traded preserved salmon with the heads (where the otolith bones are located) intact. Two commenters noted that the speciation of redband trout in the upper basin indicates that the upstream distribution of anadromous fish was limited historically.

Response: While there is some concern that a historical lava ledge near the Copco No. 1 Dam site may have prevented anadromous fish from accessing upstream habitat, there are numerous credible accounts of salmon reaching Upper Klamath Lake and its tributaries prior to dam construction. In addition, based on our review of available information, it appears that Boyle (1913 and 1976) did not provide any definitive indication that a 31-foot-tall lava dam (or similar barrier) existed around the time of construction of Copco No. 1 Dam. Regardless, the measures included in KRRC's Fish Presence Monitoring Plan would aid in the identification any historical barriers in the reach, and if present, aid in the identification of actions needed to remedy any human-

made impediments or impediments caused by the proposed action to anadromous fish migration (see section 3.4.3.7, *Effects on Fish Habitat Access*).

A.2.9 Effects on ESA-listed Suckers

Comment: Several commenters noted the adverse effects of the proposed action on the populations of ESA-listed suckers in the reservoirs. Siskiyou County stated that the sucker populations downstream of Keno Dam should be denoted as metapopulations that have broken off from the main populations upstream to form new groups in the lower river, thus expanding the range of the endangered populations.

Response: Suckers residing in the hydroelectric reach are not likely to be self-sustaining because they are not known to spawn in the hydroelectric reach reservoirs or anywhere downstream of Upper Klamath Lake and are considered “sink populations²” by FWS. In addition, there is little potential for interaction with upstream populations. Therefore, these sucker populations cannot be considered part of the larger metapopulation and do not substantially contribute to the achievement of conservation goals or recovery.

A.2.10 Terrestrial Species

Comment: The Wildlands Network stated that the Klamath-Siskiyou ecoregion is home to many large mammals (mule deer, pronghorn, elk, bobcats, badgers, etc.) that often suffer from habitat fragmentation due to road construction that does not incorporate wildlife migration features. As a result, FERC should analyze terrestrial species connectivity and migration issues as part of the Lower Klamath Project’s EIS, and ideally, terrestrial wildlife migration considerations and crossing infrastructure should be incorporated into the road and culvert construction plans in the final, FERC-Approved decommissioning plan. FWS recommended that the EIS evaluate effects to bald and golden eagles, including impacts as considered under the Bald and Golden Eagle Protection Act.

Response: Adverse effects of large mammals that suffer from the effects of habitat fragmentation due to road construction that are not related to the proposed action were not considered because there is no federal nexus to the proposed action. Moreover, once decommissioning is completed and the license surrendered, FERC has no jurisdiction over former FERC project lands. Conversion of the reservoirs to river reaches may facilitate crossings of the reconstituted Klamath River by large mammals that could increase species’ population connectivity and facilitate migration. Thus, the proposed action may benefit large mammals that are affected by habitat fragmentation by

² Sink populations exist in low quality habitat patches that would not be able to support a population in isolation. Without the contribution of individuals from a source population, they would become extinct.

facilitating crossing former reservoir reaches. KRRC is in the process of developing an Eagle Conservation Plan and Eagle permit, in accordance with the Bald and Golden Eagle Protection Act and in consultation with FWS (see section 3.5.3.9, subsection *Bald and Golden Eagles*).

A.2.11 Killer Whales

Comment: The Orca Salmon Alliance stated that the expected recovery of Klamath Chinook salmon 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.

Response: Comment noted (see also see section 3.6.3, subsection *Southern Resident DPS Killer Whale*).

A.2.12 Revegetation and Landscape Restoration

Comment: Several commenters critiqued aspects of the plans for revegetating lands included in the Reservoir Area Management Plan. Some commenters expressed concern that failure of revegetation efforts could lead to dust storms and exposure to toxins contained in the reservoir sediments. One commenter questioned how the native seeds and plants planned for restoration would survive without water given the drought situation, and comments that local residents were not consulted during preparation of mitigation plans.

Response: KRRC's proposed seeding would result in a substantial reduction of bare ground within one growing season. Seeding would be expected to stabilize soils and prevent soil erosion and nuisance dust. To determine revegetation success, KRRC's Reservoir Area Management Plan (RAMP) includes monitoring and adaptive management measures, including reseeding and additional irrigation, mulching, composting, and fencing, provide reasonable measures that would mitigate the most likely causes of poor seed germination and plant establishment (see section 3.5.3.1, *Restoration of Vegetation Within Reservoir Footprints*).

Comment: The Bureau of Land Management (BLM) stated that given the outstanding scenic, biological, cultural, and recreational resources existing in the Upper Klamath River canyon, all BLM lands within the FERC project boundary should be reasonably restored to biotic and topographic conditions reflective of the adjacent canyon conditions. BLM encouraged KRRC to integrate the J.C. Boyle scour hole into the restoration plan and revegetate this site with native plants, and states that restoration efforts for the canal demolition area should include a planting plan with associated metrics for plant establishment and survival, and that the site be contoured as much as possible to reflect the original grade.

Response: KRRC's RAMP includes grading to recontour disturbed (deconstruction) areas to match neighboring conditions, installing sediment and erosion control BMPs (included in appendix C of the RAMP), and revegetating with upland seed mixes. The plan includes specific measures to be used at concrete disposal sites, staging areas and temporary access roads, hydropower demolition areas, the J.C. Boyle canal, J.C. Boyle scour hole, and project recreational areas (see section 3.5.3.2, *Restoration of Vegetation in Disturbed Uplands*).

A.2.13 Effects on Reservoir-based Recreation, Aesthetics, and Existing Ecosystem

Comment: Numerous commenters expressed concern that the proposed action would alter the natural beauty and nature-related activities, particularly the natural serenity of the lake settings behind the reservoir. Several commenters expressed concern over the loss of lake habitat and associated flora, fish species, waterfowl, birds, and animals. Some commenters noted the number of bird species that are sighted near the reservoirs and the importance of the reservoirs as resting areas for migratory birds. Several commenters noted that the Klamath River above Copco No. 1 Reservoir is considered a blue-ribbon trout stream that could be adversely affected by the introduction of salmon.

Response: Reservoir areas that would be converted to flowing river segments would lose open water and lake vistas in exchange for more natural river, canyon, and valley vistas that may be interpreted by the viewer as beneficial or adverse, depending on their preference (see section 3.9, *Aesthetics*).

Loss of the reservoirs would provide significant, long-term, adverse effects on some lentic-dependent species due to loss in habitat area. With the presence of similar lentic habitat in the region, many affected species would be able to relocate to suitable habitat near the project area. Over the long-term, restoration of a free-flowing Klamath River would continue to provide habitat for many of these species. Furthermore, restoration of the reservoir footprints to upland habitat would also provide additional habitat for upland species including terrestrial reptiles, small mammals, big game species, and upland nesting birds (see section 3.5.3.6, *Wildlife Habitat*; section 3.5.3.7, *Reptiles and Amphibians*; and section 3.5.3.8, *Nesting Birds*).

Under the proposed action, increased abundance of anadromous salmon species could adversely affect trout through competition for food and habitat. However, long-term, beneficial effects on the redband trout population would be likely due to increased habitat quality and quantity that benefits both redband trout and anadromous salmon species (California Water Board, 2018). Existing redband trout and colonizing anadromous steelhead are expected to co-exist, as they do in other watersheds, although there may be shifts in abundance related to competition for space and food (Interior and California DFG, 2012).

Comment: Many commenters noted the impact of the proposed action to reservoir-based recreation activities, and many commenters specifically mentioned the quality of

fishing in Copco No. 1 Reservoir. Siskiyou County recommended that this impact be mitigated, and noted that other lakes and reservoirs in the region that are listed in the California Water Board's EIR as being replacement reservoir-based recreation facilities are located in Oregon, and that reaching these facilities would require passing through Siskiyou Summit, which they state is notably challenging with a trailer.

Response: Table 3.7-5 of the final EIS includes a list of other lakes and reservoirs in the region (both Oregon and California) that provide similar reservoir-based recreational opportunities. Many of these lakes and reservoirs have low to moderate recreation use, provide fishing opportunities, and could accommodate additional recreation users within the capacity of their facilities. Lakes and reservoirs in this table within California include Medicine Lake, Trinity Lake, Whiskeytown Lake, and Shasta Lake. Other reservoirs in California within regional proximity include Lake Siskiyou, Juanita Reservoir, and McCloud Reservoir. These additional three reservoirs would also provide similar reservoir recreation and fishing opportunities; however, their existing level of use or capacity to accommodate additional users is not available.

Therefore, the loss of the project reservoirs under the proposed action would not result in long-term loss in regional lake-based recreational activities that would affect a large area or a substantial number of people. Furthermore, KRRC's Recreation Facilities Plan proposes to retain and enhance most existing river access facilities and transfer project lands to the States of Oregon and California that would potentially allow for the development of additional access points for future river-based recreation opportunities. Therefore, the proposed action would be unlikely to result in a loss of rare or unique recreational facilities affecting a large area or substantial number of people (California Water Board, 2020). In addition, in its comments on the draft EIS, KRRC agreed to modify the Recreation Facilities Plan to construct river access within the existing reservoir footprints of J.C. Boyle and Copco Reservoirs. KRRC will also modify the plan, in cooperation with the States of Oregon and California, to specify an approach to secure funding for the construction of additional access sites.

A.2.14 Effects on Wild and Scenic River

Comment: Some commenters suggested that the proposed action would adversely affect a designated Wild and Scenic River. The National Park Service (NPS) and BLM noted that in 2012, BLM, NPS, and the U.S. Department of Agriculture, Forest Service (Forest Service) developed a preliminary section 7 determination in response to the draft EIS that was developed by Reclamation under the 2010 KHSA. The preliminary section 7 determination found the proposed action (removal of the lower four Lower Klamath Project dams) was consistent with the Wild and Scenic Rivers Act. Anadromous fisheries were recognized as an outstandingly remarkable value when the 189-mile-long Lower Klamath River was designated by Congress in 1981 as a Wild and Scenic River. Regarding the surrender application currently pending before FERC, NPS and BLM stated that the agencies intend to make a final determination as to Wild and Scenic River Act consistency upon review of KRRC's refined design proposals and this EIS. A report

entitled *Whitewater Recreation on the Upper Klamath River, Planning and Priorities for Dam Removal*, (American Whitewater and UKOA, 2019) attached to UKOA's comments, states that "after dam removal, the entire Upper Klamath River below Keno Dam will likely be designated as a National Wild and Scenic River. When combined with the Lower Klamath River, which was designated in 1981, the entire 234 miles of the Klamath River—from Keno Dam to the Pacific Ocean—would become the longest Wild and Scenic River in the lower 48 states and state that this is sure to spark more interest in boating on this river."

Response: Comment noted (also see section 3.7.2.1, subsection *Wild and Scenic Rivers*).

A.2.15 Effects on River-based Recreation

Comment: The Upper Klamath Outfitters Association, American Whitewater, and several individuals commented that dam removal would increase whitewater boating opportunities, and they support dam removal. Several commenters noted the need to develop timely river access and boat launching sites and to remove construction spoil and vegetation from the reach between Copco No. 2 and Iron Gate Dam, which BLM also recommended. The Upper Klamath Outfitters Association noted the need for continued access to the current whitewater run below J.C. Boyle Dam for as long as possible during deconstruction activities and stated that it is critical to perform channel restoration before restoring natural flows. Siskiyou County noted that the proposed action includes the addition of several new river-based recreation opportunities, including river access points, campsites, day use amenities, and trails, but that KRRC has not identified how these facilities will be maintained. American Whitewater described recreation mitigation required in previous dam removals, as well as detailed comments on the recreation plan and whitewater boating study, which the Upper Klamath Outfitters Association fully supports.

Response: River recreation under the proposed action would be expected to change significantly in reservoir and bypassed reaches, and more moderately in other reaches (from J.C. Boyle Dam to Copco No. 1 Reservoir), but the overall result would be beneficial to recreational river users. KRRC developed conceptual designs for new river access facilities and supports their development. As noted above, we recommend that KRRC revise the Recreation Facilities Plan to clarify whether KRRC would fund construction and operation of the new river access facilities, and that, at minimum, KRRC should construct access facilities that would be located in areas that would be affected by land disturbance during implementation of the proposed action. We also recommend that the plan be revised to remove in-channel vegetation to address stakeholder concerns regarding hazardous tree encroachment into the Copco No. 2 bypassed reach, as well as remaining construction material that contributes to hazardous boating conditions at Sidecast Slide (see section 3.7.3.2, *River Recreation*).

A.2.16 California National Historic Trail

Comment: NPS noted that J.C. Boyle Dam is located approximately 1.75 miles from the designated alignment of the California National Historic Trail. The trail alignment crosses the northwestern section of the J.C. Boyle Reservoir. There is one high potential site, the Lower Klamath River Crossing, and one high potential route segment, the Cascade Mountain Crossing of the Applegate Trail that are located approximately 2 miles north of the dam.

Response: The proposed action would return the J.C. Boyle Reservoir to a riverine state, a landscape condition that is more similar to what existed when the trail was being used in the early to mid-1800s by settlers emigrating from the central Midwest to southern Oregon (see section 3.10.2.2, *Cultural History Overview*; section 3.9, *Aesthetics*; and section 3.8.3.3, *Specially Designated Areas*).

A.2.17 Effects on Fire Fighting

Comment: Numerous parties commented that the Fire Management Plan (FMP) is not sufficient to avoid increased risk of damage by wildfires due to reduced access to water for firefighting and the loss of fire breaks that the reservoirs provide. Several commenters stated that the town of Ashland was saved from wildfire by water provided from the reservoirs, and Kathy and Dan McGuigan stated that CAL FIRE dipped at least 500 loads and prevented their house and property from being burned in the Klamathon fire in 2018. Representative LaMalfa commented that without the reservoir behind Copco No. 1 Dam, air attack craft would be required to fly farther for water and increase overall resources needed from CAL FIRE or the Forest Service. Several commenters provided detailed critiques of specific elements in the FMP, including letters filed on August 9, 2021, by Loy and John Beardsmore and the Copco Lake Fire Protection District, August 18, 2021, by Chrissie Reynolds, and August 19, 2021, by Siskiyou County. Several commenters noted that loss of the reservoirs would increase the cost and reduce the availability of fire insurance. One commenter noted that some of the most effective aircraft (specifically the Canadian Otter) used for firefighting need a large body of water for refilling. Siskiyou County stated that the FMP should be revised to include permanent water sources (such as dip tanks) strategically placed along the Klamath River corridor to support aircraft firefighting activities. One commenter questioned whether increased use of chemicals as a fire-suppression agent due to elimination of lake water sources would be worse for salmon.

Response: KRRC's FMP would provide improvements for early detection of wildfires, measures to assist property owners with improving defensible space around home sites, and measures to provide additional water source locations for ground-based and aerial fire suppression efforts. Access to open water bodies for water scooping planes would be reduced, but other bodies of water remain available in the vicinity, and other types of tanker planes and helicopters are also used for aerial firefighting. Access to water for ground-based water trucks would be improved with the construction of new

river and stream access sites, and early detection of new fires would be improved with the installation of additional MDS sites (see section 3.8.3.2, *Fire Management Plan*). The Forest Service concurred with CAL FIRE's assessment that the FMP is more than adequate. The Forest Service noted that while the plan would affect some water dipping sites that have been used during prior fire suppression efforts, it does not anticipate the FMP would adversely affect the ability to respond to fires quickly and effectively. Please also see appendix L, section L.11, *Effects on Fire Suppression*.

A.2.18 Effects on Emergency Response

Comment: Numerous commenters stated that increased traffic during deconstruction would affect travel times for local residents for a period of one to two years and would affect emergency response times for a population that includes many elderly residents. One commenter reported that Ager Beswick Road is the only route out of the canyon that can handle meaningful traffic, and that use of that road by construction equipment would severely affect emergency response time.

Response: KRRC's Oregon and California Traffic Management Plans, subplans of its proposed Construction Management Plan, identify measures to minimize the effects of short-term construction-related impacts, prevent incidents, ensure preparedness, and maintain consistency with all applicable traffic, highway, and roadway regulations in Siskiyou County, California and Klamath County, Oregon. The road and traffic measures described in KRRC's Traffic Management Plans for Oregon and California address increased traffic levels on existing public roads. Existing road deficiencies for heavy truck traffic and weights have been identified, with improvements proposed to minimize the effect to local roads and community traffic (see section 3.8.3.4, *Road Management and Traffic*). These measures would avoid increases in emergency vehicle response times associated with construction traffic.

A.2.19 Effects on Property Values and Mitigation of Impacts to Properties on Copco No. 1 Reservoir

Comment: Numerous commenters expressed concern about effects on property values, and several indicated that property valuations in the vicinity of the dams have already decreased with the mere prospect of dam removal. Representative LaMalfa stated that County officials have informed him that tax revenues would decrease between \$600,000 and \$800,000 per year, and effectively require at least one school district to be shut down. Several commenters noted that there is uncertainty about what types of impacts would be compensated for through the proposed Local Impacts Mitigation Fund. Siskiyou County asked that the EIS include a professional engineering analysis of rim stability and apply any necessary mitigation measures. One commenter was concerned about cracked foundations, windows, or doors due to settling.

Response: Under the proposed action, the regional economy would be affected in the short term by construction activities associated with dam removal and restoration actions, and in the long-term by effects on property values, tax revenue, electric rates,

commercial and recreational fishing, subsistence fishing, reservoir and riverine recreation, and tourism. Property owners near the reservoirs could also be economically affected by effects on wells, slope instability, susceptibility to damage from wildfires, and property values. KRRC proposes several measures to address these potential effects (see section 3.2.3.4, *Short- and Long-term Effects on Groundwater Supply Wells*; section 3.1.3.1, *Effects of Bank Sloughing Caused by Reservoir Drawdown*; and section 3.8.3.2, *Fire Management Plan*). In the long-term, river restoration, the development of trails within the restored areas, and the reestablishment of salmon and steelhead runs through the hydroelectric reach would at least partially compensate for the loss of lake frontage to property values, but the magnitude of this effect could not be quantified (see section 3.12, *Socioeconomics*). Also, please see appendix L, section L.14, *Property Values, Damages, and Tax Revenues*.

Comment: PCFFA commented that the KRRC's restoration plans for formerly inundated lands (including replanting of natural vegetation, with trails, and new boat ramps) should make these lands more valuable for landowners to have nearby as recreational lands, and other commenters note that having a river with salmon and steelhead nearby should increase property values. One commenter noted that these property owners have the option of adapting to the changes to their own benefit (e.g., by building alternative dwelling unit(s) on their land to rent via an online vacation rental service).

Response: See response to previous comment.

A.2.20 Environmental Justice

Comment: Siskiyou County stated that the effects on property values should be evaluated as impacts to environmental justice communities and that the project meet the policies of Executive Order 13985, Advancing Racial Equity and Support for Underserved Communities through the Federal Government. One commenter noted that local, disadvantaged populations (Hmong, among others) face the loss of their lake fishery food sources. One commenter noted that removal of this food source in favor of a different species that is more expensive and difficult to catch could be in contradiction to civil rights regulations. One commenter noted that most of the hundreds of people living in the communities around and near Copco No. 1 and Iron Gate Reservoirs are retired and elderly, and barely getting-by on social security. Many commenters stated that input from local residents (who would be the most impacted by the proposed action) has not been solicited sufficiently, and that votes by the citizens of Siskiyou and Klamath counties opposing dam removal have been ignored. One commenter noted that the expanse of open water provided by the reservoirs benefits residents by keeping the air cooler.

Response: The proposed action would have a disproportionately high and adverse effect on environmental justice populations (see section 3.13, *Environmental Justice*). However, the effects associated with the proposed action would mostly be mitigated, and

beneficial effects associated with dam removal would outweigh the long-term, adverse effects associated with the proposed action. To reduce potential adverse effects on environmental justice populations, the proposed action with staff modifications would require KRRC to revise the Sediment Deposit Remediation Plan, Water Supply Management Plan, Slope Stability Monitoring Plan, and any other plans that require landowners to contact KRRC for mitigation services, to include a required public outreach component that specifically addresses communication with environmental justice communities, with consideration that public outreach to environmental justice communities can be complicated by limited access to on-line resources, language barriers, and potential distrust of government or corporate entities. The proposed action with staff modifications would also require KRRC to include signs in Spanish and Hmong at recreational sites to increase potential for non-English speakers to access the information.

A.2.21 Noise and Air Quality

Comment: Numerous commenters expressed concern about the effects of construction activity on noise levels and air quality during dam deconstruction and restoration work, and the potential for dust storms if revegetation efforts are not successful.

Response: The proposed action includes measures proposed in the Noise and Vibration Control Plan that would minimize short-term outdoor noise impacts (see section 3.15, *Air Quality and Noise*). Several mitigation measures are proposed to control fugitive dust and exhaust emissions. Reference is made to A.2.12 regarding proposed revegetation measures in the reservoir footprint that would eliminate the potential for dust storms associated with the proposed action.

A.2.22 Greenhouse Gas Emissions and Electricity Supply

Comment: Numerous commenters stated that removing the dams would affect the availability of carbon-free energy at a time when the need for electricity is growing due to the increased use of electric cars. One commenter stated that it seems prudent to take advantage of and refurbish the energy-producing infrastructure already in place at the dams to help meet increasing demands. Another commenter stated that their region wants the hydropower generated by the Klamath River dams, which provide 70,000 homes with green renewable power.

Response: PacifiCorp plans to increase the percentage of renewable energy sources in its power mix to comply with the California Renewable Portfolio Standard at a rate that would replace the loss of renewable energy generated by the Lower Klamath Project (see section 3.15.3.3, subsection *Decommissioning of Renewable Power Generation*).

Comment: PCFFA contended that it would cost PacifiCorp ratepayers far more to retrofit and relicense these aging and now economically obsolete dams than to replace their small amount of power from other, newer and much more cost-efficient resources.

Response: Mandatory FERC relicense conditions of the Lower Klamath Project would cost in excess of \$400 million (2010 dollars) in capital expenses and \$60 million annually in operating expenses. PacifiCorp also reported that these costs are uncertain and uncapped, and that FERC relicensing represents a substantial financial risk to its customers (Interior and NMFS, 2013).

A.2.23 Construction Costs and Cost/Benefit Analysis

Comment: Many commenters stated that the estimated construction costs are now long out of date and that costs are likely to escalate and exceed available funding. Some commenters noted that construction costs and delays have increased due to the Covid-19 pandemic. Other commenters indicated that lawsuits would result in additional costs. Several commenters stated that money provided by California and Oregon is better spent helping PacifiCorp fund relicensing requirements and upgrade or recondition their equipment and lake infrastructure and improve downstream habitat. Some commenters stated that PacifiCorp should bear the costs of restoring fish passage and improving water quality, while others argued that ratepayers and taxpayers should not be obligated to pay for dam removal. Other commenters suggested that it would be cheaper to install “Whooshh” tubes to provide fish passage than remove the dams.

Response: In the transfer order, the Commission found that with KRRC and the states of Oregon and California as co-licensees, the co-licensees have the ability, financially and otherwise, to undertake dam removal. The states bring additional legal and technical expertise and their assurance that there will be sufficient funding to complete the project. PacifiCorp has committed to providing additional funding, if necessary, through the contingency fund and partially covering any cost overruns. The Independent Board of Consultants has reviewed the cost estimates and risk analyses and expressed its satisfaction that the analyses reflect that efforts were made to minimize costs as appropriate and that the cost estimates reflect an acceptable risk. Based on the commitments of these parties, and the review of the Independent Board of Consultants, the required funds should be available and adequate to complete the project as proposed.

In response to the concern that the cost of the project may be affected by Covid-19-related cost increases, the project is mostly a demolition project, so any potential Covid-19-related material shortages or delays are not expected to have a significant adverse effect on costs, and as stated above, KRRC and the states of Oregon and California remain committed to completing the project even if the final cost exceeds currently available funds.

In addition, prior analyses suggests that the costs of operating the dams with fish passage and other mitigation measures would exceed the costs of removing them. The Klamath Dam Removal Overview Report (Interior and NMFS, 2013) reports that, based

on PacifiCorp's analyses, capital costs of providing fish passage at the four dams (in 2010 dollars) would be in excess of \$400 million, and annual operating and maintenance costs would be in excess of \$60 million (see appendix A, A.1, *Alternatives Submitted During Scoping*, A.1.1, *Provide Fish Passage with Dams in Place*). Escalated to 2021, this would be \$515 million in capital costs, and annual operating and maintenance costs in excess of \$77 million.

Comment: One commenter asked how many salmon can reasonably be expected to be produced by the project and how many salmon would be needed to balance the cost/benefit of the project. Several commenters including Representative LaMalfa cited studies that indicate that salmon runs throughout the Pacific Northwest have been declining for many years, including many that use rivers that are not affected by dams. Other commenters suggested that overfishing, predation by sea lions, or ocean conditions including the Pacific Decadal Oscillation may be the primary factors limiting salmon runs and note that salmon runs in the Klamath River had declined substantially before the dams were constructed. One commenter noted that much of the available spawning habitat in tributaries to the lower river is underutilized, suggesting that providing access to additional upstream habitat would provide limited benefit. The commenter also noted that these lower tributaries, which are subject to coastal influence and have greater precipitation, provide far superior salmon habitat than exists upstream of Iron Gate Dam. They further stated that pre-dam habitat in the Upper Klamath River was subject to high temperatures and poor water quality due to high phosphorous content, noting that the first known explorations to the Upper Klamath River Basin in the 1820s by Ogden related degraded (toxic) stagnant marsh waters and much difficulty finding potable water for them and their animals. They further stated that flows often went subsurface in late summer prior to project storage and Lost River inputs. One commenter noted that water is not available in the same quantities as it was in pre-agricultural California and does not appear to be sufficient to support the numbers of salmon that returned to the river historically.

Response: Keeping the four dams in place would not meet the need for timely action to address deteriorating water quality and increased salmon disease incidence, which we conclude is necessary to ensure the long-term viability of the Klamath River salmon runs. The no-action alternative would not address many other impacts of the project, including the blockage from access to cold-water habitat that could provide refuge from increasing water temperatures, sediment starvation of the reach downstream of Iron Gate Dam, nuisance and/or noxious blue-green algae blooms in the reservoirs and the transport of blue-green algae from the reservoirs into the Klamath River, and the contribution of these effects to fish disease (see appendix A, A.1. *Alternatives Submitted During Scoping*, A.1.1, *Provide Fish Passage with Dams in Place*).

Comment: PCFFA noted that removing the dams will restore access to cold-water springs that, prior to inundation by the reservoirs, provided refugia for cold-water fish such as salmon during the summer. PCFFA also stated that the dams create ideal environmental conditions downriver of Iron Gate Dam for disease "hot spots" for the

pervasive spread of the myxosporean fish parasite *C. shasta*, which in recent years has devastated the juvenile salmon populations. PCFFA also noted that the West Coast's salmon fisheries all the way from Monterey, California, to the Oregon-Washington border are often closed or severely limited, based on "weak stock management" constraints often triggered by the depressed salmon runs of the Klamath River, which typically migrate and intermingle with other more abundant salmon stocks within those regions. PCFFA commented that all too often the socioeconomic and environmental impacts of the current status quo, including major and ongoing harms, are ignored or tacitly unaccounted for, even when they consist of major environmental degradation causing severe economic deficits. They stated that a true cost vs. benefits analysis must therefore consider all the costs as well as all the benefits of all options—including continuing the status quo. They included with their comment letter two guidance documents which they stated were prepared by the foremost natural resource economists in the country, on how to account for all the benefits as well as deficits with regard to salmon restoration efforts.

Response: Dam removal and implementation of KRRC's proposed plans would improve fish populations by increasing access to historical habitat, restoring mainstem habitat, and by improving key biological and physical factors that heavily influence fish populations (e.g., sediment transport, water quality, fish disease, toxic algal blooms, and water temperature). Despite some short-term mortalities associated with project deconstruction and suspended sediment releases, the likelihood of the potential for persistence of naturally produced salmon, steelhead trout and other native anadromous fish species is anticipated to improve under the proposed action (see section 3.4.3.3, *Effects of Changes in Suspended Sediment Concentrations on Aquatic Resources*, and section 3.4.3.9, *Effects on Commercial, Recreational and Tribal Fisheries*).

A.2.24 Socioeconomics

Comment: Del Norte County urged that the area of analysis include the Crescent City Harbor (due to potential effects of sediment deposition on boat ramps and Crescent City Harbor); socioeconomic impacts to the county's fishing and tourism; and analysis of whether "short-term" physical impacts could have long-term socioeconomic impacts on its small, fragile economy.

Response: Effects of the proposed action on Crescent City Harbor are considered in section 3.1.3.3, *Effects of Coastal Sediment Deposition on Navigation*. Some of the sediment released by the drawdown of the reservoirs may ultimately be deposited in Crescent City Harbor. KRRC proposes to mitigate the increase in dredging costs based on a study monitoring nearshore currents to estimate the amount of sediment that would be deposited in the harbor as a result of the proposed action. We suggest that developing an estimate of the potential contribution of sediment from the proposed action to Crescent City Harbor and the boat ramps using best available existing information and reasonable assumptions, could assist the involved parties in reaching an agreement on an appropriate mitigation approach.

Comment: Several commenters noted that the potential costs and benefits to local communities, including agricultural and ranching interests, have not been addressed. One commenter was concerned that any reduction in water supply would have severe effects on the people of southern Oregon who have invested their lives (and generations) building homes, businesses, ranches, and farms.

Response: Under the proposed action, construction activities associated with dam removal and restoration actions would affect the regional economy in the short term, and effects on property values, tax revenue, electric rates, commercial fishing, subsistence fishing, ocean and in-river sport fishing, reservoir and riverine recreation, and tourism would affect the regional economy in the long term. Overall, the proposed action would provide a net economic benefit that would have a long-term, significant, beneficial effect on a county, state, and national level (see section 3.12, *Socioeconomics*). The project reservoirs are not used to store water for consumptive uses, and there are no water users that obtain water directly from the reservoirs. Any effects on downstream facilities used to divert water for consumptive use would be mitigated by measures included in KRRC's California Water Supply Management Plan. Property owners near the reservoirs could also be affected economically by adverse effects on wells, slope instability, and susceptibility to damage from wildfires. Effects on private property would be mitigated or minimized by measures proposed by KRRC to address these potential effects (see section 3.2.3.4, *Short- and Long-term Effects on Groundwater Supply Wells*; section 3.1.3.1, *Effects of Bank Sloughing Caused by Reservoir Drawdown*; and section 3.8.3.2, *Fire Management Plan*).

Comment: Two of the commenters that opposed the project demanded: (1) a cease-and-desist order for all actions pertaining to Klamath River Dams Removal project, (2) an opportunity to examine and challenge validity of all documents, (3) an opportunity to present contradictory evidence without time constraints, and (4) full, open and unbiased public disclosure. They contended that water in dams is not private property, and the government's job is to protect and maintain the dams for the betterment of the people.

Response: The EIS documents the views of governmental agencies, non-governmental organizations, affected Native American Tribes, the public, the license applicants, and Commission staff. It contains staff evaluations of the applicants' proposal and alternatives for surrendering/decommissioning the Lower Klamath Project. Before the Commission decides to issue a license surrender, it will consider all concerns relevant to the public interest.

A.2.25 Cultural and Tribal Resources

Comment: Many commenters noted that restoring the salmon runs and improving water quality are of great cultural importance to the Tribal communities that reside along the Lower Klamath River. BLM and EPA recommended that each alternatives analysis fully account for, and integrate, a Tribal perspective on resource impacts.

Response: The protection and restoration of anadromous fish to historically accessible habitat would benefit local Tribes by providing dietary and economic benefits and the continuance and restoration of cultural practices and traditions related to this resource (see sections 3.11, *Tribal Trust Responsibilities*, and 3.13, *Environmental Justice*). Consulted Tribes included the Hoopa Valley Tribe, Karuk Tribe, Yurok Tribe, Klamath Tribes, Modoc Tribe, Quartz Valley Indian Community of the Quartz Valley Reservation of California, Resighini Rancheria, Confederated Tribes of Siletz Indians of Oregon, Trinidad Rancheria, Confederated Tribes of the Warm Springs Reservation of Oregon, Confederated Tribes of the Grand Ronde Community of Oregon, Cow Creek Tribes of the Warm Springs Reservation of Oregon, Elk Valley Rancheria (California), Pit River Tribe (California), and the Tolowa Dee-Ni Nation (see section 1.5, *Tribal Consultation*). Perspectives of Tribes on the proposed action are summarized in appendix K of the EIS. In general, consultation with the participating Tribes indicates strong support from most Tribes in the project area for the removal of the project dams with the consensus being that removal is necessary to ensure the survival of salmon and steelhead and restore anadromous fish habitat and improve water quality in the Lower Klamath River. Commission staff considered this Tribal consultation history as well as other comments received from the Tribes in developing this EIS.

Comment: Many commenters noted that draining the reservoirs would expose many Tribal burial grounds and cultural artifacts to potential looting and vandalism. BLM recommended using electronic surveillance and exclusion barriers at strategic sites of vulnerability to reduce the risk of off-road vehicle damage until the vegetative community is fully established to minimize damage to vegetation and disturbance of cultural resources.

Response: Sites exposed during reservoir drawdown would be the most susceptible to illicit and unauthorized activities. Appendix D of the draft Historic Properties Management Plan (HPMP) provides a Looting and Vandalism Plan that proposes coordination with local law enforcement for crimes occurring on privately held lands. Additionally, a public education program would be developed that informs visitors of the site protection. No electronic surveillance is proposed, but the Looting and Vandalism Plan calls for the restriction of public access during the drawdown and dam removal process. Security measures would also include the on-site presence of security personnel during drawdown and decommissioning. Finally, regular site condition monitoring would be conducted to document instances of looting and vandalism (see section 3.10.3.4, *Management of Historic Properties*).

Comment: Siskiyou County stated that the EIS should include a determination by the California and Oregon State Historic Preservation Offices regarding the Klamath River Hydroelectric Project District's eligibility for listing in the National Register of Historic Places. Another commenter suggested that Copco No. 1 development should qualify for historic preservation.

Response: KRRC evaluated eligibility of the proposed Klamath River Hydroelectric Project District and four other hydroelectric system historic districts (J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate) and recommended all hydroelectric districts as eligible for listing on the National Register. According to the draft HPMP, in September 2003, PacifiCorp documented the overall Klamath River Hydroelectric Project Historic District and identified the Copco No. 1 development as contributing to the larger Klamath River Hydroelectric Project District (see section 3.10.3.4, subsection *Management of Built Resources*). KRRC's proposal to remove the Lower Klamath River hydroelectric facilities would result in adverse effects to historic properties including districts. Some of these effects would be significant and permanent. KRRC's draft HPMP provides general measures that are consistent with the Advisory Council and Commission's 2002 guidelines.

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APPENDIX B—STATUTORY AND REGULATORY REQUIREMENTS

APPENDIX B

STATUTORY AND REGULATORY REQUIREMENTS

B.1 CLEAN WATER ACT

Under section 401(a)(1) of the Clean Water Act, 33 United States Code (U.S.C.) § 1341(a)(1), a license applicant must obtain either a water quality certification (WQC) from the appropriate state pollution control agency verifying that any discharge from the project would comply with applicable provisions of the Clean Water Act or a waiver of such certification. A waiver occurs if the state agency does not act on a request for certification within a reasonable period, not to exceed one year after receipt of such request.

On September 11, 2017, the Klamath River Renewal Corporation (KRRC) submitted an application to the Oregon Department of Environmental Quality (Oregon DEQ) for section 401 certification for surrender of the license for the Lower Klamath Project. On September 7, 2018, Oregon DEQ issued the section 401 water quality certificate for the project (Oregon DEQ, 2018). On September 23, 2017, KRRC submitted an application to the California State Water Resources Control Board (California Water Board) for section 401 certification for surrender of the license for the Lower Klamath Project. The California Water Board received the request on October 21, 2016. On April 7, 2020, the California Water Board issued a section 401 certificate for the project (California Water Board, 2020b). The conditions of the Oregon DEQ and California Water Board certifications are described under section 2.2, *Mandatory Conditions*, and are included in full in appendices D and E, respectively.

Section 404 of the Clean Water Act requires authorization from the Secretary of the Army, acting through the U.S. Army Corps of Engineers, for the discharge of dredged or fill material into all waters of the United States, including wetlands. Discharges of fill material generally include, without limitation; placement of fill that is necessary for the construction of any structure or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fill for recreational, industrial, commercial, residential, and other uses; causeways or road fills; dams and dikes; artificial islands; property protection or reclamation devices such as riprap, groins, seawalls, breakwaters, and revetments; beach nourishment; levees; fill for intake and outfall pipes and subaqueous utility lines; fill associated with the creation of ponds; and any other work involving the discharge of fill or dredged material. A U.S. Army Corps of Engineers' permit is required whether the work is permanent or temporary.

B.2 ENDANGERED SPECIES ACT

Section 7 of the Endangered Species Act (ESA), 16 U.S.C. § 1536, requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the critical habitat of such species. On August 2, 2021, we notified the

U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) that we had reviewed the Biological Assessment (BA) prepared by KRRC and adopted it as our final BA. The BA evaluates effects of license surrender and removal of the Lower Klamath Project on nine species: the Southern Oregon Northern California Coast (SONCC) coho salmon (*Oncorhynchus kisutch*), southern distinct population segment (DPS) green sturgeon (*Acipenser medirostris*), southern DPS eulachon (*Thaleichthys pacificus*), Lost River sucker (*Deltistes luxatus*), shortnose sucker (*Chasmistes brevirostris*), bull trout (*Salvelinus confluentus*), northern spotted owl (*Strix occidentalis caurina*), Oregon spotted frog (*Rana pretiosa*), and the Southern Resident killer whale (*Orcinus orca*). In the final BA, we conclude that license surrender and removal of project *may affect and is likely to adversely affect* SONCC coho salmon and its critical habitat, southern DPS eulachon and its critical habitat, Lost River sucker, shortnose sucker, and bull trout. We conclude the proposed surrender and removal of the project *may affect but is not likely to adversely affect* southern DPS green sturgeon or its critical habitat, Southern Resident killer whale and its critical habitat, bull trout critical habitat, Lost River sucker critical habitat, shortnose sucker critical habitat, northern spotted owl and its critical habitat, and the Oregon spotted frog. We find the proposed surrender and removal of the project would have *no effect* to critical habitat of the Oregon spotted frog.

On August 24, 2021, FWS published its final rule to list Franklin's bumble bee (*Bombus franklini*) as an endangered species under the ESA (86 *Federal Register* 47221). FWS did not designate critical habitat. The listing status became effective on September 23, 2021. Our analysis of the effects of the proposed surrender and removal of the project on Franklin's bumble bee is presented in section 3.6.3, *Threatened and Endangered Species, Effects of the Proposed Action*. We conclude the proposed surrender and removal of the project *may affect but is not likely to adversely affect* Franklin's bumble bee because the species is unlikely to occur in the project area, and KRRC would implement measures to minimize potential effects of herbicides on bumble bee habitat. Following revegetation of the reservoir footprints, foraging habitat for Franklin's bumble bee would experience a net increase. We will request concurrence with our finding from FWS.

On September 3, 2021, FWS determined that the BA and supplemental information provided were sufficient to initiate formal consultation for the project. FWS also noted the listing of Franklin's bumble bee as an endangered species to be included in the consultation. On December 22, 2021, FWS (2021e) issued its BiOp for the project that concurred with the KRRC's (2021b) effects determination that the project *may affect but is not likely to adversely affect* the northern spotted owl and its critical habitat, Franklin's bumble bee, Oregon spotted frog, and critical habitat for the Lost River sucker, shortnose sucker and bull trout. FWS (2021e) made no response to the determination that the project will have *no effect* to critical habitat for the Oregon spotted frog. FWS (2021e) also concurred with the determinations that the project *may affect and is likely to adversely affect* the Lost River sucker, shortnose sucker, and bull trout and further concluded that the proposed action is not likely to jeopardize the continued existence of

these species. Lastly, FWS (2021e) acknowledged that the project includes minimization measures to reduce effects on the monarch butterfly (*Danaus plexippus*), a candidate for ESA listing. FWS is also currently reviewing the listing status of the little brown bat (*Myotis lucifugus*), western bumble bee (*Bombus occidentalis*), and western pond turtle (*Actinemys marmorata*). We evaluated effects on these species in section 3.6.3, *Threatened and Endangered Species, Effects of the Proposed Action*, and conclude that the project would have minor, less than significant effects on possibly other species we do not yet know about. FWS (2021e) recommended drafting conservation measures for these species to minimize possible delays to the project if any of these species were to become listed prior to surrender and decommissioning.

On August 19, 2021, NMFS determined the BA and associated materials provided sufficient information to initiate formal consultation for SONCC coho salmon and its critical habitat, southern DPS eulachon and its critical habitat, Southern Resident killer whale and its critical habitat, and informal consultation for southern DPS green sturgeon and its critical habitat. On December 17, 2021, NMFS (2021b) issued its BiOp for the project, which concurred with the KRRC's (2021b) effects determination that the project *may affect but is not likely to adversely affect* the Southern DPS green sturgeon and its critical habitat. NMFS (2021b) also concurred with the KRRC's (2021b) effects determination that the project *may affect and is likely to adversely affect* the SONCC coho salmon ESU and its critical habitat, and the Southern DPS eulachon and its critical habitat. The NMFS (2021b) BiOp did not concur with the KRRC's (2021b) effects determination for the Southern Resident DPS killer whale but found that the project *may affect and is likely to adversely affect* the species and its critical habitat. NMFS (2021b) further concluded that the proposed action is not likely to jeopardize the continued existence of these species, nor is it likely to destroy or adversely modify their critical habitat.

On April 6, 2022, FWS notified the Commission that the January 2021 delisting of the gray wolf (*Canis lupus*) was remanded and vacated by the Northern District Court of California, and protections under the ESA, as federally endangered, were restored to this species. On May 17, 2022, we requested reinitiation of consultation with FWS, specific to the effects of the project on gray wolf. We concluded that the proposed action is not expected to have an effect on gray wolves; however, given the transient nature of the animal, it may voluntarily enter the proposed action activity areas, thus creating the opportunity for potential effects. Additionally, KRRC's TWMP, which contains several monitoring and minimization measures, would reduce any potential effects of the proposed action on the gray wolf to an insignificant level. For these reasons, we concluded that the proposed action "may affect, but is not likely to adversely affect" the gray wolf. On June 7, 2022, FWS concurred with our determination for gray wolf, concluding consultation for this species.

B.3 COASTAL ZONE MANAGEMENT ACT

Under section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA), 16 U.S.C. § 1456(c)(3)(A), the Commission cannot issue a license for a project within or affecting a state's coastal zone unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA Program, or the agency's concurrence is conclusively presumed by its failure to act within 180 days of its receipt of the applicant's certification.

In Oregon, the Klamath River is not included in the state's coastal watersheds. In California, the Klamath River flows into the Pacific Ocean where the delta and estuary are designated as a Critical Coastal Area within the coastal zone.

During the California Water Board's review of the application for WQC pursuant to section 401 of the Clean Water Act, the California Coastal Commission indicated that it may issue a determination of consistency with the CZMA if KRRC prepares and submits a consistency certification and if the National Oceanic and Atmospheric Administration's Office for Coastal Management grants such authority (California Water Board, 2020b). In its surrender application, KRRC proposes to obtain a consistency determination with the CZMA if determined to be necessary.

As discussed in section 3.1, *Geology and Soils*, most of the sediment released during drawdown of the reservoirs is expected to be transported to the Pacific Ocean. However, some sediment may be deposited in coastal areas, namely Crescent City Harbor. While we acknowledge here that the location and depth of sediment deposition is difficult to predict, we do expect some deposition to occur in these coastal areas.

Therefore, we find that a consistency certification with the CZMA is warranted. By letter dated January 7, 2022, Commission staff requested that KRRC seek such a determination from the California Coastal Commission and timely file it with the Commission to avoid any delay in Commission action.

KRRC filed documentation of its request for a consistency certification on February 4, 2022. On April 15, 2022,¹ the California Coastal Commission determined that it would not be requesting permission from NOAA's Office for Coastal Management to review this activity (which would take place outside the coastal zone) for consistency with the California Coastal Management Program because it would not have a substantial effect on land or water uses in the coastal zone. Thus, federal consistency review is not required.

¹ Filed by KRRC on April 18, 2022 (accession number 20220418-5449).

B.4 NATIONAL HISTORIC PRESERVATION ACT

Section 106 of the National Historic Preservation Act (NHPA), 54 U.S.C. § 306108, requires that a federal agency “take into account” how its undertakings could affect historic properties. Historic properties are districts, sites, buildings, structures, traditional cultural properties, and objects significant in American History, architecture, engineering, and culture that are eligible for inclusion in the National Register of Historic Places (National Register).

By letter dated October 18, 2017, Commission staff initiated consultation with participating Tribes. This was followed by Tribal consultation meetings from January 16 to January 19, 2018. The purpose of this consultation was to seek the Tribes’ input on the proposed action and its potential effects on environmental resources, including historic properties. Consulted Tribes included the Hoopa Valley Tribe, Karuk Tribe, Yurok Tribe, Shasta Indian Nation, Shasta Tribe, Klamath Tribes, Modoc Tribe, Quartz Valley Indian Community of the Quartz Valley Reservation of California, Resighini Rancheria, Confederated Tribes of Siletz Indians of Oregon, Trinidad Rancheria, Confederated Tribes of the Warm Springs Reservation of Oregon, Confederated Tribes of the Grand Ronde Community of Oregon, Cow Creek Tribes of the Warm Springs Reservation of Oregon, Elk Valley Rancheria (California), Pit River Tribe (California), and the Tolowa Dee-Ni Nation. Several of these Tribes subsequently filed Motions to Intervene (Shasta Indian Nation, January 19, 2021; Hoopa Valley Tribe, October 18, 2017, February 11, 2021, February 26, 2021; Yurok Tribe, November 6, 2017, February 12, 2021; Karuk Tribe, February 12, 2021; Klamath Tribes, November 14, 2017). Commission staff has considered the comments received by all Tribes in the development of the environmental impact statement.

In its May 20, 2021, response to the Commission’s request for additional information, KRRC stated that it had not requested formal review of the draft Historic Properties Management Plan (HPMP) by the California State Historic Preservation Office (SHPO) or the Oregon SHPO and that it understood that the SHPOs would provide formal review only after the Commission initiated consultation with them under section 106 of the NHPA.

By letter filed on September 28, 2021, the Commission formally requested that the SHPOs provide their comments on the draft HPMP within 45 days with the caveat that the Commission anticipates that KRRC would file a supplement to the HPMP that includes the results of the outstanding studies (Phase II studies, additional structures studies, Traditional Cultural Property [TCP] studies). The Commission’s letter also directed KRRC to file, by November 30, 2021, an update on the status of those studies. In a letter dated November 10, 2021, the Oregon SHPO stated that it prefers to review the draft HPMP and Memorandum of Agreement (MOA) simultaneously. In addition, the Oregon SHPO indicated that if consultation with Tribes regarding historic properties and cultural significance and TCPs is ongoing, and information on eligibility is still being gathered, the draft HPMP seems somewhat premature. In a letter filed on November 18,

2021, the California SHPO responded that it would review the section 106 efforts once the Phase II studies are complete, the findings have been reviewed and commented on by consulting parties, and formal National Register eligibility determinations have been made for each resource.

On December 1, 2021, Commission staff issued a letter to the California and Oregon SHPOs in response to their letters and requested they review the draft HPMP and provided the draft MOA for review, as requested by the Oregon SHPO. Commission staff stated that, even though the draft HPMP may be incomplete, it does address the following; (1) background information on the project; (2) discussion of the types of effects that may be expected and proposed mitigation and management measures; (3) identification of the area of potential effects (APE); (4) provisions for additional survey and monitoring (e.g., post-drawdown and during construction), inadvertent discoveries, and the treatment of human remains; and (5) implementation procedures that include but are not limited to staff training, reporting, ongoing consultation with the Cultural Resources Working Group, and internal review procedures. Commission staff requested the California and Oregon SHPOs provide comments on the draft MOA within 45 days of the date of the December 1, 2021, letter. In addition, Commission staff requested any preliminary comments regarding the draft HPMP, as well as the Historic Built Environment Report.

In a letter filed on January 14, 2022, the California SHPO provided comments on the draft MOA and also on the draft HPMP. In its comments on the MOA, the California SHPO stated that the MOA did not include needed components and that because the completion of the identification and evaluation of historic properties and assessment of effects cannot be completed until the removal of project facilities is underway, effects cannot be determined. The California SHPO instead suggested that a programmatic agreement (PA) executed under 36 Code of Federal Regulations (C.F.R.) 800.14(b)(1)(ii) would be more appropriate. A PA is a type of agreement document that is typically executed when the effects of an activity on historic properties cannot be determined prior to approval of the activity. In correspondence filed on January 24, 2022, the Oregon SHPO provided its comments on the draft MOA and draft HPMP.

On May 3, 2022, the licensees filed an updated HPMP that addresses comments on the HPMP that were provided in the Commission's draft EIS and also the comments received from the California and Oregon SHPOs and other consulting parties.

Our analysis of project effects on cultural resources is presented in section 3.10.3, *Cultural Resources*. Historic properties occur in the project's APE, including contributing resources of several proposed historic districts. The results of National Register evaluations of most of the potentially affected cultural resources are still pending; however, we anticipate that the proposed decommissioning and removal of the Lower Klamath Project dams would result in adverse effects on historic properties.

We agree that execution of a PA would be more appropriate for the removal of the Lower Klamath Project facilities. To meet the requirements of section 106 of the NHPA,

we intend to execute a PA with the Oregon SHPO and the California SHPO for the protection of historic properties from the effects of the proposed decommissioning and dam removal. The participating agencies, Tribes, and KRRRC will be invited to concur with the terms of the agreement. The terms of the agreement would ensure that KRRRC protects, manages, or mitigates all historic properties identified within the project's APE through the implementation of a final HPMP.

On May 13, 2022, the Commission transmitted a draft PA to the California SHPO, Oregon SHPO, and Advisory Council for review and comment. The licensees, Corps, BLM, Forest Service, Governors of California and Oregon, Klamath Tribes, Yurok Tribe, Resighini Rancheria, Hoopa Valley Tribe, Karuk Tribe, Shasta Indian Nation, Cher-Ae-Heights Indian Community of Trinidad Rancheria, Quartz Valley Indian Community, Modoc Nation, and Confederated Tribes of Siletz Indians of Oregon were copied on the letter and received the HPMP. The licensees, other agencies, and all participating Tribes were copied on the transmittal. In its letter, the Commission requested comments on the PA, reports, and the updated HPMP within 30 days.

On June 2, 2022, the California SHPO filed a request to extend the review period to June 24, 2022. On June 24, 2022, the California SHPO filed a second request for an extension and stated that it hoped to file its comments by July 1, 2022. On June 27, 2022, the Advisory Council filed its comments on the revised HPMP and PA. The California SHPO provided comments on the draft HPMP and PA on July 6, 2022. On July 5, 2022, the Oregon SHPO filed a request to extend the review period to July 15, 2022. The Oregon SHPO provided comments on the PA in its July 21, 2022, filing with the Commission. Consultation regarding the revised HPMP and PA is continuing.

On August 15, 2022, Commission staff issued a letter to the licensees requesting an update to the HPMP to address comments from the Advisory Council, California SHPO, and Commission staff within 30 days of letter issuance. In addition, the Commission staff requested the licensees include documentation of consultation with the California and Oregon SHPOs, Advisory Council, participating Tribes, and other consulting parties. The California and Oregon SHPOs, Advisory Council, Corps, BLM, Forest Service, Governors of California and Oregon, Klamath Tribes, Yurok Tribe, Resighini Rancheria, Hoopa Valley Tribe, Karuk Tribe, Shasta Indian Nation, Shasta Nation, Cher-Ae-Heights Indian Community of Trinidad Rancheria, Quartz Valley Indian Community, Modoc Nation, and Confederated Tribes of Siletz Indians of Oregon were copied on the letter.

B.5 MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT

Section 305 of the Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1855(b)(2), requires federal agencies to consult with NMFS on all actions that may adversely affect Essential Fish Habitat (EFH). In the proposed action area, EFH has been designated for Chinook salmon (*Oncorhynchus tshawytscha*) and coho salmon (*Oncorhynchus kisutch*), ground fish, and coastal pelagic species.

Our descriptions of Chinook salmon, coho salmon, ground fish, and coastal pelagic species EFH is based on our analysis in section 3.6.2, *Threatened and Endangered Species, Affected Environment*, and our analysis of project effects on EFH is in section 3.6.3, *Threatened and Endangered Species, Effects of the Proposed Action*. We conclude that the proposed action, with staff's modifications, would result in adverse effects on Chinook and coho salmon EFH conditions for adult migration, spawning, egg-to-fry survival, juvenile rearing, and smolt migration habitat downstream of Iron Gate Dam in the short term, and result in no adverse effect on estuarine rearing for Chinook and coho salmon. Over time, as deposited sediments and sediments that remain in the reservoir footprints are transported or stabilized, respectively, the proposed action, with staff's modifications, would have no adverse effect, or may benefit Chinook and coho salmon habitat. The proposed action, with staff's modifications, would have a small and temporary adverse effect on Pacific Coast groundfish EFH from the elevated suspended sediment. Long-term effects are likely not adverse for Pacific Coast groundfish EFH. The proposed action, with staff's modifications, would have a small and temporary adverse effect on EFH for coastal pelagic species associated with short-term increases in suspended sediment concentrations. Long-term effects are likely not adverse for coastal pelagic species.

B.6 WILD AND SCENIC RIVERS ACT

Section 7(a) of the Wild and Scenic Rivers Act, 16 U.S.C. § 1278(a), provides that the Commission "shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works. . . on or directly affecting any river which is designated" as a component of the wild and scenic rivers system.

Congress added about 189 miles of the mainstem of the Klamath River to the Wild and Scenic Rivers system in 1981 as part of a total of 286 miles designation of river segments in the basin. The upstream end of the designated river segment begins about 3,600 feet downstream of Iron Gate Dam in the vicinity of the Iron Gate Hatchery. Most of the river was designated by Congress as recreational; 24 miles was designated as scenic; and 12 miles was designated as wild. The outstanding remarkable value for this reach of the Wild and Scenic River system is anadromous fisheries.

In 1994, the Secretary of the Interior added an 11-mile segment of Klamath River from downstream of the J.C. Boyle Powerhouse to the Oregon and California state line to the Wild and Scenic Rivers system. This segment was designated by the Secretary of the

Interior as scenic, with outstanding remarkable values of quality whitewater boating, diverse wildlife, prehistoric sites, quality rainbow trout fishery, habitat for endangered species, historic places, scenery, and evidence of Native American traditional uses.

The current proposal is to remove an existing project. Consequently, section 7 of the Wild and Scenic Rivers act does not apply here. We identify effects from the proposed surrender and removal of the project on those designated reaches in section 3.0, *Affected Environment and Environmental Consequences*.

B.7 REFERENCES

- California Water Board (California State Water Resources Control Board). California Water Board. 2020b. Water Quality Certificate for Federal Permit or License; Klamath River Renewal Corporation Lower Klamath Project License Surrender. April 2020. Available at https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/docs/401_cert/lkp_wqc.pdf. Accessed June 20, 2022.
- FWS (U.S. Fish and Wildlife Service). 2021e. Transmittal of Biological Opinion and Conclusion of Formal and Informal Consultation for the Surrender and Decommissioning of the Lower Klamath Hydroelectric Project, Nos. 14803-001, 2082-063. FERC eLibrary accession number [20211222-5170](#).
- NMFS (National Marine Fisheries Service). 2021b. Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Surrender and Decommissioning of the Lower Klamath Hydroelectric Project No. 14803-001, Klamath County, Oregon and Siskiyou County, California. FERC eLibrary accession number [20211220-5034](#).
- Oregon DEQ (Oregon Department of Environmental Quality). 2018. Attachment B. Clean Water Act Section 401 Certification for the Klamath River Renewal Corporation License Surrender and Removal of the Lower Klamath Project (FERC No. 14803), Klamath County, OR. September 7, 2018.

APPENDIX C—COST OF ENVIRONMENTAL MEASURES

Table C-1. Cost of decommissioning and environmental measures proposed by KRRC and recommended by staff
(Source: staff)

Measure Description	Capital Cost	Annual Cost
Dam removal and decommissioning.	\$452,250,000	Included in capital cost.
Implement the 16 management plans filed on December 14, 2021, listed in table ES-1.	Included in dam removal and decommissioning cost.	Included in dam removal and decommissioning cost.
Modify the Construction Management Plan to include measures AQ-1 through AQ-5 to minimize effects of deconstruction activities on air quality, measure ENR-1 to purchase carbon offsets, and the Noise and Vibration Control Plan. These measures, which KRRC has agreed to implement, are described in section 2.1.3.	\$0 ^a	\$0
Water Quality		
Consult with Siskiyou County to address its concerns as appropriate in a revised Waste Disposal and Hazardous Materials Management Plan.	\$10,000 in year 1	\$0
Incorporate identification of the potential cool-water areas from the upper end of J.C. Boyle Reservoir to Cottonwood Creek, methods for monitoring and analysis, triggers that would guide adaptive management, and the schedule into the restoration plan proposed in the Reservoir Area Management Plan.	\$10,000 in year 1	\$5,000 in years 1-6
Prepare, in consultation with appropriate California agencies and Tribes, an Erosion and Sediment Control Plan subplan for California that identifies erosion and sediment control best management practices to minimize pollution from sediment erosion caused by facilities removal and restoration activities.	\$10,000 in year 1	\$0

Measure Description	Capital Cost	Annual Cost
Modify the Reservoir Area Management Plan's proposed development of a "comprehensive restoration plan" to include identification of the potential cool-water areas from Iron Gate Dam to Cottonwood Creek, methods for monitoring and analysis, triggers that would guide adaptive management, and a schedule.	\$10,000 in year 1	\$0
Maintain consistency, through consultation with appropriate agencies and Tribes, between the Water Quality Monitoring and Management Plan and the Implementation Plans for the Reintroduction of Anadromous Fishes into Oregon and California.	\$0	\$5,000 in years 1-6
Modify the Water Quality Monitoring and Management Plan to include monthly quantification of sediment export during and following reservoir drawdown using continuous flow and turbidity measurements for each of KRRC's continuous water quality monitoring stations.	\$5,000	\$20,000 in years 1-6
Aquatic Resources		
Modify the Hatchery Management and Operations Plan to clarify whether and when ownership would be transferred to California DFG or another entity.	\$0a	\$0a
Terrestrial Resources		
Modify the RAMP to include detailed maps that identify areas of grading, water runoff control measures, planting, seeding, mulching, and irrigation areas. These maps should include final limits of work zones, delineated wetlands within areas of proposed disturbance, the reservoir footprints, the J.C. Boyle canal and scour hole, and all areas of temporary disturbance where revegetation activities would occur.	\$10,000 in year 1	\$0

Measure Description	Capital Cost	Annual Cost
Develop an eagle conservation plan that includes occupancy and productivity surveys; timing restrictions on vegetation clearing and construction noise; monitoring of active eagle nests; coordination with FWS, California DFW, and Oregon DFW; and reporting as described in California Water Board WQC condition 17.	\$0	\$10,000 in years 2-6
Modify the California and Oregon TWMPs to extend the survey area for bird nest visual encounter surveys to include a 250-foot buffer of the disturbance area for non-eagle raptor nests and a 50-foot buffer of the disturbance area for all other species.		\$5,000 in years 2-6 ^b
Modify the California and Oregon TWMPs to specify that the preferred time for the removal of structures that provide roosting habitat for bats is September 1 to March 31, as recommended by FWS, rather than the proposed dates of September 31 to April 15, and comply with FWS's recommendations for roost structure removal, if necessary, between April 1 and August 31.		\$5,000 in years 2-6 ^b
Recreation		
Modify the Recreation Facilities Plan to include: (1) removal of remaining construction-related debris in the river at the Sidecast slide location and encroaching vegetation growth within the river channel in the Copco No. 2 bypassed reach that create hazardous boating conditions; (2) developing a plan for funding the construction and maintenance of the potential access sites described in the Recreation Facilities Plan and filing a revised Recreation Facilities Plan with the Commission to include, at a minimum, development of the planned access points that are within the existing reservoir footprints; and (3) consulting with the Upper Klamath Outfitters Association to schedule construction activities	\$50,000 in year 1	\$0

Measure Description	Capital Cost	Annual Cost
and access restrictions to minimize adverse effects on whitewater boaters.		
Land Use		
Prepare a revised Fire Management Plan and Construction Management Plan in consultation with California Department of Forestry and Fire Protection, Oregon Department of Forestry, and the Fire Safe Council of Siskiyou County to address the following issues raised by stakeholders; (1) insufficient stream depth and excessive lift requirements at proposed locations for dry fire hydrants; (2) location of some dry fire hydrants on blind corners; (3) lack of locations near dry fire hydrants for fire trucks to turn around; (4) lack of any proposed river access boat ramps within the Copco No. 1 Reservoir area; (5) identification of the entity that would be responsible for storage, deployment, and refill of portable water tanks; and (6) potential need to install permanent water sources (such as dip tanks) strategically placed along the Klamath River corridor to address the potential filling of existing dip sites by gravel transported from the reservoirs.	\$25,000	\$0
Cultural Resources		
Prepare a supplemental Historic Properties Management Plan (HPMP) in consultation with the Oregon State Historic Preservation Office (SHPO), California SHPO, participating Tribes, and other appropriate agencies and organizations to address the following; (1) further clarification regarding the resolution of adverse effects on specific archaeological sites, including by not limited to the decision-making process regarding site treatment, (2) a discussion of TCRs 5-8 identified in the California Water Board's April 9, 2020 EIR, including the potential effects on archaeological resources and	\$20,000	\$0

Measure Description	Capital Cost	Annual Cost
TCPs as a result of the transfer of Parcel B lands out of federal jurisdiction and the resolution of those effects; and (3) inclusion of final comments, recommendations, and section 106 determinations that may be received from the Oregon SHPO, California SHPO, Advisory Council, and Commission.		
Modify the Reservoir Area Management Plan to incorporate the pre- and post-drawdown requirements for cultural resources inspections, surveys, evaluations, mitigation, and management as specified in the HPMP. Additionally, should ground conditions permit access for depositional sediment grading during reservoir drawdown, include provisions in the RAMP for a cultural monitor to be present to ensure that if any cultural resources are identified on the historical pre-dam ground surface, grading stops and the measures outlined in appendix C, section 7.1 of the HPMP (Monitoring and Inadvertent Discovery Plan, Procedures) are closely followed within 48 hours. These protocols include, but are not limited to; (1) notifying the team supervisor of any discovery of cultural or archaeological resources, (2) suspending work within 100 feet of the find in all non-dewatering situations, (3) completing an initial assessment of the discovery, (4) notifying the Commission, SHPO, and participating Tribes of the find, and (5) consulting with these entities to determine and implement agreed-upon treatment measures for discoveries that are potentially eligible for listing on the National Register.	\$0	\$0

Measure Description	Capital Cost	Annual Cost
Environmental Justice		
Modify the Sediment Deposit Remediation Plan, the Water Supply Management Plan, the Slope Stability Monitoring Plan, and any other plans that require landowners to contact KRRC for mitigation services, to include a public outreach component that specifically addresses communication with environmental justice communities.	\$5,000	\$0

- ^a We assume that the cost of these measures is included in KRRC's cost estimate for implementing the management plans.
- ^b The termination of monitoring would be determined by applicable regulatory agencies' approval of KRRC's request to discontinue monitoring.

**APPENDIX D—STATE OF OREGON WATER QUALITY CERTIFICATE
CONDITIONS**

APPENDIX D
STATE OF OREGON WATER QUALITY CERTIFICATE CONDITIONS
September 7, 2018

1. Proposed Action

The KRRC proposes to remove J.C. Boyle Dam, J.C. Boyle powerhouse and all appurtenant facilities consistent with the procedures and schedule described in the Klamath Hydroelectric Settlement Agreement (KHSa) and associated Detailed Plan, the application for section 401 water quality certification, and the September 30, 2017, Technical Support Document, which by this reference, are incorporated in their entirety (the “Proposed Action”). In accordance with applicable law, the Licensee shall notify DEQ if FERC authorizes modification to the Proposed Action to allow DEQ to determine whether such changes may affect compliance with water quality standards that may require amendment of this certification.

2. Water Quality Management Plan

The Licensee shall submit to DEQ a Water Quality Management Plan (WQMP) for review and approval within 90 days of issuance of the surrender order. Upon approval by DEQ, the Licensee shall file the WQMP with FERC and implement the WQMP in accordance with its terms.

At a minimum, the WQMP shall include the following information:

a) Water Quality Monitoring Plan Content

- i. Data collection protocol, analytical methods, and laboratory method reporting limits;
- ii. Location and description of monitoring points;
- iii. Flow monitoring at USGS gauges 11509500 and 11510700;
- iv. Applicable compliance criteria and associated compliance time schedule;
- v. Instrument calibration schedule and procedures;
- vi. Data validation procedures and quality assurance methodology;
- vii. Contingency procedures for inoperable or malfunctioning equipment; and
- viii. Data interpretation procedures, and
- ix. Adaptive management plan.

b) Monitoring Locations

The Water Quality Management Plan shall establish monitoring stations at the following monitoring locations:

Station	Existing USGS Location	Approximate River Mile	Measurement Type
Keno	USGS 11509500	RM 213.9	Flow, data sonde, grab
JC Boyle Powerhouse	USGS 11510700	RM 219.7	Flow, data sonde, grab

- i. The Licensee shall secure all field equipment as necessary to ensure safe reliable placement, stability, and retrieval during seasonally high flows and drawdown conditions;
- ii. The Licensee shall install monitoring equipment as necessary to meet data collection schedule as described in Section 3(d) or an alternate schedule approved by DEQ;

c) Parameters

The WQMP shall include monitoring for the following parameters:

Continuous Data Sonde Collection. The Licensee shall maintain operable data sondes and collect continuous measurements for the following parameters:

- i. Temperature;
- ii. Conductance;
- iii. pH;
- iv. Dissolved oxygen, oxygen saturation; and
- v. Turbidity

Grab Sample Collection. The Licensee shall collect grab samples for the following parameters:

- vi. Nitrogen: ammonia, nitrate, nitrite, total nitrogen;
- vii. Phosphorus: orthophosphate, organic phosphorus, total phosphorus; viii. Carbon: dissolved organic carbon, particulate carbon;
- ix. Chlorophyll-a; and
- x. Suspended sediment concentration.

d) Monitoring Frequency and Duration

- i. Initiating data collection: The Licensee shall begin sample and data collection at least

12 months prior to initiating drawdown of J.C. Boyle Reservoir unless otherwise approved by DEQ;

- ii. Data sonde sampling frequency: The Licensee shall record data at 15-minute intervals.
- iii. The Licensee shall collect grab samples for suspended sediment concentrations per the following schedule:

- A. Twice monthly through September of the drawdown year;

- B. Monthly beginning October 1 of the drawdown year.

- iv. The Licensee shall collect all other grab samples monthly;

- v. Duration: The Licensee shall monitor water quality in accordance the schedule in WQMP for a minimum of four years after initiating reservoir drawdown. Upon receipt and review of annual water quality monitoring reports DEQ may, at its discretion, continue or discontinue the requirement to monitor certain water quality parameters as warranted by water quality conditions.

e) Suspended Sediment Load

The Licensee shall propose procedures to quantify sediment export during and following reservoir drawdown using suspended sediment concentrations and flow measurements recorded at USGS gauges 11510700 and 11509500 and other methodologies as appropriate. Upon approval by DEQ, the Licensee shall implement this methodology.

f) Non-Reservoir Drawdown Activities

The Licensee shall propose procedures to monitor turbidity at the locations of actions that may discharge or increase sedimentation in runoff to the Klamath River and its tributaries. Except for activities that occur within the 24-month compliance time period identified in Section 3, the Licensee shall monitor turbidity approximately 100 feet upstream and 300 feet downstream during proposed activities at the following locations:

- i. Activities to maintain fish passage as required by Section 4(a);
- ii. J.C. Boyle scour hole restoration as required by Section 8(c);
- iii. Removal of recreation areas required by Section 8(d);
- iv. Backfilling and restoring the J.C. Boyle powerhouse tailrace as required by Section 8(f).

g) Water Quality Reporting

The Licensee shall present, summarize, and interpret water quality data in the Annual Compliance Report prepared in accordance with Section 11 of this certification. Water quality data shall be presented using graphs, tables, or other means to clearly

demonstrate trends, relationships, and compliance. Raw data must be made available to DEQ either from accessible external websites, CDs, or other means to effectively transfer electronic data files.

3. Compliance Time Schedule

Pursuant to OAR 340-041-0185(5), DEQ establishes a compliance time schedule of 24 months following drawdown after which dam removal is not expected to cause an exceedance of Oregon water quality standards. If water quality monitoring demonstrates that project actions may contribute to exceedances of the applicable water quality standards beyond the compliance time schedule established by this certification, DEQ may require the Licensee to develop an adaptive management plan in consultation with DEQ, which includes alternative measures, an assessment of impacts, and a schedule to achieve compliance. Once approved by DEQ, the Licensee shall implement the plan in accordance with its terms, including any modifications made by DEQ as conditions of its approval.

4. Biological Criteria; Protection of Beneficial Uses; Other Requirements of State Law

a) Fish Passage

- i. The Licensee shall provide or maintain fish passage at all artificial obstructions created or affected by the Proposed Action that prevent or delay the migration of native migratory fish;
- ii. The Licensee shall, in consultation with ODFW and subject to approval by DEQ, remove or modify artificial fish barriers created or affected by the Proposed Action until the effective date of license surrender at all locations where native migratory fish are currently or have historically been present. Until the effective date of license surrender the Licensee shall reduce or eliminate project-related obstructions such as sediment barriers and erosional head cuts resulting in a vertical step higher than six inches;
- iii. Potential artificial barrier locations may include but are not limited to the following:
 - A. Topsy Grade Road culverts;
 - B. Unnamed tributary north of Keno Access Road;
 - C. Spencer Creek.

b) Aquatic Resource Measure AR-6: Sucker

The Licensee shall implement Aquatic Resource Measure AR-6 presented in Appendix H of the Technical Support Document (KRRC 2017) to mitigate project effects on adult Lost River Sucker and Shortnose Sucker in J.C. Boyle Reservoir prior to drawdown.

c) Western Pond Turtle Mitigation

Subject to approval by DEQ, in consultation with ODFW, the Licensee shall conduct abundance and overwintering studies. The Licensee shall, as DEQ deems warranted, implement appropriate mitigation actions to reduce potential impacts to Western Pond Turtle populations prior to drawdown of JC Boyle Reservoir. DEQ's determination of the need for both initiation and extent of mitigation actions, if any, shall be based upon ongoing survey data, anticipated impacts, and potential additional impacts associated with capture and transport.

d) On-Site Septic Systems

To reduce the potential for bacterial pollution, the Licensee shall decommission Lower Klamath Project on-site septic systems proposed for removal in accordance with Oregon Administrative Rule Chapter 340, Division 71.

e) NPDES Construction Stormwater Permit

The Licensee shall register with DEQ for coverage under National Pollution Discharge Elimination System general permit 1200-C before any construction activities occur that cumulatively disturb more than one acre of and may discharge stormwater to surface waters of the state.

5. Reservoir Drawdown and Diversion Plan

Within 90 days of issuance of the surrender order, the Licensee shall submit to DEQ for review and approval a Reservoir Drawdown and Diversion Plan. Upon approval by DEQ, the Licensee shall file the Reservoir Drawdown and Diversion Plan with FERC and implement the plan upon receipt of all required authorizations. The Reservoir Drawdown and Diversion Plan shall propose drawdown procedures, schedule, and monitoring efforts. At a minimum, the plan shall include the following elements:

a) Drawdown Procedure

The plan shall include the following minimum information:

- i. Description of all relevant reservoir drawdown facilities;
- ii. Flood frequency evaluation;
- iii. Anticipated drawdown rates and schedule;
- iv. Slope-stability analysis;
- v. Schedule for the sequenced removal of structural elements whose removal will affect discharge during drawdown.

b) Monitoring

The plan should include the following:

- i. Location, schedule, and installation procedures for piezometer wells proposed for the upstream shell and core of J.C. Boyle Dam and procedures to monitor water levels and pore pressure at these locations;
- ii. Description of all proposed survey monuments and inclinometer installations to monitor slope stability during and following drawdown;
- iii. Visual monitoring schedule for evidence of potential slumping, cracking, or slope failure of dam embankment during dam removal;
- iv. Monitoring of J.C. Boyle Reservoir elevation and stream flow at USGS gauge 11509500 below Keno Reservoir and USGS gauge 11509500 below J.C. Boyle powerhouse during drawdown.

c) Contingency and Notification Procedures

The plan shall include procedures to assess and respond to confirmed or suspected issues including but not limited to the following:

- i. Obstructions to reservoir discharge caused by physical blockages, mechanical failure, or other conditions that may restrict outflow;
- ii. Embankment instability, slumping, loss of erosion protection;
- iii. Cultural resource discovery;
- iv. Other events that directly or indirectly affect reservoir drawdown schedule.

d) Notification

KRRC shall notify DEQ within 72 hours of an event that may substantially delay drawdown or cause the timeline to complete drawdown to exceed the anticipated schedule.

6. Reservoir Area Management Plan

Within 90 days of issuance of a license surrender order from FERC, the Licensee shall submit to DEQ a Reservoir Area Management Plan for review and approval. Upon approval by DEQ, the Licensee shall file the Reservoir Area Management Plan with FERC and implement the plan upon receipt of all required authorizations. The plan shall include the following elements.

a) Reservoir Restoration Activities

The plan should include procedures to stabilize and restore the former reservoir area following dam removal. The plan should include the following:

- i. Performance criteria for evaluating restoration efforts to meet the following objectives:
 - A. Unobstructed stream continuity;
 - B. Fish passage;

- C. Sediment stability;
 - D. Invasive exotic vegetation abatement and native vegetation cover establishment.
- ii. Proposed actions for meeting plan objectives including:
- A. Actions to ensure tributary connectivity following drawdown;
 - B. Strategies to create or enhance wetlands, floodplain, and off-channel habitat features;
 - C. Actions to improve revegetation success by enhancing floodplain roughness; Locations for placement of large wood or other structures to improve channel margin complexity;
- iii. The Licensee shall not use nitrogen- or phosphorus-based fertilizers in hydroseeding applications unless expressly authorized by DEQ.

b) Monitoring

- i. The Licensee shall annually conduct aerial LiDAR reconnaissance surveys of the affected area to measure sediment stability and estimate the volume of sediment export following reservoir drawdown. Annual sediment stability monitoring shall be supplemented with visual inspections, physical measurements, and photo-documentation at monitoring locations identified in the Reservoir Area Management Plan;
- ii. The Licensee shall twice annually conduct surveys to determine the area of invasive exotic vegetation and native vegetation cover in the reservoir restoration area;
- iii. The Licensee shall annually inspect mainstem Klamath River and affected tributaries for the presence of physical barriers to volitional fish passage. Annual inspections shall occur following the wet season.
- iv. Monitoring is required for a minimum of three years following completion of reservoir drawdown.

c) Adaptive Management

If monitoring demonstrates that runoff from exposed embankment areas may cause erosion, sedimentation, or a lowering of water quality DEQ may require the Licensee to analyze the situation and propose an appropriate corrective response. Corrective actions may include measures to increase soil stability through additional plantings, irrigation to maintain revegetated areas, contouring sediment to reduce slope, adding energy dissipating features such as large wood or boulders, modifying stream channel slope, or other methods deemed appropriate to achieve the goals and objectives of the plan. Upon DEQ approval, the Licensee shall implement the corrective measures.

7. Remaining Facilities and Operations Plan

Within six months of license surrender and prior to initiating the Proposed Action, the Licensee shall submit to DEQ a Remaining Facilities and Operations Plan for review and approval. Upon approval by DEQ, the Licensee shall implement the plan in accordance with its terms, including any modifications made by DEQ as conditions of its approval. The Remaining Facilities and Operations Plan shall include, at a minimum, the following information:

- a) A description of all Project facilities and/or structures that will not be physically removed or permanently modified during project implementation;
- b) A description of all potential water quality impacts associated with retaining proposed project structures;
- c) Proposed measures, including but not limited to potential modifications and best management practices, to reduce potential water quality impacts associated with retaining Project facilities and/or structures; and
- d) Provisions deemed necessary by DEQ to ensure that any ongoing measures will be implemented once title of the Lower Klamath Project facilities and/or responsibility for operations is transferred to another entity, which shall not occur later than the effective date of surrender of FERC license No. P-14803.

8. Site Restoration, Erosion and Sediment Control

a) Erosion and Sediment Control Plan

Within 90 days of issuance of a surrender order, the Licensee shall submit to DEQ an Erosion and Sediment Control Plan for review and approval. Once approval by DEQ, the Licensee shall implement the plan in accordance with its terms, including any modifications made by DEQ as conditions of its approval. The ESCP shall include best management practices to minimize pollution from sediment erosion caused by facilities removal and restoration activities. The Licensee and its contractors shall ensure the following actions are implemented to minimize sediment runoff during project activities:

- i. Maintain an adequate supply of materials necessary to control erosion at the project construction site;
- ii. Deploy compost berms, impervious materials, or other effective methods during rain events or when stockpiles are not moved or reshaped for more than 48 hours. Erosion of stockpiles is prohibited;
- iii. Inspect erosion control measures daily and maintain erosion control measures as often as necessary to ensure the continued effectiveness of measures. Erosion control measures must remain in place until all exposed soil is stabilized;
- iv. If monitoring or inspection shows that the erosion and sediment controls are ineffective, the Licensee must make repairs, install replacements, or install additional controls as necessary;

- v. If sediment has reached 1/3 of the exposed height of a sediment or erosion control the Licensee must remove the sediment to its original contour;
- vi. Use removable pads or mats to prevent soil compaction at all construction access points through, and staging areas in, riparian or wetland areas to prevent soil compaction, unless otherwise authorized by DEQ;
- vii. Flag or fence off wetlands not specifically authorized to be impacted to protect from disturbance and/or erosion;
- viii. Place dredged or other excavated material on upland areas with stable slopes to prevent materials from eroding back into waterways or wetlands;
- ix. Place clean aggregate at all construction entrances, and utilize other BMPs, including, but not limited to truck or wheel washes, when earth-moving equipment is leaving the site and traveling on paved surfaces. The tracking of sediment off-site by vehicles is prohibited.

b) J.C. Boyle Disposal Site

- i. The Licensee shall place earthen material generated during deconstruction of J.C. Boyle Dam in the disposal site located near the right abutment of the dam. Final contours, elevation, and slope of the disposal site shall reflect the design specifications presented in the J.C. Boyle Right Abutment Disposal Site Plan & Section diagram presented as Figure 5.2-8 of the Technical Support Document (KRRC 2017) or subsequent version approved by DEQ;
- ii. The Licensee shall implement inspection procedures to identify and divert non-earthen material from placement in the J.C. Boyle disposal site location;
- iii. Site preparation, grading, and vegetative restoration shall be performed in accordance with the ESCP to reduce the potential for erosion and sediment runoff;
- iv. The Licensee shall inspect the J.C. Boyle disposal site annually for at least five years following completion or an alternate schedule approved by DEQ. The Licensee shall submit to DEQ an Annual Report in accordance with Section 11, which includes inspection records documenting the physical condition of cover placement, status of revegetation, evidence of erosive conditions or sediment runoff, and corrective actions performed or proposed to ensure long-term stability.

c) J.C. Boyle Scour Hole Restoration

- i. The Licensee shall restore the eroded scour hole beneath the J.C. Boyle emergency spillway based on the design specifications presented in the J.C. Boyle Forebay Spillway Scour Hole Backfill Plan & Sections diagram presented as Figure 5.2-9 in the Technical Support Document (KRRC 2017) or subsequent version approved by DEQ;

- ii. The Licensee shall prepare the site and source material as necessary to achieve stable, long-term placement of fill and cover material;
- iii. Site preparation and grading shall be performed in accordance with the ESCP to reduce the potential for erosion and sediment runoff;
- iv. The Licensee shall inspect the restored scour hole for annually for at least five years or an alternate schedule approved by DEQ. The Licensee shall submit to DEQ an Annual Report in accordance with Section 11, which includes inspection records documenting the physical condition of cover placement, status of revegetation, evidence of erosive conditions or sediment runoff, and corrective actions performed or proposed to ensure long-term stability.

d) Recreation Areas

i. Topsy Campground

The Licensee shall remove all permanent water-related improvements at Topsy Campground including boat launches, floating dock, fishing pier and concrete. Compacted surface areas shall be prepared in a manner that increases surface permeability and reduces surface runoff. The Licensee shall grade, seed and replant affected areas in a manner that promotes riparian revegetation. Site restoration shall be performed according to the ESCP prepared in accordance with Section 9(a).

ii. Pioneer Park

The Licensee shall remove all features at the two separate day use areas on the east and west side of J.C. Boyle Reservoir identified as Pioneer Park. Compacted surface areas shall be prepared in a manner that increases surface permeability and reduces surface runoff. The Licensee shall grade, seed and replant affected areas in a manner that promotes riparian revegetation. Site restoration shall be performed according to the ESCP prepared in accordance with Section 9(a).

e) J.C. Boyle Power Canal

The Licensee shall remove all concrete wall portions of the J.C. Boyle power canal except for shotcrete applied to the upstream wall to maintain stability against erosion. Concrete shall be placed in the J.C. Boyle emergency spillway scour hole in accordance with Section 8(c). Alternatively, material may be placed at the disposal site in accordance with Section 8(b). If the Licensee removes the invert slab, the Licensee shall restore the former canal area by decompacting the canal floor to support revegetation.

f) J.C. Boyle Powerhouse Tailrace

- i. The Licensee shall select and place material near the mouth of the former tailrace channel in a manner that resists erosion and scour;
- ii. Tailrace backfill material sourced from beneath industrial areas such as the adjacent substation and maintenance building must first be screened for the

presence of hazardous materials prior to use as fill material in the tailrace. Soils containing oil or hazardous substances may not be used as fill below the ordinary high water level.

- iii. The Licensee shall perform all restoration activities in accordance with the ESCP to reduce the potential for erosion and sedimentation.

9. Waste Disposal and Management Plan

Within 90 days of issuance of a surrender order, the Licensee shall submit to DEQ a Waste Disposal and Management Plan for review and approval. Once approved by DEQ, the Licensee shall implement the plan in accordance with its terms, including any modifications made by DEQ as conditions of its approval. The plan shall describe procedures for characterizing and appropriately managing all waste streams generated during facilities removal. The plan shall, at a minimum, include the following components:

a) Hazardous Materials

The plan must include the following information:

- i. Prior to drawdown, the Licensee shall commission a Phase I Environmental Site Assessment to identify the presence, nature, and quantities of hazardous substances associated with Lower Klamath Project facilities;
- ii. Prior to drawdown, the Licensee shall implement recommendations of the Phase I ESA including, as necessary, a Phase II ESA to characterize the magnitude, extent, and risk of hazardous materials in the environment. In consultation with DEQ, the Licensee shall undertake remedial actions to mitigate risks from residual hazardous materials in accordance with applicable state and federal law;
- iii. Procedures to manage disposal of hazardous and solid wastes in compliance with applicable state and federal law;
- iv. Comprehensive investigative and sampling procedures to confirm adequate abatement of hazardous materials;
- v. Procedures to manage all records, disposal receipts and/or manifests confirming transportation and disposal of hazardous materials.

The Licensee shall file a report with DEQ documenting the investigation, management and disposal of hazardous materials within 90 days of completing actions or an alternate schedule approved by DEQ.

b) Deleterious Waste Materials:

The Licensee is prohibited from placing biologically harmful materials including, but not limited to petroleum products, chemicals, cement cured less than 24 hours, welding slag and grindings, concrete saw cutting by-products, sandblasted materials,

chipped paint, tires, wire, steel posts, and asphalt where such materials could enter waters of the state, including wetlands. The Licensee must do the following:

- i. Cure concrete, cement, or grout for at least 24 hours prior to any contact with flowing waters;
- ii. Use only clean fill, free of waste and polluted substances;
- iii. Employ all practicable controls to prevent discharges of spills of deleterious materials to surface or ground water;
- iv. Maintain at the project construction site, and deploy as necessary, an adequate supply of materials needed to contain deleterious materials during a weather event;
- v. Remove foreign materials, refuse, and waste from the project area; and
- vi. Employ general good housekeeping practices at all times.

10. Spill Response

- a) The Licensee shall maintain a Spill Prevention, Control, and Countermeasure Plan in effect at all times in accordance with 40 CFR Part 112. The following specific requirements apply during site activities:
 - i. Vehicle staging, cleaning, maintenance, refueling, and fuel storage must be performed at least 150 feet from waters of the state. An exception may be authorized upon written approval by DEQ if all practicable prevention measures are employed and this distance is not possible because;
 - A. Physical constraints that make this distance not feasible (e.g., steep slopes, rock outcroppings);
 - B. Natural resource features would be degraded as a result of this setback;
 - C. Equal or greater spill containment and effect avoidance is provided even if staging area is less than 150 feet of any waters of the state.
 - D. If staging areas are within 150 feet of any waters of the state, as allowed under subsection (a)(iii) of this condition, full containment of potential contaminants must be provided to prevent soil and water contamination, as appropriate.
 - ii. All vehicles operated within 150 feet of any waters of the state must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected in the vehicle staging area must be repaired before the vehicle resumes operation;
 - iii. Before operations begin and as often as necessary during operation, equipment must be steam cleaned (or undergo an approved equivalent cleaning) until all visible external oil, grease, mud, and other visible contaminants are removed if the equipment will be used below the bank of a waterbody;

- iv. All stationary power equipment (e.g., generators, cranes, stationary drilling equipment) operated within 150 feet of any waters of the state must be covered by an absorbent mat to prevent leaks, unless other suitable containment is provided to prevent potential spills from entering any waters of the state
- v. An adequate supply of materials (such as straw matting/bales, geotextiles, booms, diapers, and other absorbent materials) needed to contain spills must be maintained at the project construction site and deployed as necessary;
- vi. All equipment operated in state waters must use biodegradable hydraulic fluid. A maintenance log documenting equipment maintenance inspections and actions must be kept on-site and available upon request.

b) Spill Incident Reporting;

- i. If petroleum products, chemicals, or any other deleterious materials are discharged into state waters, or onto land with a potential to enter state waters, the Licensee must promptly report the discharge to the Oregon Emergency Response System (OERS), at 1-800-452-0311);
- ii. If a release of petroleum products, chemicals, or other materials results in distressed or dying fish, the Licensee must immediately do the following: cease operations; take appropriate corrective measures to prevent further environmental damage; collect fish specimens and water samples; and notify DEQ, ODFW and other appropriate regulatory agencies.

11. Annual Compliance Report

The Licensee shall prepare and submit to DEQ an Annual Compliance Report by April 1 for the preceding year in which activities are performed pursuant to conditions required by this certification. The Annual Compliance Report shall include, as appropriate:

- a) Monitoring data including graphical representations, as appropriate;
- b) Records documenting required consultations and/or approvals;
- c) Narrative interpretation of results;
- d) Compliance evaluations;
- e) Efforts undertaken by the Licensee to achieve the objectives of the Aquatic Resource mitigation measures set forth in section 4 of this certification;
- f) A comprehensive presentation of all actions performed in accordance with the Reservoir Area Management Plan and include all data, observations, measurements, photo-documentation, findings and recommendations. The report shall compare reservoir restoration conditions with the objectives of the Reservoir Area Management Plan and document corrective or adaptive methods performed or recommended to meet those objectives.

- g) Efforts undertaken by the Licensee to achieve the objectives of the Groundwater Well Management Plan, including all well installations, field activities, outreach efforts, and monitoring results. The report shall include drill logs and well as-builts for project-installed monitoring wells; a comparison with installation depths and techniques from representative nearby wells; the results of any pumping or drawdown tests; an interpretation of the results; mitigation to improve water quality or quantity from affected wells; and findings and recommendations; and
- h) Efforts undertaken and anticipated completion of site restoration activities required in this certification.

The Licensee may also include a request for DEQ to consider approval of alternative or additional measures. As used in this section, alternative measures are methods or approaches not included in the Proposed Action that will provide or assist in providing, reasonable assurance that the Proposed Action will not cause or contribute to a violation of water quality standards beyond the compliance schedule described in Section 3. DEQ shall respond to any request for consideration of alternative measures within 60 days of receipt. DEQ shall notify the Licensee in writing of its approval or denial of the proposed alternative measures. Following DEQ approval, the Licensee shall implement the plan in accordance with the approved plan's terms and schedule, including any modifications made to the plan by DEQ as a condition of approval.

12. General

a) Section 401 Certification Modification

DEQ, in accordance with Oregon and Federal law including OAR Chapter 340, Division 48 and, as applicable, 33 USC 1341, may modify this Certification to add, delete, or alter Certification conditions as necessary to address;

- i. Adverse or potentially adverse Project effects on water quality or designated beneficial uses that did not exist or were not reasonably apparent when this § 401 certification was issued;
- ii. TMDLs (not specifically addressed above in these section 401 certification conditions);
- iii. Changes in water quality standards;
- iv. Any failure of these § 401 Certification Conditions to protect water quality or designated beneficial uses as expected when this § 401 Certification was issued; or
- v. Any change in the Project or its operations that was not contemplated by this § 401 Certification that might adversely affect water quality or designated beneficial uses.

b) Project Modification

The Licensee shall obtain DEQ review and approval before undertaking any change to the Proposed Action that may affect water quality other than modifications authorized or required by this certification.

c) Inspection

The Licensee shall allow DEQ such access as necessary to inspect the Project area and Project records required by these section 401 Certification Conditions and to monitor compliance with these section 401 Certification Conditions, upon reasonable notice and subject to applicable safety and security procedures when engaged in such access.

d) Posting

The Licensee shall maintain a copy of the section 401 water quality certification at the project site for the duration of the project. The certification shall be available for review by the Licensee and its contractors, as well as by DEQ, the US Army Corps of Engineers, National Marine Fisheries Service, Oregon Department of Fish and Wildlife, and other appropriate state and local government inspectors for the duration of the project.

e) Water Quality Standards Compliance

Notwithstanding the conditions of this Certification, no wastes shall be discharged and no activities shall be conducted which will violate state water quality standards.

f) Conflict Between Certification Conditions and Application

To the extent that there are any conflicts between the terms and conditions in this certification and how the Proposed Action, activities, obligations, and processes are described in the Application, the terms and conditions in this certification, as interpreted by DEQ, shall control.

13. Project Specific Fees

In accordance with ORS 543.080, the Licensee shall pay project-specific fees, in 2018 dollars adjusted according to the formula in Section 13b below, to DEQ for costs of overseeing implementation of this certification. The licensee shall pay an initial pro-rated payment to DEQ within 30 days of license surrender for the period from the date of license surrender to the first June 30, which follows license surrender.

a) Schedule

The Licensee shall pay project-specific fees to DEQ, made payable to State of Oregon, Department of Environmental Quality, according to the following schedule:

FERC License Surrender	Annual Project-Specific Fee Subject to Adjustment	Due
Year 1	\$42,578	Within 30 days
Year 2	\$40,000	July 1
Year 3	\$33,219	July 1
Year 4	\$7,254	July 1
Year 5	\$7,254	July 1

b) Annual Adjustment

Fee amounts shall be adjusted annually, according to the following formula:

$$AD = D \times (CPI-U)/(CPI-U-June\ 2018)$$

Where:

AD = Adjusted dollar amount payable to agency.

D = Dollar amount pursuant to Section 13a and Section 13b above,

CPI-U = the most current published version of the Consumer Price Index-Urban. The CPI-U is published monthly by the Bureau of Labor Statistics of the U.S. Department of Labor. If that index ceases to be published, any reasonably equivalent index published by the Bureau of Economic Analysis may be substituted by written agreement between DEQ and the Licensee.

c) Payment Schedule

Fees shall be paid pursuant to a written invoice from DEQ. Except as provided below, project-specific fees shall be due on July 1 of each year following issuance of the new FERC License. The Licensee shall pay an initial prorated payment to DEQ within 30 days of license surrender, for the period from the date of license surrender to the first June 30 that follows license surrender.

d) Credits

DEQ will credit against this amount any fee or other compensation paid or payable to DEQ, directly or through other agencies of the State of Oregon, during the preceding year (July 1 to June 30) for DEQ's or ODFW's costs of oversight.

e) Expenditure Summary

DEQ shall provide the Licensee with a biennial summary of project specific expenditures.

f) Duration

The project-specific fee shall expire 5 years after the first July 1 following the issuance of the new FERC license, unless DEQ terminates it earlier because oversight is no longer necessary. One year before the expiration of the fee, or earlier if mutually agreed, DEQ and the Licensee shall review the need, if any, to modify, extend, or terminate the fee, in accordance with ORS 543.080. The Licensee shall pay any project-specific fee required after such review as provided in ORS 543.080.

**APPENDIX E—STATE OF CALIFORNIA WATER QUALITY CERTIFICATE
CONDITIONS**

APPENDIX E
STATE OF CALIFORNIA WATER QUALITY CERTIFICATE CONDITIONS
April 7, 2020

CONDITION 1. WATER QUALITY MONITORING AND ADAPTIVE MANAGEMENT

The Klamath River Renewal Corporation (Licensee) shall submit the Water Quality Monitoring Plan (WQMP) for review and approval by the Deputy Director for the Division of Water Rights (Deputy Director) no later than six months following issuance of a Federal Energy Regulatory Commission (FERC) license surrender order and prior to Lower Klamath Project License Surrender (Project) implementation. The WQMP shall be developed in consultation with staff from the State Water Resources Control Board (State Water Board), North Coast Regional Water Quality Control Board (North Coast Regional Board), Oregon Department of Environmental Quality (ODEQ), and California Department of Fish and Wildlife (CDFW). The WQMP shall include comments received during the consultation process and identify how the Licensee addressed the comments.

The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy Director-approved WQMP, together with any required plan modifications, with FERC. Any changes to WQMP shall be approved by the Deputy Director prior to implementation. Upon receiving all necessary approvals, the Licensee shall implement the WQMP for the duration of the license surrender order or until otherwise approved by the Deputy Director in writing. The Deputy Director may require modifications to the WQMP, including implementation of additional adaptive management measures informed by monitoring results, as part of review and approval of reports as specified below.

At a minimum, the WQMP shall include: (1) a monitoring program to assess Project impacts to water quality; (2) a reporting schedule; (3) adaptive management measures based on water quality monitoring results; and (4) provisions for collection and submittal of water quality data to inform the Licensee's implementation of a water quality compliance schedule (Condition 2). Additionally, the WQMP shall describe; field sampling and analytical methods; monitoring locations; types of sampling (e.g., continuous, grab) and frequency by the category (as enumerated below); pre-drawdown monitoring; quality assurance plan and quality control measures; sediment load quantification; reporting and adaptive management; and other Project-related monitoring.

Field Sampling and Analytical Methods

The Licensee shall implement field sampling and monitoring methods consistent with the State of California's Surface Water Ambient Monitoring Program or equivalent methods approved by the Deputy Director. The Licensee shall use analytical methods that comply with Code of Federal Regulations, title 40, part 136, or methods approved by California's Environmental Laboratory Accreditation Program (ELAP), where such methods are available. Samples that require laboratory analysis shall be analyzed by ELAP-certified laboratories.

Types of Sampling and Frequency by Category

At a minimum, the WQMP shall identify the parameters and sampling frequency¹ for the three categories of sampling outlined below. Water quality monitoring shall be implemented at the noted frequency or more often.

Category 1: Continuous Water Quality Monitoring

The Licensee shall continuously monitor the following water quality parameters;

- (1) dissolved oxygen (DO) in milligrams per liter (mg/L) and percent saturation;
- (2) water temperature;
- (3) turbidity;
- (4) conductivity; and
- (5) pH.

Category 1 Frequency; At a minimum, 30-minute interval recordings.

Category 2: Water Quality Grab Samples

The Licensee shall collect and analyze water quality grab samples for the following parameters;

- (1) total nitrogen;
- (2) nitrate;
- (3) nitrite;
- (4) ammonia
- (5) total phosphorus;
- (6) particulate organic phosphorus;
- (7) orthophosphate;
- (8) particulate organic carbon;
- (9) dissolved organic carbon;
- (10) chlorophyll-a (beginning May 1 following drawdown activities and continuing annually from May 1 through October 31);
- (11) turbidity;
- (12) microcystin (beginning May 1 following drawdown activities and continuing annually from May 1 through October 31);

¹ See pre-drawdown monitoring below for minimum monitoring frequency prior to drawdown.

- (13) suspended sediment concentrations;
- (14) methylmercury (only at Klamath River monitoring locations below Copco No. 1);
- (15) settleable solids; and
- (16) particulate and dissolved aluminum (only at Klamath River monitoring locations below Iron Gate).

Category 2 Frequency: At a minimum, monthly (with the exception of suspended sediment concentrations), at approximately the same time of day, during and following drawdown. For suspended sediment concentrations, monitoring shall occur every two weeks.

Category 3: Klamath Riverbed Sediment Grab Samples

The Licensee shall collect and analyze sediment samples from the Klamath Riverbed prior to and following dam decommissioning. At a minimum, sediment samples shall be analyzed for the following parameters;

- (1) arsenic;
- (2) lead;
- (3) copper;
- (4) nickel;
- (5) iron;
- (6) aluminum;
- (7) dioxin;
- (8) cyanide;
- (9) mercury;
- (10) ethyl benzenes;
- (11) total xylenes;
- (12) dieldrin;
- (13) 4,4'-dichlorodiphenyltrichloroethane (DDT);
- (14) 4,4'-dichlorodiphenyldichloroethane (DDD);
- (15) 2,3,7,8-tetrachlorodibenzodioxin (TCDD);
- (16) 4,4'-dichlorodiphenyldichloroethylene (DDE); and
- (17) 2,3,4,7,8-pentachlordibenzofuran (PCDF).

Category 3 Frequency; One monitoring event prior to drawdown activities² and one event within 12 to 24 months of completing drawdown activities.

Monitoring Locations (Categories 1 through 3)

The Licensee shall consider the following when selecting monitoring locations; existing water quality monitoring stations in the Klamath River Basin, site access, land use, and input received during consultation. Whenever feasible, the Licensee shall select monitoring locations at or near existing water quality monitoring locations. At a minimum, the Licensee shall monitor at the following locations;

Category 1 (Continuous Water Quality Monitoring) and Category 2 (Water Quality Grab Samples³) shall be conducted at the following locations;

- Klamath River at or near United State Geological Survey (USGS) gage no. 11509500 (below Keno)
- Klamath River at or near USGS gage no. 11510700 (below J.C. Boyle)
- Klamath River upstream of Copco No. 1 Reservoir, and downstream of Shovel Creek;
- Klamath River downstream of Copco No. 2 Powerhouse, no further downstream than the Daggett Road bridge crossing of the Klamath River;
- Klamath River at or near USGS gage no. 11516530 (below Iron Gate);
- Klamath River at or near Walker Bridge (Category 1 monitoring only);
- Klamath River at or near USGS gage no. 11520500 (below Seiad Valley);
- Klamath River at or near USGS gage no. 11523000 (Orleans);
- Klamath River at or near USGS gage no. 11530500 (Klamath); and
- Klamath Estuary near the mouth of the Klamath River.

Category 3 (Klamath Riverbed Sediment Grab Samples) shall be collected at the following locations⁴;

- Klamath River upstream of Copco No. 1 Reservoir and downstream of Shovel Creek;
- Three locations in the Copco No. 1 Reservoir footprint, in areas where sediments will likely be terraced. If terracing does not occur at the previously sampled location, the sample location shall be moved to a location with terraced sediments;

² In lieu of collecting additional pre-drawdown [in-reservoir] samples, the Licensee may rely on the results of previously-analyzed sediment samples, to the extent they provide the necessary information.

³ Samples shall be collected at the same location, or as close as possible, each time.

⁴ Samples shall be collected at the same location, or as close as possible, each time. Locations should target slow-velocity depositional areas (eddies and backwaters) where fine sediment accumulation is most likely to occur.

- Klamath River downstream of Copco No. 2 Powerhouse, no farther downstream than the Daggett Road bridge crossing of the Klamath River;
- Three locations in the Iron Gate Reservoir footprint, in areas where sediments will likely be terraced. If terracing does not occur at the previously sampled location, the sample location shall be moved to a location with terraced sediments;
- Klamath River at or near USGS gage no. 11516530 (below Iron Gate);
- Klamath River at or near USGS gage no. 11523000 (Orleans); and
- Klamath Estuary.

Pre-Drawdown Monitoring (Categories 1 through 3)

At a minimum, prior to drawdown activities the Licensee shall monitor as follows;

- Category 1 (Continuous Water Quality Monitoring); One year of continuous monitoring at all Category 1 monitoring locations.
- Category 2 (Water Quality Grab Samples); One year with samples collected monthly, at all Category 2 monitoring locations.
- Category 3 (Klamath Riverbed Sediment Grab Samples); One collection event at all Category 3 monitoring locations, except as specified in Footnote 13.

Quality Assurance Project Plan

The Licensee shall develop a Quality Assurance Project Plan (QAPP) using the State Water Board's and United States Environmental Protection Agency's (USEPA's) guidance resources to describe the Project's monitoring goals, data needs and assessment, responsible individuals, quality assurance plan, equipment maintenance, quality control measures, and reporting deadlines. The QAPP shall be submitted as part of the WQMP.

Sediment Load Quantification

The Licensee shall submit reports to the Deputy Director describing the status of sediment movement at 12 and 24 months, respectively, following completion of drawdown activities. The reports shall; (a) quantify the amount of sediment present in each Project reservoir footprint; (b) quantify the total amount of sediment exported from the Project reservoirs; (c) quantify the amount of sediment that has settled in the Klamath River between Iron Gate Dam and Cottonwood Creek (River Mile⁵ [RM] 185); and (d) describe remediation activities planned or undertaken, if any. For (a) and (b) estimates shall be provided in million cubic yards, tons (dry weight), and percentage of sediment present compared to total amount of sediment present prior to drawdown. For (c) estimated sediment deposition shall be presented as total estimated quantities in million cubic yards, tons (dry weight), average depth change from pre-drawdown conditions, and percent particle size composition. The reports shall be submitted to the Deputy Director at 15- and 27-months following completion of drawdown activities, respectively.

⁵ River Mile (RM) refers to the distance, along the Klamath River, upstream from the mouth of the Klamath River at the Pacific Ocean.

Reporting and Adaptive Management; Prior to, during, and for a minimum of one year following completion of drawdown, the Licensee shall provide monthly monitoring reports to the State Water Board, ODEQ, and North Coast Regional Board. Monitoring and monthly reporting shall continue until otherwise approved by the Deputy Director in writing. The monthly report shall, at a minimum;

1) summarize the results of the month's monitoring; 2) be provided in a Microsoft Excel spreadsheet format and include all data collected during the reporting period; 3) highlight any exceedances of water quality objectives; 4) highlight observed trends; 5) request any changes to the WQMP; and 6) report on any adaptive management measures taken and propose any additional or substitute adaptive management measures to address exceedances. Any proposal to modify, reduce, or discontinue monitoring and reporting shall be included in the reports with a request for Deputy Director approval and must include information to support the request. Such requests must also comply with Tribal Water Quality Standards (Condition 22). Modifications to the WQMP or additional or substitute adaptive management measures requested by the Licensee require Deputy Director approval prior to implementation.

As noted in the Sediment Load Quantification section above, at 15 months and 27 months following completion of drawdown activities, the Licensee shall submit the reports describing the status of sediment movement.

Based on monitoring results, the Deputy Director may require the Licensee to modify monitoring parameters, frequency, methods, duration, constituents, reporting, or other elements of the WQMP, or to implement additional adaptive management measures. The Licensee shall implement changes upon receiving Deputy Director and any other required approvals. The Licensee shall file the Deputy-Director-approved updates to the WQMP with FERC. The Licensee may integrate the reporting in this condition with other reporting requirements outlined in this water quality certification (certification).

Other Project-Related Monitoring

The WQMP shall identify other monitoring efforts the Licensee plans to conduct under other plans or aspects of the Project, which include, but are not limited to monitoring under the following conditions; Sediment Deposits (Condition 4); Public Water Supplies (Condition 8); Construction: General Permit Compliance, and Water Quality Monitoring and Protection Plans (Condition 10); Hatcheries (Condition 13); and Recreation Facilities (Condition 19).

CONDITION 2. COMPLIANCE SCHEDULE

Project activities related to drawdown and the export of reservoir sediments into the Klamath River are anticipated to result in temporary exceedances of water quality objectives related to sediment. Temporary exceedance of a water quality objective is permissible for restoration projects with long-term benefits to water quality and beneficial uses. Pursuant to this certification, discharges to the Klamath River that exceed sediment-related water quality objectives can temporarily occur during and following reservoir drawdown, dam removal, and associated sediment flushing activities. The Licensee shall demonstrate that, in the long term, these Project activities attain all sediment-related water quality objectives listed in *the Water Quality Control Plan for the North Coast Region* (North Coast Basin Plan) as outlined in this condition. Implementation of this condition shall also serve to demonstrate compliance with North Coast Basin Plan prohibitions.

The Licensee shall monitor water quality consistent with Water Quality Monitoring and Adaptive Management (Condition 1) to assess attainment of water quality objectives listed in the North Coast Basin Plan. Within 36 months of beginning drawdown, unless otherwise approved by the Deputy Director in writing, the Licensee shall submit a report that documents; 1) Project attainment of sediment-related water quality objectives over a range of flows, including high winter flows and low summer flows; and 2) post-dam removal Klamath River water quality conditions following attenuation of impacts associated with drawdown and establishment of new riverine conditions.

The Licensee shall document changes in water quality following drawdown and assess trends in water quality parameters. The Licensee's report shall evaluate the Project's effects on all California portions of the Klamath River (i.e., from California/Oregon Stateline to Klamath Estuary) and Klamath River tributaries, including attainment of; (i) numeric water quality objectives outlined in Table 1; and (ii) narrative water quality objectives in the North Coast Basin Plan. Outlier exceedances that are localized or isolated may be accepted if the Project is consistently in attainment with water quality standards. Localized or isolated exceedances may be addressed through adaptive management associated with Restoration (Condition 14) or other measures proposed by the Licensee. If data indicate that a water quality objective is exceeded and the Licensee believes the exceedance is not a result of Project activities, the Licensee shall provide information and support demonstrating that the exceedance is not related to Project activities. The Deputy Director will consider the information provided by the Licensee in evaluating the Licensee's attainment of water quality objectives.

Table 1: Minimum Parameters to Demonstrate Attainment of Numeric Water Quality Objectives

Parameter	Water Quality Objective*
Turbidity	Turbidity shall not be increased more than 20% above naturally occurring background levels.
pH	pH shall be between 7.0 (minimum) and 8.5 (maximum). Changes in normal ambient pH levels shall not exceed 0.2

Parameter	Water Quality Objective*
	units in waters designated marine or saline beneficial uses nor 0.5 units within the range specified above in fresh waters with designated COLD** or WARM***.
Dissolved Oxygen (percent saturation)	<p>Stateline to the Scott River;</p> <ul style="list-style-type: none"> • October 1 to March 31: 90% • April 1 to September 30: 85% <p>Scott River to Hoopa;</p> <ul style="list-style-type: none"> • All year: 90% saturation <p>Downstream of Hoopa to Turwar;</p> <ul style="list-style-type: none"> • June 1 to August 31: 85% • September 1 to May 31: 90% <p>Upper and Middle Estuary:</p> <ul style="list-style-type: none"> • September 1 to October 31: 85% • November 1 to May 31: 90% • June 1 to July 31: 85% • August 1 through August 31: 80%
Temperature	<p>Elevated temperature waste discharges into COLD** interstate waters are prohibited.</p> <p>Thermal waste discharges having a maximum temperature greater than 5°Fahrenheit above natural receiving water temperature are prohibited.</p> <p>At no time or place shall the temperature of WARM*** intrastate water be increased more than 5°Fahrenheit above natural receiving water temperature.</p>
Specific Conductance	<p>Klamath River above Iron Gate Dam and including Iron Gate and Copco Reservoirs:</p> <ul style="list-style-type: none"> • 275 micromhos (50% upper limit)****; and • 425 micromhos (90% upper limit)***** <p>Middle Klamath River below Iron Gate Dam:</p> <ul style="list-style-type: none"> • 275 micromhos (50% upper limit); and • 350 micromhos (90% upper limit) <p>Lower Klamath River:</p> <ul style="list-style-type: none"> • 200 micromhos (50% upper limit); and • 300 micromhos (90% upper limit)

* Naturally occurring background levels, for the purpose of numeric water quality objectives in Table 1, are defined as the post-dam-removal condition of the Klamath River with successful implementation of revegetation and bank stabilization. It does not include discharges from construction or restoration activities, including failures of vegetation and/or bank stabilization.

** COLD is defined as Cold Freshwater Habitat uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

*** WARM is defined as Warm Freshwater Habitat uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

**** 50% upper and lower limits represent the 50 percentile values of the monthly means for the calendar year. 50% or more of the monthly means must be less than or equal to an upper limit and greater than or equal to a lower limit.

***** 90% upper and lower limits represent the 90 percentile values of the monthly means for the calendar year. 90% or more of the monthly means must be less than or equal to an upper limit and greater than or equal to a lower limit.

At 32 months following the beginning of drawdown, the Licensee shall submit an assessment of whether Project activities are anticipated to result in exceedance of a water quality objective(s) beyond 36 months following the beginning of Project drawdown. The assessment shall be submitted to the Deputy Director and the Executive Officer of the North Coast Regional Board (Executive Officer), and consistent with Tribal Water Quality Standards (Condition 22). If the assessment indicates a high risk of continued exceedance beyond this timeline, the Licensee shall immediately commence consultation with staff from the State Water Board and North Coast Regional Board regarding the development of a report and compliance proposal for actions to address the anticipated exceedance(s). The report and proposal shall be submitted to the Deputy Director for review and approval no later than 35 months following the beginning of Project drawdown activities and shall at a minimum include;

- A summary of which water quality objective(s) and compliance location(s) continue to exceed a water quality objective(s);
- An explanation of why the water quality objective(s) continues to be exceeded in relation to Project activities;
- A description of Licensee actions taken to date to address the exceedance(s); and
- A proposal to address the water quality objective(s) exceedance and associated timeline for attainment of compliance with the water quality objective(s).

The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy Director's approval, together with any required modifications, with FERC. The Licensee shall implement the compliance plan upon receiving Deputy Director and any other required approvals. Any changes to the compliance plan shall be approved by the Deputy Director prior to implementation.

If the Licensee is unable to demonstrate attainment of water quality objectives within 36 months of beginning Project drawdown activities, the Licensee shall notify the Deputy Director and immediately begin implementation of the approved compliance proposal, or the approved portions of the proposal if the entire proposal has not yet been approved.

CONDITION 3. RESERVOIR DRAWDOWN

No later than six months following issuance of the FERC license surrender order, the Licensee shall prepare and submit a Reservoir Drawdown and Diversion Plan (Drawdown Plan) to the Deputy Director for review and approval. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy Director's approval, together with any required modifications, with FERC. The Licensee shall implement the Drawdown Plan upon receipt of Deputy Director and any other required approvals. Any changes to the Drawdown Plan shall be approved by the Deputy Director prior to implementation.

At a minimum, the Drawdown Plan shall include;

- (1) The material elements of the drawdown plan presented in Section 4 of the Licensee's 2018 Definite Plan. If the Licensee proposes to change any elements material to water quality, the Drawdown Plan shall highlight such changes and provide a rationale, including any new information relied on;
- (2) A description of the facilities that will be used to draw down the reservoirs;
- (3) An updated flood frequency analysis and associated average flows;
- (4) Anticipated drawdown rates for each reservoir. The drawdown rate for each reservoir shall be determined using best available science and consider any potential slope instability issues;
- (5) Drawdown scenarios for different water years (e.g., wet, dry, etc.);
- (6) Construction schedule, including anticipated schedule for drawdown, and each reservoir's anticipated drawdown start and end dates;
- (7) Anticipated total (drawdown and inflow) and drawdown only discharge rates (cubic feet per second [cfs]) associated with each structure (e.g., spillways, diversion tunnels, outlets, etc.);
- (8) Public notice of Project schedule and potential impacts, including but not limited to closure of reservoirs, recreation facilities, and impacts to water quality;
- (9) Surface water elevation at which each reservoir is considered drawn down;
- (10) A detailed description of all structures related to reservoir operations that are proposed to be removed during drawdown;
- (11) Compliance with cofferdam requirements in this condition, and a detailed description of cofferdams that will be installed as part of drawdown that includes locations, timing and duration of installations, and other information related to how the installation and removal of cofferdams will be coordinated to limit impacts;

(12) A detailed description of operations required to maintain reservoir water at the gated spillway crest elevation on Copco No. 1 Dam between the conclusion of the first phase and initiation of the second phase of drawdown. (The two phases of Copco No. 1 Reservoir drawdown are described below.);

(13) Detail on how long Project powerhouses are anticipated to be operational during drawdown of the reservoirs; and

(14) An overview of the sequence of drawdown activities for all four reservoirs, including a detailed sequence of how drawdown activities will be implemented at each reservoir.

Cofferdams; Construction areas in active streams shall use cofferdams or equivalent barriers to isolate construction areas from instream flows. Instream water shall be routed around the isolated construction area either by pipe or by isolating the stream in phases so that construction does not impede stream flow around the construction area. In addition, all dewatering pump intakes shall be screened to avoid potential impacts to fish and all bypass routes (e.g., pipelines, outlets, etc.) shall be properly removed or sealed upon completion of Project activities unless otherwise approved by the Deputy Director as part of review and approval of the Drawdown Plan. Any fish entrained by a Project cofferdam shall be safely relocated.

The Licensee shall notify the Deputy Director, in writing, within 24 hours of initiation and conclusion of drawdown activities at each reservoir. The Licensee shall notify the Deputy Director within 72 hours of knowledge that reservoir drawdown has the potential to be delayed or extended while still meeting the requirements outlined in this certification. The notification shall include the reason for the delay or extension and a proposed revised drawdown schedule that complies with this condition. The Deputy Director may require modifications to the proposed revised drawdown schedule. Development of a proposed revised drawdown schedule shall include consultation with State Water Board staff.

Drawdown of the reservoirs shall occur over no more than a single six-month period between November 1 (earliest date to start drawdown) and May 1 of the following year (latest date to conclude drawdown), and shall occur as more specifically outlined below;

- Copco No. 1 Reservoir drawdown is divided into two timeframes based on the rate of drawdown⁶ allowed at specific reservoir elevations.
 - The first phase of Copco No. 1 Reservoir drawdown, from its normal operating reservoir elevation (2,609.5 feet) to gated spillway (crest elevation 2,597.0 feet),

⁶ For purposes of this certification, the actual drawdown rates may be less than what is described in the Drawdown Plan and may even be negative during storm events due to increased inflow to the reservoirs. The drawdown rates shall be sufficient to end drawdown of Copco No. 1 Reservoir by March 15 of the year directly following the initiation of Copco No. 1 Reservoir drawdown.

shall start no sooner than November 1 and no later than December 15. The maximum drawdown rate during the initial drawdown of Copco No. 1 Reservoir is two feet per day, unless otherwise approved by the Deputy Director based on new information provided in the Drawdown Plan. The initial phase of Copco No. 1 Reservoir drawdown shall be concluded no later than January 1.

- The second phase of Copco No. 1 Reservoir drawdown, from the gated spillway until empty, shall not start until at least two weeks after Iron Gate Reservoir drawdown begins and shall start no later than February 15 of the year directly following the initial drawdown of Copco No. 1 Reservoir. Copco No. 1 Reservoir drawdown shall conclude no later than March 15 of the year in which the second phase of Copco No. 1 Reservoir drawdown is initiated. The maximum drawdown rate for the second phase of Copco No. 1 Reservoir drawdown shall be five feet per day, unless otherwise approved by the Deputy Director based on new information provided in the Drawdown Plan.

The maximum additional discharge below Copco No. 1 Dam associated with Copco No. 1 Reservoir drawdown shall be limited to 6,000 cfs, unless otherwise approved by the Deputy Director based on new information provided in the Drawdown Plan. If initial drawdown of Copco No. 1 Reservoir has not started by December 15, drawdown activities shall be delayed until at least November 1 of the following calendar year.

- Iron Gate Reservoir drawdown shall start no sooner than January 1 of the year directly following the initiation of Copco No. 1 Reservoir drawdown and no later than January 15 of the same year. Iron Gate drawdown shall conclude no later than March 15 of the same year Iron Gate drawdown is initiated. The maximum drawdown rate for Iron Gate shall be five feet per day. The maximum additional discharge below Iron Gate Dam associated with Iron Gate Reservoir drawdown activities shall be limited to 6,000 cfs, unless otherwise approved by the Deputy Director based on new information provided in the Drawdown Plan.

- J.C. Boyle Reservoir drawdown shall start no sooner than January 1 and no later than February 1 of the year directly following the initiation of Copco No. 1 drawdown. J.C. Boyle Reservoir drawdown shall conclude no later than March 15 of the same year in which J.C. Boyle drawdown is initiated.

- Copco No. 2 Reservoir drawdown shall conclude no later than May 1 of the year following initiation of Copco No. 1 Reservoir drawdown.

Removal of the Project facilities shall begin and be completed, to the extent feasible, during drawdown to minimize the duration of sediment releases, and to comply with the schedule set forth in the Compliance Schedule (Condition 2) of this certification.

Additionally, drawdown and dam deconstruction shall be conducted to ensure instream flow requirements⁷ below Iron Gate Dam are maintained.

CONDITION 4. SEDIMENT DEPOSITS

Unless otherwise approved in writing by the Deputy Director, by no later than December of the first full calendar year following completion of drawdown activities, the Licensee shall assess and remediate (if appropriate) visibly obvious sediment deposits along the Klamath River from below Iron Gate Dam to the mouth of the Klamath Estuary that may have been deposited during reservoir drawdown activities. Assessment is limited to sediment deposits on parcels with a current or potential residential or agricultural (e.g., row crop) land use, for which the property owner has notified the KRRC of a potential sediment deposit that may be associated with reservoir drawdown activities.

Within 60 days of property owner notification, visibly obvious sediment deposits shall be assessed by the Licensee to determine if the deposits are consistent with physical sediment properties associated with Project reservoir sediments. Sediment deposits consistent with the physical sediment properties of Project reservoirs shall be tested for arsenic or remediated without testing per the requirements of this condition. If testing is performed, soil samples in the vicinity of the deposited sediments (e.g., from the adjacent riverbank and/or floodplain), shall also be tested for arsenic to determine the local background arsenic concentrations. No additional actions or remediation shall be required if the measured arsenic concentrations in the deposited sediments are less than or equal to measured local background soil concentrations for arsenic. If the concentration of arsenic in the deposited sediments on the river banks and floodplain of the Klamath River exceed local background levels and USEPA or California Environmental Protection Agency human health residential screening levels, the deposited sediments shall be remediated to local background levels through removal of the deposited sediments or soil

⁷ The United States Bureau of Reclamation's (USBR) Klamath River Project must meet flows below Iron Gate Dam that are specified in the *Endangered Species Act Section 7(a)(2) Biological Opinion, and Magnuson-Stevens Fishery Conservation and Management Act essential fish habitat response for Klamath Project operations from April 1, 2019 through March 31, 2024 (NMFS 2019)* and the *Biological Opinion on the Effects of the Proposed Klamath Project Operations from April 1, 2019, through March 31, 2024, on the Lost River Sucker and the Shortnose Sucker (USFWS, 2019)*(jointly 2019 BiOp). USBR has released two Biological Assessments (in February and April 2020) for amended operations, including amended flow requirements; one of these proposals - or other amendments - could occur prior to drawdown. Drawdown shall not interfere with implementation of the required instream flow requirements that are current at that time.

capping, if sediment removal is infeasible or poses a greater risk than soil capping.

For Sediment Deposits that Require No Further Action. Within 30 days of a determination that a reported deposit does not require remediation, either because it is not consistent with reservoir sediment deposits or because sediment testing does not indicate a need for further action, the Licensee shall notify the property owner and submit a report to the Deputy Director. At a minimum, the report shall include the location of the reported deposit, a summary of actions taken, and support for the determination that no further action is needed. If sampling was performed, the report shall also include, at a minimum;

- Estimated quantity of the reported sediment deposit;
- Arsenic testing method(s) used and the number, location, and depth of samples collected from the reported sediment deposit and surrounding soils (background); and
- Arsenic concentrations associated with each sample.

The Deputy Director may require additional testing, remediation, or other actions based on the report. The Licensee shall provide additional information upon request by the Deputy Director.

For Sediment Deposits that Require Further Action. Within 14 days following completion of the inspection of a reported sediment deposit that requires further action (including any associated sediment sampling results), the Licensee shall submit a Sediment Deposit Remediation Plan to the Deputy Director for review and approval. At a minimum, the Sediment Deposit Remediation Plan shall include;

- Estimated location and quantity of the reported sediment deposit;
- If testing was performed, the arsenic sediment testing methods used and the number, location, depth, and concentration associated with each sediment samples collected from the reported sediment deposit and surrounding soils (background); and
- Proposed remediation actions, including a schedule for remediation and any proposed post-remediation soil sampling. If soil capping is proposed, the Licensee shall provide documentation supporting why soil removal is infeasible or poses a greater risk than soil capping.

The Deputy Director may require modifications to the Sediment Deposit Remediation Plan as part of any approval. The Licensee shall file the Deputy Director's approval, together with any required modifications, with FERC. The Licensee shall implement the Sediment Deposit Remediation Plan upon receipt of Deputy Director and any other required approvals. Any changes to the Sediment Deposit Remediation Plan shall be approved by the Deputy Director prior to implementation.

Within 30 days of completing remediation activities, the Licensee shall provide the property owner and Deputy Director with a report documenting completion of the remediation. At a minimum, the report shall include the location of the remediation, a

summary of action(s) taken including the quantity of soil removed or area capped, and support for the determination that no further remediation is needed. Additionally, if post-remediation soil sampling was performed, the report shall include, at a minimum; arsenic soil testing method(s) used; the number, location, and depth of soil samples collected and their relation to the area remediated; and the associated arsenic soil concentrations.

The Deputy Director may require additional testing, remediation, or other actions based on the report. The Licensee shall provide additional information upon request by the Deputy Director.

CONDITION 5. ANADROMOUS FISH PRESENCE

The purpose of fish presence surveys is to ensure that following Project implementation anadromous fish can volitionally access the Klamath River and its tributaries within and upstream of the California portion of the Hydroelectric Reach⁸). Accordingly, the Licensee shall conduct surveys to document anadromous fish presence and access to the tributaries and mainstem Klamath River.

No later than 24 months following issuance of a FERC license surrender order, the Licensee shall submit a Fish Presence Monitoring Plan (Fish Presence Plan) to the Deputy Director for review and approval. The Fish Presence Plan shall be developed in consultation with staff from the State Water Board, North Coast Regional Board, CDFW, and National Marine Fisheries Service (NMFS). The Licensee shall solicit comments from the agencies listed above. Additionally, the Fish Presence Plan shall include comments received during the consultation process and identify how the Licensee has addressed the comments. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy-Director-approved Fish Presence Plan, together with any required plan modifications, with FERC. The Licensee shall implement the Fish Presence Plan upon Deputy Director and any other required approvals. Any changes to the Fish Presence Plan shall be approved by the Deputy Director prior to implementation.

At a minimum, the Fish Presence Plan shall include: (1) a list of anadromous fish species covered by the plan; (2) California survey reaches; (3) timing, frequency, and duration of surveys; (4) survey methods; and (5) reporting. Additional information on the minimum requirements for each of these plan elements is provided below. Additionally, the Fish Presence Plan may include a discussion of how the information collected under Action 1 (Tributary-Mainstem Connectivity) of the Mainstem Spawning Aquatic Resources Measure (Condition 6) will be used to inform implementation of the Fish Presence Plan.

Fish Species; The Fish Presence Plan shall, at a minimum, include surveys for the following anadromous fish species; spring-run and fall-run Chinook salmon

⁸ The Hydroelectric Reach refers to the stretch of the Klamath River that begins at the confluence of J.C. Boyle Reservoir with the Klamath River and continues to the base of Iron Gate Dam, and includes both J.C. Boyle and Copco No. 2 bypass reaches, and tributaries in this reach such as Jenny Creek, Fall Creek, Spencer Creek, and Shovel Creek.

(*Oncorhynchus tshawytscha*), coho salmon (*Oncorhynchus kisutch*), Pacific lamprey (*Entosphenus tridentatus*), and steelhead (*Oncorhynchus mykiss*).

California Survey Reaches; Unless otherwise approved by the Deputy Director in writing, the Licensee shall survey, in California, all tributaries with potentially viable anadromous fish habitat that have a confluence in the Hydroelectric Reach, as well as the mainstem Klamath River to the state line to determine if anadromous fish are present. Specific survey reaches of the mainstem Klamath River shall include areas upstream of the California Project reservoir footprints.

Timing, Frequency, and Duration; Fish presence surveys shall begin in the third year following the completion of drawdown. Fish presence surveys shall be conducted for at least four consecutive years and until otherwise approved or modified by the Deputy Director. The Licensee, through annual reporting (discussed below), may request to reduce the duration or scope of surveys based on new information (e.g. survey results that substantiate either anadromous fish presence or lack of fish passage barriers related to Project implementation).

Survey Methods; The Licensee shall propose appropriate survey methods (e.g., carcass surveys, snorkel surveys, etc.) to evaluate anadromous fish presence. Information provided shall include; number of days required for surveys with approximate field crew size; equipment that will be used to assess fish presence; global positioning system (GPS) and map of survey areas; field documentation methods (e.g., data sheets, photo documentation); and survey timing. The results of tributary fish presence surveys may be used to determine the need for surveys of the mainstem Klamath River (e.g., anadromous fish present in tributaries above Copco No. 1 Reservoir footprint would indicate anadromous fish can access portions of the mainstem Klamath River below that point, eliminating the need for additional evaluation). A minimum of four weeks prior to conducting fish presence surveys, the Licensee shall notify staff from the State Water Board, North Coast Regional Board, CDFW, and NMFS so that agency staff may participate in the surveys, if desired.

Reporting; The Licensee shall report fish presence survey results annually to the Deputy Director.

Annual reports shall, at a minimum, include;

- (1) A summary of the fish presence results; and
- (2) An overall assessment of fish presence in the newly accessible Klamath River and tributaries. The Licensee shall consider fish return projections and observations (e.g., barrier) as part of the fish surveys in the reports.

Additionally, the fourth annual report shall, at a minimum, include;

- (1) An analysis of whether any encountered fish passage impediment is Project-related; and
- (2) Proposed actions to remedy any Project-related impediments to anadromous fish.

The Deputy Director may require the Licensee to submit proposed actions to address a fish passage impediment that the Deputy Director finds is Project-related. Prior to implementing any proposed actions, the Licensee shall receive approval from the Deputy Director. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy Director's approval, together with any required modifications, with FERC. The Licensee shall implement the action upon receipt of Deputy Director and any other required approvals.

CONDITION 6. AQUATIC RESOURCES

The Licensee shall implement the Aquatic Resource (AR) Measures; as proposed in Appendix I of the 2018 Definite Plan (Appendix I); updated by the Licensee's October 10, 2018 letter to the State Water Board; and based on the requirements presented in this condition. Except to the extent changes are required by this condition, the Licensee shall submit to the Deputy Director any proposed changes in the material terms of the measures described in the June 2018 Appendix I and October 2018 updates, along with an explanation of the reason for the proposed change and any additional information relied on. The Deputy Director may approve, deny, or conditionally approve any changes to the AR Measures proposed by the Licensee.

Mainstem Spawning Aquatic Resource Measure

The Mainstem Spawning AR Measure includes two actions; 1) Tributary-Mainstem Connectivity; and 2) Spawning Habitat Evaluation.

Action 1; Tributary-Mainstem Connectivity. No later than six months following issuance of a FERC license surrender order and prior to Project implementation, the Licensee shall submit the Tributary-Mainstem Connectivity Plan for Deputy Director review and approval. The Tributary-Mainstem Connectivity Plan shall be developed in consultation with staff from the State Water Board, North Coast Regional Board, ODEQ, NMFS, and CDFW. The Licensee shall solicit comments from the agencies listed above. Additionally, the Tributary-Mainstem Connectivity Plan shall include comments received during the consultation process and identify how the Licensee has addressed the comments. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy-Director-approved Tributary-Mainstem Connectivity Plan, together with any required plan modifications, with FERC. The Licensee shall implement the Tributary-Mainstem Connectivity Plan upon receipt of Deputy Director and any other required approvals. Any changes to the Tributary-Mainstem Connectivity Plan shall be approved by the Deputy Director prior to implementation.

The Tributary-Mainstem Connectivity Plan shall assess tributary confluences with the Klamath River for connectivity that provides coho salmon, Chinook salmon, steelhead, and Pacific lamprey passage. At a minimum, the Tributary-Mainstem Connectivity Plan shall include; proposed monitoring elements such as methods, timing, duration, frequency, and locations; and proposed reporting. The Tributary-Mainstem Connectivity Plan shall also include potential actions the Licensee may implement to remove Project-related obstructions to tributary connectivity and fish passage. The Tributary-Mainstem Connectivity Plan shall monitor and address tributary connectivity and fish passage in at least the tributaries identified in Action 1 of the Mainstem Spawning AR Measure (i.e., at

least four tributaries in the Hydroelectric Reach and five tributaries from below Iron Gate to Cottonwood Creek), as well as all newly created stream channels that were previously inundated by Project reservoirs prior to drawdown.

The Tributary-Mainstem Connectivity Plan shall include monitoring for at least two years directly following the completion of drawdown activities, and within one month following a five-year flow event⁹¹⁰ unless it is unsafe for field crews, in which case monitoring shall be conducted as soon thereafter as safe conditions occur.

Reporting; The Licensee shall submit annual reports to the Deputy Director. Annual reports shall, at a minimum, include;

- (1) A summary of monitoring results;
- (2) An overall assessment of fish passage in the newly accessible Klamath River and tributaries; and
- (3) A summary of tributary obstructions that limit fish passage and proposed remedial actions.

Action 2: Spawning Habitat Evaluation. The Licensee shall implement spawning gravel surveys as proposed in Action 2 of the Mainstem Spawning AR Measure. The Licensee shall develop a Spawning Habitat Availability Report and Plan (SHARP) that; (i) summarizes the survey of newly-accessible anadromous fish spawning habitat; and (ii) proposes actions to augment spawning habitat in the mainstem Klamath River and its tributaries. The SHARP shall be developed in consultation with staff from the State Water Board, North Coast Regional Board, CDFW, NMFS, United States Fish and Wildlife Service (USFWS), ODEQ, and Oregon Department of Fish and Wildlife. The SHARP shall be submitted to the Deputy Director for review and approval no later than December 31 of the year in which drawdown is completed. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy-Director-approved SHARP, together with any required plan modifications, with FERC. The Licensee shall implement the actions identified in the Deputy-Director-approved SHARP upon receipt of Deputy Director and any other required approvals. Any changes to the SHARP shall be approved by the Deputy Director prior to implementation.

The SHARP shall include the following elements for proposed actions to improve spawning habitat; 1) a detailed description of each proposed action; 2) locations of the proposed actions; 3) duration and timing (e.g., season) for implementation of the proposed actions; 4) assessment of estimated spawning habitat benefits resulting from the proposed action compared to the targets identified in Action 2 of the Mainstem Spawning

⁹ A 5-year flow event is 10,908 cfs as recorded at USGS gage no. 11516530 (below Iron Gate).

¹⁰ A 5-year flow event may occur outside of the two years following completion of drawdown, in which case the monitoring described here would be required.

AR Measure; and 5) reporting on SHARP implementation. In the SHARP, the Licensee shall evaluate a range of actions to meet the spawning targets identified in Action 2 (Table 3-2) of the Mainstem Spawning AR Measure. When spawning gravel augmentation is not appropriate¹¹, the Licensee shall evaluate and propose other actions to improve spawning and rearing habitat that meet the targets identified in Table 3-2 (Action 2 of the Mainstem Spawning AR Measure). Other actions may include; installation of large woody material, riparian planting for shade coverage, wetland construction or enhancement, and cattle exclusion fencing.

Juvenile Outmigration Aquatic Resource Measure

The Juvenile Outmigration AR Measure includes three actions; 1) Mainstem Salvage of Overwintering Juvenile Salmonids; 2) Tributary-Mainstem Connectivity Monitoring; and 3) Rescue and Relocation of Juvenile Salmonids and Pacific Lamprey from Tributary Confluence Areas.

Action 1; Mainstem Salvage of Overwintering Juvenile Salmonids. Except as modified by this condition, the Licensee shall implement overwintering juvenile salmonid salvage and relocation efforts as proposed in Action 1 of the Juvenile Outmigration AR Measure. The Licensee shall survey sites in the Klamath River between Iron Gate Dam (RM 192.9) and the Trinity River (RM 43.4) during the pre- and early-drawdown surveys described in Action 1 of the Juvenile Outmigration AR Measure to evaluate the presence and relative abundance of yearling coho salmon. Site selection and survey methods shall be developed in consultation with staff from CDFW, NMFS, State Water Board, and North Coast Regional Board, and implemented as approved by the Deputy Director.

Action 2; Tributary-Mainstem Connectivity Monitoring. The Licensee shall implement Action 2 of the Juvenile Outmigration AR Measure as proposed, with the same modifications identified in Action 1 of the Mainstem Spawning AR Measure, above.

Action 3; Rescue and Relocation of Juvenile Salmonids and Pacific Lamprey from Tributary Confluence Areas. No later than six months following issuance of the FERC license surrender order, the Licensee shall submit a Juvenile Salmonid and Pacific Lamprey Rescue and Relocation Plan (Juvenile Salmonid Plan) to the Deputy Director for review and approval. The Juvenile Salmonid Plan shall be developed in consultation with staff from the State Water Board, North Coast Regional Board, NMFS, and CDFW. The Licensee shall solicit comments from the agencies listed above. Additionally, the Juvenile Salmonid Plan shall include comments received during the consultation process and identify how the Licensee has addressed the comments. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy-Director-approved Juvenile Salmonid Plan, together with any required plan modifications, with FERC prior to initiating drawdown. The Licensee shall implement the Juvenile Salmonid Plan upon receipt of Deputy Director and any other required

¹¹ Gravel augmentation shall only be performed in the mainstem Klamath River unless the Deputy Director-approved SHARP allows otherwise.

approvals. Any changes to the Juvenile Salmonid Plan shall be approved by the Deputy Director prior to implementation.

At a minimum, the Juvenile Salmonid Plan shall include;

- (1) Methods that will be used to find and relocate juvenile salmonids and lamprey;
- (2) Potential relocation areas and/or criteria that will be used to identify potential relocation areas;
- (3) Detailed description of water quality monitoring to be performed at each confluence of the Klamath River and the 13 tributaries¹² listed in Action 3 of the Juvenile Outmigration AR Measure. In addition, the plan shall include water quality triggers for implementation of lamprey and juvenile salmonid relocation efforts. The Licensee shall perform the water quality monitoring required here consistent with the sampling methods and quality control procedures identified in the Deputy-Director-approved WQMP and its QAPP (Condition 1). The Licensee shall provide the proposed frequency, duration, and location of water quality monitoring that will be conducted under Action 3 of the Juvenile Outmigration AR Measure. The Licensee may use water quality monitoring results from implementation of the WQMP (Condition 1), as applicable. The plan shall identify what monitoring results from Condition 1 may be used under this action;
- (4) Detailed description of proposed rescue efforts that includes; duration, method of rescue, target number of fish, locations for capture and relocation;
- (5) Provisions for incidental rescue and relocation of Pacific lamprey encountered in tandem with any juvenile salmonid rescue and relocation efforts: and
- (6) Reporting to the Deputy Director on implementation of Action 3 of the Juvenile Outmigration AR Measure within six months following implementation of rescue and relocation efforts. At a minimum, reporting shall include; a summary of the water quality data collected; any actions taken by the Licensee to rescue and relocate lamprey and juvenile salmonids, including number of lamprey and juvenile salmonids rescued (including age class), release location, and the success of such efforts.

Iron Gate Hatchery Management Aquatic Resource Measure

The Licensee shall implement the Iron Gate Hatchery Management AR Measure– as listed in the Licensee’s June 2018, Appendix I.

Suckers Aquatic Resource Measure

The Licensee shall implement the Suckers AR Measure as listed in the Licensee’s June 2018, Appendix I. The Licensee shall submit the summary reports to the Deputy Director no later than six months after each sampling event or no later than three months following issuance of the FERC license surrender order for sampling events implemented before

¹² The 13 tributaries are; Bogus Creek, Dry Creek, Cottonwood Creek, Shasta River, Humbug Creek, Beaver Creek, Horse Creek, Scott River, Tom Martin Creek, O’Neil Creek, Walker Creek, Grider Creek, and Seiad Creek.

license surrender order issuance. The Licensee shall submit summary reports to the Deputy Director detailing relocation efforts implemented under this measure no later than three months following completion of the relocation efforts.

Freshwater Mussels Aquatic Resource Measure

The Licensee shall implement the Freshwater Mussels AR Measure, as listed in the Licensee's October 2018 letter to the State Water Board. The Licensee shall submit summary reports to the Deputy Director detailing relocation efforts implemented under this measure no later than three months following completion of the relocation efforts.

CONDITION 7. REMAINING FACILITIES

No later than six months following issuance of the FERC license surrender order, and prior to Project implementation, the Licensee shall submit a Remaining Facilities Plan to the Deputy Director for review and approval. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy Director-approved Remaining Facilities Plan, together with any required plan modifications, with FERC. The Licensee shall implement the Remaining Facilities Plan upon receiving Deputy Director and any other required approvals. Any changes to the Remaining Facilities Plan shall be approved by the Deputy Director prior to implementation.

At a minimum, the Remaining Facilities Plan shall include;

- (1) A list and description of all Project facilities and structures that will be retained during Project implementation¹³, including but not limited to facilities buried in place;
- (2) An analysis of potential water quality impacts associated with remaining facilities and operations, including hazardous materials or wastes present at the facilities and the potential for erosion or runoff to surface waters;
- (3) Measures the Licensee will implement to ensure remaining facilities do not contribute to water quality impairments; and
- (4) Provisions to ensure that any ongoing measures will be implemented when ownership of the facilities and/or responsibility for operations is transferred to another entity.

CONDITION 8. PUBLIC DRINKING WATER SUPPLIES

This condition outlines provisions to ensure protection of public drinking water supplies that may be impacted by Project implementation, including drinking water supplies sourced from the Klamath River and the City of Yreka's water supply. The provisions for each of these types of water supplies are provided below.

¹³ While all remaining facilities shall be listed in the Remaining Facilities Plan, it is not necessary to include a description and other information for recreational facilities addressed under Recreation Facilities (Condition 19) and hatcheries addressed under Hatcheries (Condition 13).

Drinking Water Supplies Sourced from the Klamath River. No later than three months following issuance of the FERC license surrender order, and prior to Project implementation, the Licensee shall consult with community water systems, transient non-community water systems, or other drinking water providers that use Klamath River surface water for drinking water to identify appropriate measures to reduce water supply impacts associated with Project implementation. The Licensee shall ensure that Project implementation does not result in service of water that fails to meet drinking water quality standards. Potential measures shall include, as appropriate; (1) providing an alternative potable water supply; (2) providing technical assistance to assess whether existing treatment is adequate to treat the potential increase in sediments and sediment-associated contaminants to meet drinking water standards; (3) providing water treatment assistance to adequately treat Klamath River water to minimize suspended sediments and associated constituents that may impact human health; (4) ensuring that transient, non-community supplies are temporarily shut off for drinking; and/or (5) ensuring that water not intended for drinking is clearly marked as non-potable.

At least six months prior to initiating drawdown, the Licensee shall submit a report to the Deputy Director that; (i) identifies all drinking water supplies sourced from the Klamath River that may be impacted by the Project; (ii) details measures the Licensee will implement to protect each potentially affected water supply and why such measures are sufficient to protect the drinking water supplies; and (iii) documents consultation with the applicable water supplier and how any comments made on the proposed measures were addressed in the report. The Licensee shall implement the measures sufficiently prior to, during, and following the reservoir sediment releases to ensure protection of water supplies. The Deputy Director may require modifications or additional measures. The Licensee shall provide the Deputy Director with a summary of its implementation of this provision within three months of concluding implementation of the measures.

City of Yreka's Water Supply. Prior to initiating drawdown of Project reservoirs, the Licensee shall construct a new, fully operational replacement pipe for the City of Yreka's current water supply pipeline for the section of pipe that crosses Iron Gate Reservoir. The new replacement pipeline section shall be connected to the existing City of Yreka water supply pipeline and installed in a location that prevents Klamath River flows during and after drawdown from affecting the City of Yreka's water supply.

Any work the Licensee undertakes to ensure that the City of Yreka water supply intake structures comply with fish screen criteria shall be completed within the water delivery outage period specified in this condition. Installation of a fish barrier that does not impact the City of Yreka's water supply and associated intake structures may be performed at an alternate time outside of the water delivery outage period.

Except as provided in this condition, the Licensee shall ensure uninterrupted water supply during replacement of the water pipeline section, any required intake structure modifications, and throughout Project implementation. A short water delivery outage is necessary to make the final connections following construction of the new pipeline. The Licensee shall limit the water delivery outage to a maximum of 12 hours or another water delivery outage timeframe agreed upon between the City of Yreka and the Licensee. The Licensee shall coordinate the water delivery outage period with the City of Yreka to

ensure the City of Yreka has an adequate supply of water stored to cover the maximum water delivery outage period.

Water pipeline and intake work shall not cause impacts to water quality that exceed North Coast Basin Plan standards. If the Licensee proposes any in-water work, the Licensee shall prepare a water quality monitoring and protection plan in compliance with Condition 10 of this certification for Deputy Director review and approval.

CONDITION 9. AQUATIC VEGETATION MANAGEMENT

In the event chemical vegetation control is proposed to control algae or aquatic weeds, the Licensee shall consult with staff from the United States Army Corps of Engineers (USACE), CDFW, North Coast Regional Board, and State Water Board and submit a proposal to the Deputy Director for review and approval. The proposal shall include; (1) the Licensee's plans to implement chemical vegetation management, including any public noticing or additional measures proposed beyond those required in this certification; (2) the timeline for the application of chemicals and any potential impacts to beneficial uses of water, including Native American culture uses; (3) comments and recommendations made in connection with the consultation and how they were incorporated into the proposal; and (4) a description of how the proposal incorporates or addresses use of glyphosate in an aquatic formulation, avoidance of glyphosate formulations containing the surfactants POEA or R-11, and prohibition of application if precipitation is predicted within 24 hours of intended use. If another herbicide is selected for use, it shall meet the characteristics of low soil mobility and low toxicity to fish and aquatic organisms and shall be applied using low use rates (i.e., spot treatments), avoidance of application in the rain, avoidance of treatments during periods when fish are in life stages most sensitive to the herbicide(s) used, and adherence to appropriate buffer zones around stream channels as specified in Bureau of Land Management 2010¹⁴.

The Deputy Director may approve, deny, or require modifications of the proposal. The Licensee shall file any Deputy-Director-approved proposal, together with any required proposal modifications, with FERC. The Licensee shall implement the proposal upon Deputy Director and any other required approvals. Any changes to the proposal shall be approved by the Deputy Director prior to implementation.

At a minimum, the Licensee shall comply with the terms in State Water Board Order No. 2013-0002-DWQ (as amended by Order 2014-0078-DWQ), National Pollutant Discharge Elimination System (NPDES) No. CAG990005, *Statewide National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Water of the United States from Algae and Aquatic Weed Control Applications* and any amendments thereto.

¹⁴ Bureau of Land Management (BLM). 2010. Final environmental impact statement. Vegetation treatments using herbicides on BLM lands in Oregon. Volume 2- Appendices. FES 10-23 BLM/OR/WA/AE-10/077+1792. Prepared by BLM, Pacific Northwest Region, Portland, Oregon.

CONDITION 10. CONSTRUCTION GENERAL PERMIT COMPLIANCE AND WATER QUALITY MONITORING AND PROTECTION PLANS

The Licensee shall comply with the terms and conditions in the State Water Board's *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit; State Water Board Order 2009-0009-DWQ, as amended by State Water Board Orders 2010-0014-DWQ and 2012-0006-DWQ), and ongoing amendments during the life of the Project.

For any ground-disturbing activities that could impact water quality (including beneficial uses) that are neither addressed by the Construction General Permit nor addressed in other conditions of this certification (e.g., Reservoir Drawdown [Condition 3], Hatcheries [Condition 13], and Restoration [Condition 14]) site-specific water quality monitoring and protection plans shall be prepared and implemented following Deputy Director approval. Prior to construction or other activity that could impact water quality or beneficial uses, the Licensee shall submit the water quality monitoring and protection plan to the Deputy Director for review and approval. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy Director's approval, together with any required modifications, with FERC. The Licensee shall implement site specific water quality monitoring and protection plans upon receipt of Deputy Director and any other required approvals.

Any water quality monitoring and protection plans shall include measures to control erosion, stream sedimentation, dust, and soil mass movement. The plans shall be based on actual-site geologic, soil, and groundwater conditions and at a minimum include;

- (1) Description of site conditions and the proposed activity;
- (2) Detailed descriptions, design drawings, and specific topographic locations of all control measures in relation to the proposed activity, which may include;
 - a. Measures to divert runoff away from disturbed land surfaces;
 - b. Measures to collect and filter runoff from disturbed land surfaces, including sediment ponds at the sites; and
 - c. Measures to dissipate energy and prevent erosion;
- (3) Revegetation of disturbed areas using native plants and locally-sourced plants and seeds; and
- (4) A monitoring, maintenance, and reporting schedule.

Potential best management practices (BMPs) include those identified in the Licensee's 2018 Definite Plan, the Licensee's September 30, 2017, Technical Support Document, *Water Quality Management for Forest System Lands in California –Best Management Practices* (USFS 2012), California Department of Transportation's May 2017 *Construction Site Best Management Practices (BMP) Manual* (Caltrans BMP Manual) (Caltrans 2017), or other appropriate documents.

CONDITION 11. WASTE DISPOSAL

No later than six months following issuance of the FERC license surrender order, the Licensee shall submit a Waste Disposal Plan to the Deputy Director for review and approval. The Waste Disposal Plan shall describe how the Licensee will manage and dispose of all non-hazardous wastes¹⁵ generated as part of the Project in a manner protective of water quality. The Waste Disposal Plan shall be developed in consultation with staff from the North Coast Regional Board and State Water Board. The Licensee shall solicit comments from the agencies listed. Additionally, the Waste Disposal Plan shall include comments received during the consultation process and identify how the Licensee has addressed the comments. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy Director's approval, together with any required modifications, with FERC. The Licensee shall implement the Waste Disposal Plan upon receipt of Deputy Director and any other required approvals. Any changes to the Waste Disposal Plan shall be approved by the Deputy Director prior to implementation.

At a minimum, the Waste Disposal Plan shall include;

- (1) The elements of the waste disposal description presented in Section 5 of the Licensee's 2018 Definite Plan, that influence water quality, and as updated based on the requirements presented in this condition. If the Licensee proposes to change any elements material to water quality, the Waste Disposal Plan submittal shall highlight such changes and provide a rationale, including any new information relied on;
- (2) An estimate of the quantity and nature of anticipated waste generated by dam removal and other Project decommissioning activities and a description of where all materials and debris will be disposed;
- (3) A detailed description of on-site disposal, including the proposed locations and associated size of sites;
- (4) Erosion control measures for on-site disposal activities; and
- (5) A proposal to restore on-site disposal sites with topsoil and native vegetation, including monitoring, reporting, and follow up actions (if needed) to ensure the long-term stability of the restored disposal site and protection of water quality.

On-site disposal of inert, non-hazardous debris resulting from dam removal and other Project decommissioning activities may be buried in accordance with requirements in division 2, title 27 of the California Code of Regulations. With exception of the J.C. Boyle scour hole and powerhouse tailrace disposal sites identified in the 2018 Definite Plan, the Licensee shall ensure that the disposal sites are above the ordinary high-water

¹⁵ Management of hazardous materials is covered in Hazardous Materials Management (Condition 12). Additionally, the Licensee shall provide support for why other appropriate BMPs from the Caltrans Manual are sufficient to protect water quality and beneficial uses.

mark (OHWM) and in a location that does not drain directly to surface waters. The Licensee shall select disposal site locations where drainage patterns can be preserved. If a waste disposal site has the potential to drain into surface waters, catch basins shall be constructed whenever feasible¹⁶ and other appropriate BMPs from the Caltrans BMP Manual shall be implemented, to intercept runoff before it reaches surface waters. On-site disposal areas that will remain uncovered through the rainy season (between October 16 and May 14) shall be protected with appropriate BMPs from the Caltrans BMP Manual to prevent erosion. Reinforced steel and other recyclable materials should be recycled at local recycling facilities. Excavated embankment material may be used as topsoil to cover on-site disposal areas prior to grading and being sloped for drainage. Concrete rubble resulting from demolition of the powerhouses may be buried in the existing tailrace channel. All mechanical and electrical equipment shall be hauled to a suitable commercial landfill or salvage collection point. Prior to Project completion, all on-site disposal locations shall be graded and vegetated to reduce the potential for erosion.

CONDITION 12. HAZARDOUS MATERIALS MANAGEMENT

No later than six months following issuance of the FERC license surrender order, the Licensee shall submit a Hazardous Materials Management Plan to the Deputy Director for review and approval. The Hazardous Materials Management Plan shall be developed in coordination with State Water Board staff. The Hazardous Materials Management Plan shall include the following; (a) proper disposal or abatement of hazardous materials and wastes that are encountered as part of decommissioning activities (e.g., asbestos tiles or building materials, batteries, etc.); (b) proper storage, containment, and response to spills of hazardous materials and wastes that are part of Project implementation (e.g., gasoline and diesel for vehicles, oil and other fluids for construction equipment, etc.); and (c) proper removal and disposal of septic tanks. At a minimum, the Hazardous Materials Management Plan shall include the requirements presented in this condition and;

(1) The elements of the hazardous materials management description presented in Appendix O3 of the Licensee's 2018 Definite Plan, that influence water quality, as updated based on the requirements presented in this condition. If the Licensee proposes to change any elements material to water quality, the Hazardous Material Management Plan submittal shall highlight such changes and provide a rationale, including any new information relied on;

(2) A list with contact information of federal, state, and local officials the Licensee will contact to respond in the event of a hazardous materials spill. The list and contact information shall be maintained and updated by the Licensee. In the event of a hazardous materials spill, at a minimum, the Licensee shall immediately inform the California Emergency Management Agency, CDFW, North Coast Regional Board, and the State Water Board staff of the magnitude, nature, time, date, location, and action taken for the spill;

¹⁶ The Licensee shall provide justification for any determination that a catch basin is infeasible at a disposal site with the potential to drain into surface water.

- (3) An inventory of hazardous materials and wastes at each facility and the plan for final disposition of the hazardous materials and wastes;
- (4) Description of hazardous materials storage, spill prevention, and cleanup measures, including the deployment and maintenance of spill cleanup materials and equipment at each facility/site to contain any spill from Project activities. Onsite containment for storage of chemicals classified as hazardous shall be away from watercourses and include secondary containment and appropriate management as specified in California Code of Regulations, title 27, section 20320; and
- (5) Testing, monitoring, and reporting that will be implemented if a spill occurs to ensure water quality is not affected.

The Deputy Director may require modification as part of any approval. The Licensee shall file the Deputy Director's approval, together with any required modifications, with FERC. The Licensee shall implement the Hazardous Materials Management Plan upon receipt of Deputy Director and any other required approvals. Any changes to the Hazardous Materials Management Plan shall be approved by the Deputy Director prior to implementation.

For structures being removed, the Licensee shall inspect each structure prior to removal for hazardous materials (e.g. asbestos-containing material, lead-based paint, and polychlorinated biphenyls [PCBs]) and perform any necessary sampling or testing when inspection alone does not provide sufficient information to determine whether the material is hazardous. Any material with asbestos, lead, PCBs, or other hazardous waste shall be handled and disposed of as hazardous waste at approved hazardous waste facilities in accordance with applicable waste management regulations. Other deconstruction materials shall be disposed of as non-hazardous waste in accordance with Waste Disposal (Condition 11) provisions of this certification.

All hazardous materials removed from inside existing structures during Project implementation (e.g., paints, oils, and welding gases) shall be either returned to the vendor, recycled, or managed and disposed of as hazardous waste at an approved hazardous waste facility in accordance with applicable federal and state regulations. Transformer oils shall be tested for PCBs if no data exist. Any tanks that contained hazardous materials shall be decontaminated prior to disposal. Universal hazardous waste (e.g., lighting ballasts, mercury switches, and batteries) shall be handled in accordance with applicable federal and state universal waste regulations.

Existing septic tanks associated with Project facilities shall be decommissioned in place or removed and disposed of in accordance with the corrective action requirements specified in the State Water Board's *Water Quality Control Policy for Siting, Design,*

*Operation and Maintenance of Onsite Wastewater Treatment Systems (OWTS Policy)*¹⁷ (State Water Board 2012).

CONDITION 13. HATCHERIES

No later than six months following issuance of a FERC license surrender order, the Licensee shall submit a Hatcheries Management and Operations Plan (Hatcheries Plan) to the Deputy Director for review and approval. The Hatcheries Plan shall be developed in consultation with staff from the State Water Board, North Coast Regional Board, CDFW, and NMFS. The Licensee shall solicit comments from the agencies listed above. Additionally, the Hatcheries Plan shall include the comments received during the consultation process and identify how the Licensee addressed the comments. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy Director-approved Hatcheries Plan, together with any required plan modifications, with FERC. The Licensee shall implement the Hatcheries Plan upon receipt of Deputy Director and any other required approvals. Following Deputy Director approval of the Hatcheries Plan, any changes to the Hatcheries Plan with the potential to increase impacts to water quality shall be approved by the Deputy Director prior to implementation. At a minimum, the Hatcheries Plan shall include;

- (1) The Licensee's plans to construct, modify, operate, maintain, and facilitate transfer of ownership and continued operation of the Fall Creek and Iron Gate hatcheries, as presented in Section 7.8 of the 2018 Definite Plan, and as updated based on the requirements in this certification. If the Licensee proposes to change any elements material to water quality, the Hatcheries Plan shall highlight such changes and provide a rationale, including any new information relied on;
- (2) Annual fish production goals that include the target production numbers by species, life stage, and hatcheries locations;
- (3) Identification of water supplies that will be used to operate the Iron Gate and Fall Creek hatcheries including; location; anticipated diversion rates (cfs) and total diversion amounts (annual and monthly); minimum amount of flow that will be bypassed below the diversions to provide volitional fish passage; and summaries of and compliance with any water right requirements associated with water diversions;
- (4) Implementation actions for protection of hatchery and natural fish populations (as impacted by hatchery operations) in the event water supply to Iron Gate or Fall Creek hatcheries is unavailable due to drought or other limitations;
- (5) The proposed construction BMPs for ground-disturbing activities associated with construction of the hatcheries, including establishment of a 20-foot buffer around delineated wetlands, unless site-specific conditions require adjustment of the buffer in a

¹⁷ The OWTS Policy was adopted by the State Water Board on June 19, 2012, per Resolution No. 2012-0032; it was approved by the Office of Administrative Law on November 13, 2012; and consistent with OWTS Policy section 13.0, became effective on May 13, 2013. On April 17, 2018, per Resolution No. 2018-0019, the State Water Board amended the OWTS Policy renewed its conditional waiver.

manner that remains protective of delineated wetlands and is acceptable to a qualified and approved biologist. Construction associated with these activities shall be subject to the BMPs required under the Construction General Permit;

(6) Details regarding a minimum flow in Bogus Creek of 4.5 cfs, unless it is determined that an alternative minimum flow is required to provide volitional fish migration for Chinook salmon, coho salmon, and steelhead. If the hatchery diversions cause a flow within Bogus Creek downstream of the bypass that is less than 4.5 cfs (or the minimum flow identified for each species during their migration period), hatchery operations shall be adjusted, in coordination with NMFS and CDFW, to reduce the percentage of flow diverted from Bogus Creek and protect of anadromous fish passage;

(7) Expected duration of each hatchery's operations; and

(8) Reporting details, such as the amount of water diverted at each hatchery, bypass flows, and reporting requirements under the NPDES permit.

Prior to operation of the Fall Creek and Iron Gate hatcheries, the Licensee shall ensure that each hatchery has obtained coverage under and complies with a NPDES permit issued by the North Coast Regional Board. If the closure of the hatcheries is anticipated while the license surrender order is still in effect, the Hatchery Plan shall be updated to include the proposal for decommissioning of the facilities.

CONDITION 14. RESTORATION

No later than six months following issuance of the FERC license surrender order, and prior to initiation of drawdown activities, the Licensee shall submit a Restoration Plan to the Deputy Director for review and approval. The Restoration Plan shall be developed in consultation with staff from the North Coast Regional Board, State Water Board, and CDFW. The Licensee shall solicit comments from the agencies listed above.

Additionally, the Restoration Plan shall include comments received during the consultation process and identify how the Licensee has addressed the comments. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy-Director-approved Restoration Plan, together with any required plan modifications, with FERC. The Licensee shall implement the Restoration Plan upon receipt of Deputy Director and any other required approvals. Any changes to the Restoration Plan shall be approved by the Deputy Director prior to implementation. At a minimum, the Restoration Plan shall include;

(1) The material elements of the Licensee's restoration plan for the Project, as presented in Section 6 of the Licensee's 2018 Definite Plan, and as updated based on the requirements in this condition. If the Licensee proposes to change any elements material to water quality, the Restoration Plan submittal shall highlight such changes and provide the rationale, including any new information relied on;

(2) Detailed description of proposed restoration activities (e.g., grading, planting, swales, wetland construction, etc.) and preliminary map identifying proposed locations for restoration activities. The preliminary map shall be updated within two months following drawdown, as necessary. The description of proposed restoration activities shall include associated water quality protection measures the Licensee will implement as part of restoration;

- (3) Exclusive use of native plants, with preference for plants that promote soil stabilization;
- (4) Description and results of the Licensee's evaluation of the presence of wetlands that could be affected by the Project, including wetlands in the potential disposal areas;
- (5) Description of measures the Licensee will implement to ensure no net loss of wetland or riparian habitat. Measures shall include establishment of a minimum 20-foot buffer around all delineated wetlands potentially affected by construction impacts (unless site-specific conditions require adjustment of the buffer in a manner that remains protective of delineated wetlands and is acceptable to a qualified and approved biologist) to deter heavy machinery from traversing the wetland and prevent runoff pollution associated with Project activities from directly entering wetlands;
- (6) Description of how the Licensee will ensure floodplain connectivity within the reservoir footprint;
- (7) Description of how the Licensee will monitor for and address any invasive weeds in the restored area;
- (8) Plan for installation of large woody material in the Hydroelectric Reach in California that includes;
 - a. Number or volume of large woody material to be installed;
 - b. Placement of a portion of large woody material at or above the OHWM to create habitat at higher flows,
 - c. Consistency with practices in *California Salmonid Stream Habitat Restoration Manual* (CDFG 2010) or guidance provided through consultation with staff from CDFW, NMFS, North Coast Regional Board, and State Water Board; and
 - d. Timeline for placement of large woody material, which shall not occur until active dam and facilities removal work is complete; and
- (9) Monitoring and reporting on the implementation of the Restoration Plan, including adaptive management measures that will be implemented over time to ensure successful restoration (e.g., measures to address the loss of newly planted vegetation, soil instability¹⁸, etc.). Monitoring shall occur frequently enough to determine whether plantings are successful and to facilitate implementation of adaptive measures (e.g., supplemental irrigation, re-seeding, changes in plant types) to ensure rapid establishment of vegetation.

Within six months of concluding drawdown activities, and annually thereafter until otherwise directed by the Deputy Director, the Licensee shall provide a report to the

¹⁸ Adaptive management measures for soil stabilization may refer to the Slope Stability Monitoring Plan required in Slope Stability (Condition 18).

Deputy Director documenting implementation of the Restoration Plan, including highlights of any problems encountered and adaptive management measures deployed or proposed to address the problems. The Licensee shall provide additional reports or information related to implementation of the Restoration Plan if requested by the Deputy Director.

CONDITION 15. WATER SUPPLY MONITORING AND MANAGEMENT

The Licensee shall implement the following measures to protect water supply and beneficial uses. The Licensee shall annually prepare, and submit to the Deputy Director, a Water Supply Management Report that includes the elements described below. The Deputy Director may require implementation of additional adaptive management measures informed by the report and associated monitoring results.

Surface Water Diversions; The Licensee shall identify all points of diversion on the Klamath River listed in the Electronic Water Rights Information Management System (eWRIMS). The Licensee shall contact all California water rights holders with points of diversion on the Klamath River to determine whether the water right holder is interested in working with the Licensee to evaluate potential Project impacts to the water right holder. If potential impacts are identified and if the water right holder is interested in working with the Licensee, the Licensee shall provide temporary accommodations (e.g., replacement water, settling basins, etc.) to address potential impacts. Following dam removal, the Licensee shall investigate any impacts reported by a diverter. If the investigation confirms an adverse impact has occurred as a result of dam removal, the Licensee shall implement measures to reduce impacts and allow the water right holder to divert water in the same manner (e.g., amounts, suitable quality, and timing) as before dam removal.

The year prior to and annually for the first two years following drawdown, the Licensee shall submit a Water Supply Management Report to the Deputy Director on implementation of the surface water supply activities described above. At a minimum, the report shall include; a map showing the location of potentially affected points of diversion; a description of the potential adverse effects; a description of proposed/implemented mitigation measures; and the number of water right holders who agreed to work with the Licensee to address potential water supply issues.

Groundwater; To determine Project effects on surrounding groundwater wells, the Licensee shall, within a 2.5-mile range of the reservoirs' OHWM, monitor groundwater levels before, during, and after drawing down the reservoirs. To identify groundwater wells, the Licensee shall outreach to all residents and landowners within 2.5 miles of the California Project reservoirs to inquire about their groundwater wells. At least two months prior to commencing drawdown activities, the Licensee shall monitor groundwater levels at a minimum of 10 locations within 2.5 miles of the California reservoirs dispersed throughout the Hydroelectric Reach in California. The Licensee may begin groundwater elevation monitoring earlier, in order to integrate observations of natural seasonal fluctuations in groundwater elevation into the impact analysis.

The Licensee shall continue to monitor groundwater levels, at least monthly, until otherwise approved by the Deputy Director and for a term of at least two years following

completion of drawdown of all Project reservoirs. Monitoring may occur at groundwater wells of landowners or residents with wells located within 2.5 miles of the California Project reservoirs who volunteer to allow testing or at other groundwater monitoring wells around the California Project reservoirs. Potential groundwater monitoring locations and measures to address potential water supply impacts are identified in Appendix N of the Licensee's 2018 Definite Plan. The Licensee shall provide the Deputy Director with the locations of groundwater wells that will be monitored per this condition, and the Deputy Director may require additional monitoring if the locations chosen do not provide sufficient information on potential impacts to groundwater levels. The Licensee shall submit an annual Groundwater Report to the Deputy Director, for a minimum of two years directly following completion of drawdown. Monitoring duration may be adjusted based on groundwater levels reported in the annual Groundwater Report, and as approved by the Deputy Director. At a minimum, the annual Water Supply Management Report shall include a section on groundwater that;

- Documents groundwater level monitoring results;
- Highlights any trends or significant changes in groundwater levels; and
- Summarizes actions the Licensee has or will implement to address any impacts to groundwater supply associated with Project implementation. Actions implemented by the Licensee shall ensure disruptions in groundwater supply determined to be a result of the Project are limited. Actions shall include, but are not limited to, providing temporary water until Project impacts are adequately addressed.

Fire Protection; The first annual Water Supply Management Report shall include a list and map of locations where fire trucks and/or helicopters may access the Klamath River and its tributaries for residential fire protection efforts in the Hydroelectric Reach.

If the Deputy Director finds that the measures undertaken to address water supply impacts are insufficient or additional reporting is needed, the Deputy Director may require the Licensee to implement additional measures or continue reporting on implementation of this condition.

CONDITION 16. AMPHIBIAN AND REPTILE MANAGEMENT

No later than three months following issuance of a FERC license surrender order, the Licensee shall submit an Amphibian and Reptile Rescue and Relocation Plan (Amphibian and Reptile Plan) to the Deputy Director for review and approval. The Amphibian and Reptile Plan shall be developed in consultation with staff from CDFW, USFWS, and State Water Board. The Licensee shall solicit comments from the agencies listed above. Additionally, the Amphibian and Reptile Plan shall include comments received during the consultation process and identify how the Licensee has addressed the comments. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy-Director-approved Amphibian and Reptile Plan, together with any required modifications, with FERC. The Licensee shall implement the Amphibian and Reptile Plan upon receipt of Deputy Director and any other required approvals. Any

changes to the Amphibian and Reptile Plan shall be approved by the Deputy Director prior to implementation.

The Amphibian and Reptile Plan shall address protection of amphibians and reptiles previously found in the areas of the Project affected by drawdown and land-disturbing activities that are listed under the Federal Endangered Species Act (ESA) or the California ESA, or are designated as Species of Special Concern by CDFW. These species may include, but are not limited to foothill yellow-legged frog, and western pond turtle. At a minimum the Amphibian and Reptile Plan shall include;

- (1) The amphibians and reptiles covered by the plan;
- (2) Surveys and protocols that will be implemented to identify and relocate amphibians and reptiles identified in the plan;
- (3) Protocols for relocation that will be implemented upon the incidental discovery of a listed species during surveys;
- (4) Identification of the minimum qualifications for the individual(s) that will conduct the surveys and relocations, if necessary;
- (5) Timing and locations where surveys will be conducted, including all areas of the Project affected by drawdown and land-disturbing activities in California with known amphibian or reptile habitat or presence;
- (6) Identification of potential relocation areas, which may include lower reaches of Klamath River tributaries with suitable habitat approved by USFWS and CDFW;
- (7) Pre-construction surveys and associated reporting for western pond turtles conducted by an on-site biologist approved by applicable agencies and familiar with western pond turtle ecology;
- (8) Provisions for rescue and relocation of western pond turtles after reservoir drawdown that includes survey timing to cover multiple life stages, survey frequency, survey locations, relocation areas with suitable habitat, survey methodology, and reporting of survey results within 60 days of the completion of surveys to applicable agencies and the State Water Board; and
- (9) Monitoring and reporting that will be implemented to document compliance with this condition, including notification and reporting identified by USFWS and CDFW through consultation to develop the plan. Reporting shall include a report submitted to applicable agencies within 30 days of completing the Project, regarding all species handled and relocated; location, date, time and duration of the handling; enumeration and identification of species handled; identification of species life stage; identification of capture personnel; the release location and time; stream, transport, and receiving water temperatures; and location, date, and time of release.

The Amphibian and Reptile Plan must be approved by the Deputy Director prior to drawdown, in-water work, and work in riparian areas. Prior to approval of the Amphibian and Reptile Plan, the Licensee may implement ground-disturbing activities occurring entirely above the OHWM, so long as a USFWS- and CDFW- approved

biological monitor surveys the area, monitors construction, and takes appropriate actions to protect amphibians and reptiles.

CONDITION 17. BALD AND GOLDEN EAGLE MANAGEMENT

No later than three months following issuance of a FERC license surrender order, and prior to Project implementation, the Licensee shall submit a Bald and Golden Eagle Management Plan (Eagle Management Plan), to the Deputy Director for review and approval. The Eagle Management Plan shall be developed in consultation with staff from CDFW, USFWS, and State Water Board. The Licensee shall solicit comments from those agencies. Additionally, the Eagle Management Plan shall include comments received during the consultation process and identify how the Licensee has addressed the comments. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy-Director-approved Eagle Management Plan, together with any required modifications, with FERC. The Licensee shall implement the Eagle Management Plan upon receipt of Deputy Director and any other required approvals. Any changes to the Eagle Management Plan shall be approved by the Deputy Director prior to implementation.

The Eagle Management Plan shall include, at a minimum, the following;

- A two-year survey for eagle use patterns shall be conducted prior to construction activities.
 - The first-year survey shall determine bird use patterns at any facilities to be removed or modified during the time of year most likely to detect bird usage (completed by the Licensee in 2017).
 - The second-year survey shall include focused surveys (see below).
 - Surveys shall be conducted by a qualified avian biologist, approved by CDFW and USFWS.
- A focused survey (two site visits) shall be conducted in a single nesting season within two years prior to drawdown to document the presence of nests. These focused surveys shall identify eagle nests within one mile of disturbance areas within the Limits of Work, including but not limited to demolition areas where there may be any loud noise disturbance (e.g., helicopter or plane, blasting, etc.). The early nesting season survey shall occur at a time when eagles are most likely to be found at the nest sites, and the second survey shall occur later in the season and prior to the fledglings leaving the nest to confirm nesting activity. All observations shall be reported to CDFW using the California Bald Eagle Nesting Territory Survey Form (CDFW 2017d).
- Within two weeks prior to commencing construction or ground-disturbing activities, the Licensee shall conduct at least one pre-construction survey within the survey area defined above.

- Wherever possible, clearing, cutting, and grubbing activities shall be conducted outside of the eagle nesting season (January 1 through August 31¹⁹).
- If active eagle nests are documented during the surveys, a one-mile²⁰ restriction buffer shall be established around the nest to ensure that nests are not disturbed. This buffer may be reduced in coordination with USFWS and CDFW, while taking into consideration components such as proposed activity, distance to activity, terrain, and line of site. For example, in coordination with agencies, if a nest is not within line-of-site, meaning that trees or topographic features physically block the eagle's view of construction activities, the buffer could be reduced to 0.25-mile. Further reduction of buffers or allowance of limited activity inside of buffers could occur in coordination with an on-site biologist, CDFW, and the USFWS, while being consistent with the Licensee's proposed Eagle Avoidance and Minimization Plan, if it is determined that the activities shall not jeopardize nesting success. To reduce the potential for nesting in a previously identified active nest, measures may be implemented prior to the nesting season such as removing the nest or making the nest temporarily unavailable (e.g., placing cone or ball in nest) in coordination with an on-site biologist, CDFW, and the USFWS.
- Nests within a one-mile buffer shall be monitored by an USFWS- and CDFW-approved biologist when there is a potential for noise disturbance, in order to assess whether eagle activity patterns are normal, as compared with that observed during baseline surveys described above.
- If activities are anticipated to result in take under the Bald and Golden Eagle Protection Act, it would be considered a significant impact and the Licensee shall coordinate appropriate measures, including procurement of any necessary take permits, with USFWS and CDFW. The Licensee shall report on the status of bald and golden eagle surveys within one month of survey completion to USFWS, CDFW, and State Water Board.
- Monitoring and reporting that will be implemented to document compliance with this condition, including notification and reporting identified by USFWS and CDFW through consultation to develop the Eagle Management Plan.

CONDITION 18. SLOPE STABILITY

The Licensee shall identify reservoir slopes and other Project areas prone to instability and implement site-specific measures to avoid potential slope erosion and associated increases in sedimentation to surface waters throughout Project implementation. Additionally, the Licensee shall monitor for and address slope instability throughout the term of the Project, including restoration activities. No later than three months following issuance of the FERC license surrender order and prior to starting drawdown, the

¹⁹ Eagle breeding season of January 1 through August 31, as identified by A. Henderson, CDFW, Environmental Scientist, pers. comm, November 2017.

²⁰ Eagle nest restriction buffer of 1.0 mile, as identified by A. Henderson, CDFW, Environmental Scientist, pers. comm, November 2017.

Licensee shall submit a Slope Stability Monitoring Plan to the Deputy Director for review and approval. The Slope Stability Monitoring Plan shall be developed in consultation with State Water Board staff. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy-Director-approved Slope Stability Monitoring Plan, together with any required modifications, with FERC. The Licensee shall implement the Slope Stability Monitoring Plan upon receipt of Deputy Director and any other required approvals. Any changes to the Slope Stability Monitoring Plan shall be approved by the Deputy Director prior to implementation. At a minimum, the Slope Stability Monitoring Plan shall include;

- (1) The material elements of the Licensee's proposal related to stability of embankments and reservoir rims, as presented in the 2018 Definite Plan and the Licensee's commitment to implement final EIR Mitigation Measure GEO-1 (Slope Stabilization), and as updated based on the requirements presented in this condition. If the Licensee proposes to change any elements material to water quality, the Slope Stability Monitoring Plan shall highlight such changes and provide the rationale, including any new information relied on;
- (2) A list of slopes and Project areas prone to instability;
- (3) Number and location of piezometer wells the Licensee will use to monitor water levels and pore pressure;
- (4) Number and location of inclinometer installations to monitor slope stability;
- (5) A list of measures the Licensee will implement to prevent erosion and maintain soil stability;
- (6) A description of soil stability monitoring, including locations and schedule;
- (7) Visual monitoring for potential slumping, cracking, and other signs of slope instability throughout the Project area;
- (8) Potential measures the Licensee will implement to address soil instability;
- (9) Coordination with Reservoir Drawdown (Condition 3) to address the potential modification of drawdown rates to control slope instability if necessary to protect infrastructure, property, or resources;
- (10) Slope inspections during drawdown of the reservoirs and after storm events, and implementation of any necessary repairs, replacements, and/or additional measures to minimize potential slope instability effects on water quality based on inspection information; and
- (11) Submittal of the following reports to the Deputy Director until otherwise approved;
 - a. An annual report that summarizes; slope stability monitoring and inspection information; any repairs, replacements, or additional stabilization measures implemented; and any proposed changes to the Slope Stability Monitoring Plan; and
 - b. Monthly reports during the rainy season (October 16 – May 14) that identify any areas that have experienced slope instability, any actions taken to control and improve

slope stability, and an assessment of the success of initial and any ongoing slope stability actions implemented.

Upon request, the Licensee shall provide additional information regarding slope stability measures undertaken to address identified slope instability. If monitoring and inspection indicate that the measures identified in the Slope Stability Monitoring Plan are insufficient to protect water quality, the Deputy Director may establish a timeframe and require the Licensee to re-consult on the Slope Stability Monitoring Plan, make changes, and resubmit the Slope Stability Monitoring Plan for Deputy Director approval.

CONDITION 19. RECREATION FACILITIES

No later than six months following issuance of the FERC license surrender order, the Licensee shall submit a Recreation Facilities Plan to the Deputy Director for review and approval. The Recreation Facilities Plan shall be developed in consultation with staff from the State Water Board, North Coast Regional Board, and CDFW. The Licensee shall include comments received from the agencies consulted during the consultation process and identify how the Licensee has addressed the comments. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy Director-approved Recreation Facilities Plan, together with any required modifications, with FERC. The Licensee shall implement the Recreation Facilities Plan upon receipt of Deputy Director and any other required approvals. Any changes to the Recreation Facilities Plan shall be approved by the Deputy Director prior to implementation. At a minimum, the Recreation Facilities Plan shall include;

- (1) The material elements of the Licensee's recreation proposal for the Project, as presented in Section 7.6 of the 2018 Definite Plan, and as updated based on the requirements presented in this condition. If the Licensee proposes to change any elements material to water quality, the Recreation Facilities Plan submittal shall highlight such changes and provide a rationale, including any new information relied on;
- (2) A list of recreation facilities associated with the Project;
- (3) Identification of recreation facilities that will be removed and a schedule for removal;
- (4) Identification of any recreation sites to be added, modified, or maintained following dam removal, including location, the types of facilities to be added, modified, or maintained, and the proposed schedule for completion of new facilities or modifications to existing facilities;
- (5) The Licensee's plans to facilitate transfer of ownership and/or operation of Project recreation facilities;
- (6) Proposed measures to protect water quality and beneficial uses during any construction, removal, maintenance, or other activities associated with the Project recreation facilities;
- (7) Water quality monitoring of Project recreation areas in compliance with this condition;

(8) Public education signage regarding aquatic invasive species and proper boat cleaning at established public boat access locations or visitor information kiosks in the vicinity;

(9) Installation, if necessary, and maintenance of boat cleaning stations at Project boat ramps for the removal of aquatic invasive species;

(10) Signage posted at Project recreation facilities for water quality impairments (e.g., *E. coli* or fecal coliform and microcystin toxin) discovered through sampling under this condition or other efforts. If water quality monitoring indicates the impairments are an ongoing problem, the Licensee shall propose implementation of appropriate measures as part of the annual reporting requirement outlined in this condition; and

(11) Annual reporting to the Deputy Director on implementation of the Recreation Facilities Plan that includes; the status of any proposed construction, removal, or modifications to Project recreation facilities; water quality monitoring results required per this condition; and any proposed modifications to the Recreation Facilities Plan requested by the Licensee.

Recreation Areas Water Quality Monitoring; The Licensee shall collect and analyze grab water samples as outlined below for protection of the recreational water contact (REC-1) beneficial use as defined in the North Coast Basin Plan. The Licensee may use the water quality results collected under the WQMP (Condition 1) and other water quality monitoring efforts²¹ in the Klamath River watershed that comply with Water Quality Monitoring and Adaptive Management (Condition 1) and the provisions of the Deputy Director approved WQMP, as appropriate.

For fecal coliform and *E. coli*;

Timing; Prior to drawdown, samples shall be collected during the 30-day period that spans the Independence Day holiday (June-July) and the Labor Day holiday (August-September). Following completion of drawdown, sampling shall be performed as necessary to monitor for water quality and beneficial use protection, as approved by the Deputy Director in the Recreation Facilities Plan.

Frequency; Project facilities shall be monitored twice every year until each recreation facility is transferred to a new owner or as otherwise approved by the Deputy Director in the Recreation Facilities Plan.

Location; Samples shall be collected at all Project recreation facilities that provide for recreational water contact unless otherwise approved by the Deputy Director in the Recreation Facilities Plan. Samples shall be collected at locations near restrooms, recreation facilities, and other high use areas.

Method; The Licensee shall use the five samples in 30-day methodology or other future protocol identified in the North Coast Basin Plan.

²¹ Other water quality efforts may include Interim Measure 15 as described in Appendix D of the Klamath Hydroelectric Settlement Agreement, as amended November 30, 2016.

For microcystin toxin;

Prior to drawdown, the Licensee shall annually monitor for microcystin toxin at all Project recreation sites that provide for recreational water contact unless otherwise approved by the Deputy Director in the Recreation Facilities Plan. At a minimum, monitoring shall continue monthly (May through October) for two years following the completion of drawdown unless the recreation site is removed. For newly constructed or modified-existing recreation sites, the Licensee shall monitor microcystin toxins for a minimum of two year beginning with completion of construction or modifications, unless otherwise approved by the Deputy Director in the Recreation Facilities Plan.

The Licensee shall report monitoring results annually. Reporting shall; summarize monitoring results; highlight any exceedances of fecal coliform, *E. coli*, or microcystin toxin and propose adaptive management measures to address exceedances. Based on monitoring results, the Deputy Director may require the Licensee to modify monitoring frequency, methods, duration, or to implement additional adaptive management measures. The Licensee shall implement changes upon receipt of Deputy Director direction and any other required approvals.

CONDITION 20. LIMITATIONS ON HYDROPOWER OPERATIONS

This water quality certification is for the proposed removal of Project facilities as described in the Licensee's application and shall not be construed as approval of more than incidental, short-term interim operation of the Project hydroelectric facilities until such removal can be implemented.

Not later than 24 months following issuance of the FERC license surrender order, if drawdown and dam removal are not initiated, the Licensee shall submit an Interim Hydropower Operations Plan (Operations Plan) to the Deputy Director for review and approval. The Operations Plan shall describe additional measures the Licensee will implement to protect water quality and fisheries in advance of drawdown and dam removal activities. The Operations Plan shall be developed in consultation with staff from the State Water Board, North Coast Regional Board, CDFW, NMFS, and USFWS. The Licensee shall solicit comments from the agencies listed above, and the Operations Plan shall include comments received during the consultation process and identify how the Licensee has addressed the comments. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy-Director-approved Operations Plan, together with any required plan modifications, with FERC. The Licensee shall implement the Operations Plan upon receipt of Deputy Director and any other required approvals.

Dam removal must be initiated no later than five years following issuance of the FERC license surrender order unless the Licensee can demonstrate to the satisfaction of the Executive Director of the State Water Board that the delay is due to factors outside of the Licensee's control.

CONDITION 21. WATER RIGHTS MODIFICATION

The Licensee shall provide the State Water Board with a description of the Licensee's proposal for the post-dam removal disposition of all water rights associated with Project facilities. Prior to changing any water diversion for implementation of the Project, the

Licensee shall consult with State Water Board staff regarding potential modifications to or transfer of state-issued water right permits and licenses that may be required by the Project. The Licensee shall follow the procedures for any such modification, as described in the California Water Code and in California Code of Regulations, title 23. Nothing in this certification shall be construed as State Water Board approval of the validity of any water rights, including pre-1914 or riparian claims. The State Water Board has separate authority under the California Water Code to investigate and take enforcement action, if necessary, to prevent any unauthorized or threatened unauthorized diversion of water.

CONDITION 22. TRIBAL WATER QUALITY STANDARDS

Project implementation and compliance with the conditions in this certification are anticipated to result in improved compliance with downstream water quality standards for the Hoopa Valley Tribe, adopted in the *Water Quality Control Plan, Hoopa Valley Indian Reservation* (Hoopa Valley Tribe 2008)²². The Yurok Tribe and Karuk Tribe have applied to the USEPA for treatment-as-a-state status under the Clean Water Act, and it is possible that other tribes may similarly apply for and receive such status.

To ensure that the requirements of this certification ultimately meet Tribal Clean Water Act standards, the 32-month report on anticipated compliance under Compliance Schedule (Condition 2) shall be submitted to the Hoopa Valley Tribe and any other Native American tribes that have obtained treatment-as-a-state status. Any comments from such tribes received by the Deputy Director on the report shall be a factor in the Deputy Director's consideration of whether to require implementation of additional management measures.

Additionally, the Licensee shall submit to the Hoopa Valley Tribe, and any other tribe that has subsequently obtained treatment-as-a-state status, any request to end or modify monitoring under Water Quality Monitoring and Adaptive Management (Condition 1) at the location(s) closest to or within that tribe's reservation, along with a summary of that location's monitoring results and associated data, to date. Any comments from such tribes received by the Deputy Director on the report will be a factor in the Deputy Director's consideration of whether to approve the cessation or modification of monitoring at that location(s).

CONDITION 23. CONSULTATION REQUIREMENTS

For any condition that requires consultation with specific agencies, the Licensee may consult with additional parties (including, through "good neighbor" agreements or through consultation commitments under the Klamath Hydroelectric Settlement Agreement). The Licensee is particularly encouraged to consult with local agencies with expertise in siting issues and local conditions, and with tribes that have resources that may be affected by various plans or adaptive management measures. Such consultation

²² See also a February 1, 2017, letter from Robert Franklin, Division Lead, Hoopa Tribal Fisheries – Water Division to Parker Thaler, State Water Board, Division of Water Rights.

is likely to result in plans that are better conceived and more likely to receive approval without the need for additional modification.

ADDITIONAL CONDITIONS (CONDITIONS 24-41)

CONDITION 24. The State Water Board's approval authority includes the authority to withhold approval or to require modification of a proposal or plan prior to approval. The State Water Board may take enforcement action if the Licensee fails to provide or implement a required plan in a timely manner. If a time extension is needed to submit a report or plan for Deputy Director approval, the Licensee shall submit a written request for the extension, with justification, to the Deputy Director no later than 60 days prior to the deadline. The Licensee shall file any Deputy-Director-approved time extensions with FERC.

CONDITION 25. The State Water Board reserves the authority to reopen this certification based on evidence that the Project may be contributing to fish passage impediment in the Hydroelectric Reach upstream of the California/Oregon Stateline.

CONDITION 26. The State Water Board reserves the authority to add to or modify the conditions of this certification to incorporate changes in technology, sampling, or methodologies.

CONDITION 27. The State Water Board shall provide notice and an opportunity to be heard in exercising its authority to add to or modify the conditions of this certification.

CONDITION 28. Notwithstanding any more specific conditions in this certification, the Project shall be operated in a manner consistent with all water quality standards and implementation plans adopted or approved pursuant to the Porter-Cologne Water Quality Control Act or section 303 of the Clean Water Act. The Licensee must take all reasonable measures to protect the beneficial uses of the Klamath River watershed.

CONDITION 29. Unless otherwise specified in this certification or at the request of the Deputy Director, data and/or reports shall be submitted electronically in a format accepted by the State Water Board to facilitate the incorporation of this information into public reports and the State Water Board's water quality database systems in compliance with California Water Code section 13167.

CONDITION 30. This certification does not authorize any act which results in the unauthorized taking of a threatened, endangered, or candidate species or any act which is now prohibited, or becomes prohibited in the future, under either the California ESA (Fish & Game Code §§ 2050-2097) or the federal ESA (16 U.S.C. §§ 1531 - 1544). If a "take" will result from any act authorized under this certification or water rights held by the Licensee, the Licensee must obtain applicable authorization for the take prior to any construction or operation of the portion of the Project that may result in a take. The Licensee is responsible for meeting all applicable requirements of the cited laws for the Project authorized under this certification.

CONDITION 31. The Licensee shall submit any change to the Project, including Project operation, implementation, technology changes or upgrades, or methodology, which would have a significant or material effect on the findings, conclusions, or conditions of

this certification, to the Deputy Director for prior review and written approval. The Deputy Director shall determine significance and may require consultation with state and/or federal agencies. If the Deputy Director is not notified of a change to the Project, it will be considered a violation of this certification. If such a change would also require submission to FERC, the change must first be submitted and approved by the Deputy Director.

CONDITION 32. In the event of any violation or threatened violation of the conditions of this certification, the violation or threatened violation is subject to any remedies, penalties, process, or sanctions as provided for under applicable state or federal law. For the purposes of section 401(d) of the Clean Water Act, the applicability of any state law authorizing remedies, penalties, process, or sanctions for the violation or threatened violation constitutes a limitation necessary to ensure compliance with the water quality standards and other pertinent requirements incorporated into this certification.

CONDITION 33. In response to a suspected violation of any condition of this certification, the State Water Board or North Coast Regional Board may require the holder of any federal permit or license subject to this certification to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board deems appropriate, provided that the burden, including costs, of the reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports (California Water Code sections 1051, 13165, 13267 and 13383).

CONDITION 34. In response to any violation of the conditions of this certification, the State Water Board may add to or modify the conditions of this certification as appropriate to ensure compliance.

CONDITION 35. This certification shall not be construed as replacement or substitution for any necessary federal, state, and local Project approvals. The Licensee is responsible for compliance with all applicable federal, state, or local laws or ordinances and shall obtain authorization from applicable regulatory agencies prior to the commencement of Project activities.

CONDITION 36. Any requirement in this certification that refers to an agency whose authorities and responsibilities are transferred to or subsumed by another state or federal agency, will apply equally to the successor agency.

CONDITION 37. The Deputy Director and the Executive Officer shall be notified one week prior to the commencement of ground disturbing activities that may adversely affect water quality. Upon request, a construction schedule, and updates thereto, shall be provided to the State Water Board and North Coast Regional Board staff. The Licensee shall provide State Water Board and North Coast Regional Board staffs access to Project sites to document compliance with this certification

CONDITION 38. This certification is not intended and shall not be construed to apply to any activity involving a hydroelectric facility and requiring a FERC license or an amendment to a FERC license unless the pertinent application for certification was filed pursuant to California Code of Regulations, title 23, section 3855, subdivision (b) and that application for certification specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

CONDITION 39. This certification is conditioned upon total payment of any fee required in California Code of Regulations, title 23, article 4.

CONDITION 40. This certification is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to California Water Code, section 13330, and California Code of Regulations, title 23, division 3, chapter 28, article 6 (commencing with section 3867).

CONDITION 41. A copy of this certification shall be provided to any contractor and all subcontractors conducting Project-related work, and copies shall remain in their possession at the Project site(s). The Licensee shall be responsible for work conducted by its contractor, subcontractors, or other persons conducting Project-related work.

APPENDIX F—LITERATURE CITED

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APPENDIX H—LIST OF RECIPIENTS

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- American Rivers
- American Whitewater
- Anette Heying
- Anthony Intiso
- Brian Inouye
- Bureau of Reclamation
- California Department of Fish and Wildlife
- California Department of Water Resources
- California Department of Water Resources
- California Natural Resources Agency
- California State Water Resources Control Board
- California Trout
- Carole Perlick
- Chrissie Reynolds
- Christopher Morgan
- City of Yreka, California
- Clancy and Nora Grant
- Copco Fire Protection District
- Copco Lake Community Center
- County of Del Norte, California
- County of Humboldt, California
- County of Siskiyou, California
- D.B. Mining
- Department of the Interior, Office of the Solicitor
- Dmitriy Vorik
- Friends of the River
- Holly Lacy
- Hoopa Valley Indian Tribe
- Industrial Customers of Northwest Utilities
- Institute for Fisheries Resources
- Jan Hamilton
- Jean Perlick
- Jerry Bacigalupi
- John and Loy Beardsmore
- Karuk Tribe of California
- Kikaceki Land Conservancy
- Klamath Irrigation District
- Klamath Off-Project Water Users

- Klamath River Renewal Corporation
- Klamath Riverkeeper
- Klamath Tribes
- Klamath Water Users Association
- Lisa D'Aurelio
- Mark Fischer
- Momentum River Expeditions, Inc.
- National Marine Fisheries Service-West Coast Region
- National Rural Electric Cooperative Association
- Natural Heritage Institute
- Northern California Council of Fly Fishers International
- Oregon Department of Environmental Quality
- Oregon Department of Fish and Wildlife
- Oregon Water Resources Department
- Oregon Wild
- Pacific Coast Federation of Fisheries Associations and Institute for Fisheries Resources
- Pacific Coast Federation of Fishermen's Associations
- PacifiCorp
- Patricia Grieb
- Patricia Utz
- Peter Marino
- Phil Reynolds
- Public Utility Commission of Oregon
- Quartz Valley Indian Community
- Rex Cozzalio
- Robert Perlick
- Salmon River Restoration Council
- Shasta Indian Nation
- Sierra Club-Redwood Chapter
- Siskiyou County Water Users Association
- Siskiyou County, California
- Sustainable Northwest
- Suzanne Perlick
- Taylor Ranch
- Tim Heying
- Tim Perlick
- Trout Unlimited
- U.S. Bureau of Indian Affairs

- U.S. Bureau of Land Management
- U.S. Department of Agriculture
- U.S. Department of Agriculture-
Office of General Counsel
- U.S. Department of Interior
- U.S. Department of Interior-
Office of the Solicitor
- U.S. Fish and Wildlife Service
- U.S. Fish and Wildlife Service,
Region 1
- U.S. Forest Service
- U.S. Forest Service, Pacific SW
Region
- U.S. Forest Service, Region 6
- U.S. Forest Service-Pacific
Southwest Region
- Upper Klamath Outfitters
Association, Inc.
- Yurok Indian Tribe

APPENDIX I—RESERVOIR SUBSTRATE COMPOSITION

APPENDIX I

RESERVOIR SUBSTRATE COMPOSITION

The U.S. Bureau of Reclamation (Reclamation) sampled the reservoirs to determine the sediment composition and thickness throughout the reservoirs (Reclamation, 2010); table 1 describes the physical properties of the sediment in each reservoir.¹ Except for the Copco No. 2 Reservoirs, the sediment in the other reservoirs consists primarily of elastic silt and clay, with smaller amounts of elastic silt with fine sand (table 1). Sediments are, on average, coarser grained in upper reaches because coarser grain sizes settle out first and become finer toward the dam. The elastic silt in all the reservoirs had high water content and low cohesion and were found erodible. In locations with flow velocities of greater than 2 to 4 miles per hour, accumulated sediment was less than a few inches thick. The following sections summarize the findings for each reservoir from Reclamation (2010) and reflect conditions at the time of the survey.

I.1 J.C. BOYLE RESERVOIR

The upper reach of J.C. Boyle Reservoir primarily contains coarse-grained sediment, both as pre-reservoir alluvium and reservoir sediment. The reservoir has an abundance of gravel/sand bars and cobbles exposed above the reservoir water surface, with sub-surface sand and gravel found by stab-sampling. The reservoir also likely has small, local accumulations of fine-grained reservoir sediment within the upper 5,000 feet of the reservoir, but most of the reservoir sediment in this section was coarse-grained. The reservoir sediment became finer grained with distance downstream. Approximately 5,000 feet downstream, reservoir sediments were found to be 3 to 5 feet thick and composed of mostly of silty sand to poorly graded sand.

In the mid-section of the reservoir, sediment deposits were found to be thin, consisting of fine-grained elastic silt with substantial accumulations of organic material. Pre-reservoir material consisted of coarse-grained alluvium (silty gravel and sand), and bedrock consisted of volcanoclastic rock intensely weathered/decomposed to lean clay. Sediments were thickest (14 to 22 feet) in the lower section of the reservoir. Sediment in the lower section consisted uniformly of elastic silt. The sediment overlaid coarse-grained pre-reservoir alluvium consisting mostly of silty gravel with sand.

I.2 COPCO NO. 1 RESERVOIR

The upper section of the Copco No. 1 Reservoir contained sediment ranging in thickness from 3.5 to 8.0 feet and consisting of elastic silt with sand. Sediments in the remainder of the reservoir were relatively uniform and composed of elastic silt,

¹ The study also addressed the chemical composition of the reservoir sediment. A summary of these results and the associated implications are addressed in section 3.3, *Water Quality*, of the draft EIS.

containing between 88 and 99 percent fine-grained material. The sediment thickness in the main reservoir ranged from 1.3 to 9.7 feet.

I.3 COPCO NO. 2 RESERVOIR

The upper 500 feet of the Copco No. 2 Reservoir contained deposits primarily composed of cobble boulders. Flow velocities in the reservoir channel at the time of sampling were relatively fast, suggesting that fine-grained sediment does not accumulate in this reservoir, which was also concluded from core drilling.

I.4 IRON GATE RESERVOIR

Iron Gate Reservoir has relatively steep side-slopes and a narrow channel with numerous tributaries. Two of these tributaries likely contribute substantial amounts of sediment. Only the upper 6,000 feet of the reservoir have a substantial percentage of sand within the reservoir sediment. Sediment thickness ranged from 1.4 to 9.2 feet, with most samples having a thickness of less than 5 feet. Reservoir sediment was relatively uniform throughout the reservoir and mostly fine-grained.

Table 1. Physical properties of reservoir sediment by facility (Source; Reclamation, 2010, 2011)

Reservoir	Location	Volume yd ³	Clay%	Silt%	Sand%	Gravel%	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Porosity (%)	Dry Bulk Density (lb/ft)
J.C. Boyle	Upper Reservoir	380,000	17.3	26.2	56.5	0	45.5	14.7	173	0.82	29.5
	Lower Reservoir	620,000	38.2	49.7	12.1	0	173	60.6	345	0.9	16.3
	Pre-Reservoir		3.7	9.5	28.4	58.5	44.9	12.7	23.4	0.38	101
Copco 1	Upper Reservoir	810,000	27.9	46.8	25.1	0.2	109.3	49.3	287	0.88	19.2
	Lower Reservoir	6,630,000	55.8	34.2	10	0	154.3	59.1	295	0.88	18.7
	Pre-Reservoir		35.6	42.2	22.2	0	105	41.5	153	0.8	32.6
Iron Gate	Upper Reservoir	830,000	35.4	43.1	21.6	0	70.9	29.9	192	0.83	27
	Lower Reservoir	2,780,000	60.7	25.5	13.5	0.4	118.7	51.4	276	0.88	19.8
	Pre-Reservoir		33.6	16.9	20.4	29.1	60.6	32.5	37.9	0.5	81.8
	Upper Tributary	300,000	31.8	42.7	25.5	0	60.7	22.7	102	0.73	44.4
	Lower Tributary	800,000	61.8	32	6.1	0	112.2	49.6	284	0.88	19.3

I.5 REFERENCES

Reclamation (U.S. Department of the Interior, Bureau of Reclamation). 2010. Klamath River Sediment Sampling Program, Phase I – Geologic Investigations. September.

Reclamation. 2011. Hydrology, Hydraulics and Sediment Transport Studies for the Secretary's Determination on Klamath River Dam Removal and Basin Restoration, Technical Report No. SRH-2011-02. Prepared for Mid-Pacific Region, Bureau of Reclamation, Technical Service Center, Denver, CO. Available at <https://kbifrm.psmfc.org/file/hydrology-hydraulics-and-sediment-transport-studies-for-the-secretarys-determination-on-klamath-river-dam-removal-and-basin-restoration/>. Accessed June 20, 2022.

APPENDIX J—AIR QUALITY

APPENDIX J

AIR QUALITY

J.1 INTRODUCTION

The Lower Klamath Project is located on the Klamath River in Klamath County in south-central Oregon, and in Siskiyou County in north-central California (figure 1). It occupies 146.4 acres of federal land administered by the U.S. Department of the Interior, Bureau of Land Management. This appendix assesses the effects on air quality from the construction involved in the removal of four dams and associated infrastructure (J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate), restoration activities on inundated land, and other construction activities associated with the Lower Klamath Project (proposed action).

The air quality of an area reflects the existing emission sources combined with the meteorology, climate, and topography of the area. Air pollution is harmful to health (e.g., respiratory distress, premature death), reduces visibility, and damages vegetation (e.g., agricultural crops, forests) (CARB, 2020a). Air quality standards are developed to protect health and the environment and are the maximum amount of a pollutant averaged over a specific period of time that can be present in the air without harming health or the environment (CARB, 2020a).

J.2 AFFECTED ENVIRONMENT

The affected environment includes the counties in which the Lower Klamath Project is located or where construction vehicles or workers may travel. In California, the Lower Klamath Project and all associated construction and decommissioning activities are within the Siskiyou County Air Pollution Control District (SCAPCD), with activity at J.C. Boyle located in Klamath County, Oregon. As such, emissions estimated were conducted in accordance with SCAPCD guidance and approved methods.

The project area extends northeast along the Klamath River from the downstream end of Iron Gate Reservoir to the free-flowing water above the J.C. Boyle Reservoir. Elevations at the valley bottom rise from approximately 2,170 feet above mean sea level (amsl) at the southwestern end to approximately 3,800 feet amsl at the northeastern end. In the southwestern stretch, elevations rise several hundred feet on either side of the river. In the northeast, the river is more incised, with elevation rising as much as 1,000 feet above the valley bottom. The area surrounding the river valley is characterized by a mixture of vast arid and semi-arid basins and evergreen and hardwood forested uplands.

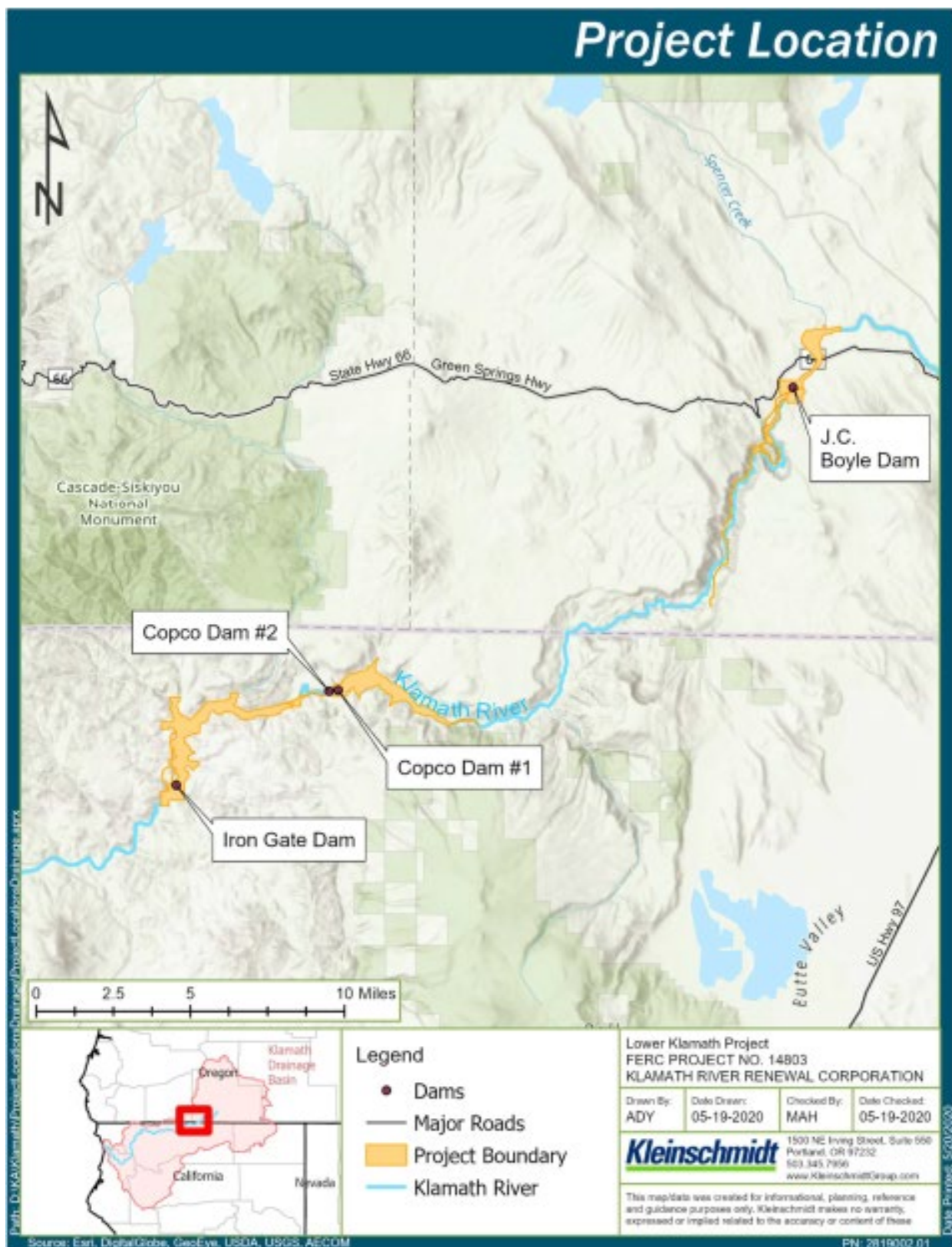


Figure 1. Lower Klamath Project Area (Source: KRRC and PacifiCorp, 2020).

The entire bioregion is significantly influenced by the rain shadow effect of the Cascade Range to the west. Approximately 75 percent of the annual total rainfall occurs between November and April. Between June and September, normal rainfall typically is less than 1 inch per month. Temperatures in Siskiyou County average approximately 60 degrees Fahrenheit (°F) annually, with summer highs in the low 90°F range and winter lows in the mid 40°F range. Precipitation averages approximately 20 inches per year, although annual precipitation varies markedly from year to year (World Climate, 2016). Annual average wind speeds in Siskiyou County are approximately 6.1 miles per hour and predominantly blow from the south. The average wind speed ranges from a low of 5.0 miles per hour in the fall to a high of 7.7 miles per hour in the spring (Western Regional Climate Center, 2016).

J.2.1 Criteria Air Pollutants

The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants; ozone, carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM), and lead (EPA, 2018). Particulate matter is further designated into two different size classes; PM₁₀ (particle size less than 10 microns) and PM_{2.5} (particle size less than 2.5 microns). In addition, the state of California has developed California Ambient Air Quality Standards for 10 pollutants.

The status of criteria pollutants in an area is described by three categories; attainment, non-attainment, and unclassified (EPA, 2020a). An area that meets or exceeds the standard is designated as unclassifiable/attainment. Areas that do not meet the air quality standard are in non-attainment. Areas are designated as unclassifiable if EPA is unable to determine the status based on the available information (EPA, 2020a). Maintenance areas are areas that were previously a non-attainment area but are now consistently meeting the NAAQS.

Siskiyou County is in attainment or unclassified for all criteria pollutants (CARB, 2020b) (table 1). The portion of the Lower Klamath Project in the state of Oregon is within an area that is designated as attainment for all criteria air pollutants. There are areas surrounding the Lower Klamath Project where construction vehicles or workers may travel that are in maintenance or non-attainment areas; these areas include the Klamath Falls Urban Growth Boundary (UGB), the Klamath Falls non-attainment area, and the Medford-Ashland Air Quality Maintenance Area (AQMA) (Oregon DEQ, 2020). The Klamath Falls UGB is designated as a maintenance area for CO and PM₁₀. The Klamath Falls non-attainment area is in non-attainment for PM_{2.5}. The Medford-Ashland AQMA is designated as a maintenance area for CO and PM_{2.5} (Oregon DEQ, 2020). Additional data regarding ambient air quality and attainment area designations is provided in the 2020 Environmental Impact Report (EIR) (California Water Board, 2020) and appendix N to that EIR. California Water Board 2020, Appendix N *Air Emissions Modeling for the Lower Klamath Project* provides a summary of the existing emission

sources and monitoring data, detailed emission calculation methodologies, and detailed emission inventories.

Table 1. Project Area Attainment Status (Source; Interior and California DFG, 2012; CARB, 2020b; Oregon DEQ, 2020; California Water Board, 2020).

Criteria Pollutant	Federal Status: Siskiyou County	Status in California (Siskiyou County)	Federal Status: Klamath and Jackson Counties, Oregon
Ozone	Unclassified/Attainment	Attainment	Attainment
Carbon Monoxide	Unclassified/Attainment	Unclassified	Maintenance (Klamath Falls UGB, Medford-Ashland AQMA)
Nitrogen Dioxide	Unclassified/Attainment	Attainment	Attainment
Sulfur Dioxide	Unclassified/Attainment	Attainment	Attainment
PM10	Unclassified	Attainment	Attainment (Project Area) Maintenance (Klamath Falls UGB, Medford-Ashland AQMA)
PM2.5 (2012)	Unclassified/Attainment	Attainment	Attainment
Lead	Unclassified/Attainment	Attainment	NA
Sulfates	NA	Attainment	NA
Hydrogen Sulfide	NA	Unclassified	NA
Visibility Reducing Particles	NA	Unclassified	NA

J.2.2 Toxic Air Contaminants

Toxic air contaminants (TACs), referred to at the federal level as hazardous air pollutants, are defined as air pollutants that may cause or contribute to an increase in mortality or serious illness or pose a hazard to human health. TACs usually are present in small quantities in the ambient air. However, in some cases, their high toxicity or health risk may pose a threat to public health even at low concentrations. Of the TACs for which data are available in California, diesel PM, benzene, 1,3-butadiene,

acetaldehyde, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene pose the greatest risks. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, and genetic damage; or short-term acute effects such as eye watering, respiratory irritation, rhinitis, throat pain, and headaches.

According to California Air Resources Board (CARB), most of the estimated health risk from TACs can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (diesel PM) (CARB, 2013). Diesel PM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

Statewide, diesel PM emissions account for approximately 2 percent of the annual average for on-road emissions, while other diesel PM emissions from off-road mobile sources (e.g., construction and agricultural equipment) account for an additional 3 percent (CARB, 2013). Statewide diesel PM emissions decreased approximately 37 percent from year 2000 to 2010, primarily from implementation of more stringent federal emission standards and cleaner burning diesel fuel (CARB, 2013). CARB anticipates that diesel PM emissions from on-road and other mobile sources (e.g., construction and agricultural equipment) will continue to decrease into 2035. This decrease would also be attributed to more stringent emissions standards and the introduction of cleaner burning diesel fuel.

In addition, asbestos is also considered a TAC. Naturally occurring asbestos, which was identified as a TAC in 1986 by CARB, is located in the existing geology in many parts of California. An investigation was conducted of the potential for naturally occurring asbestos to occur both in the bedrock of the Lower Klamath Project area, as well as in the concrete used to construction the dams (KRRC, 2019a). A survey of existing geologic information revealed that the mineral content typically associated with naturally occurring asbestos is not known to occur in the Lower Klamath Project boundary. According to the U.S. Geological Survey (USGS) and the Department of Conservation, Division of Mines and Geology, the geology of California has been extensively investigated. The Lower Klamath Project boundary is situated in the Western and High Cascade Range. This range consists of a suite of Tertiary and Quaternary flow rocks. Specifically, the mineral content of these mafic rocks includes andesite and basalt. Naturally occurring asbestos typically occurs in ultramafic rocks with a mineral content of serpentine and amphibole, which are not known to occur in the project area (USGS, 2019). This is confirmed by the California Water Board (2020), as well as several publicly available USGS publications focused on the Cascade Range and Northern California (USGS, 2011). While project construction activities are unlikely to disturb bedrock, these sources suggest that even if bedrock is disturbed, it is unlikely to contain naturally occurring asbestos (KRRC, 2019a).

Because of the lack of information pertaining to the specific concrete production of the dam facilities, it is not known for certain whether local aggregate was used in this process. Historical photographs suggest that concrete was locally sourced during the original construction. While available historical records do not specify the precise aggregate borrow sites, there is no evidence that aggregates were hauled long distances to the project sites. Since the aggregate was likely locally sourced, it is unlikely that the concrete would contain naturally occurring asbestos considering naturally occurring asbestos is not known to occur within the Lower Klamath Project boundary (KRRC, 2019a).

Between August and December 2018, the Klamath River Renewal Corporation (KRRC) conducted hazardous building materials surveys (HBMS) at the following sites; J.C. Boyle development, Copco No. 1 development, Copco No. 2 development, Iron Gate development, Iron Gate and Fall Creek Hatcheries, and the City of Yreka Intake Structure and Dam. Where accessible, bulk concrete samples were collected as part of these surveys in accordance with the CARB method 435 Method to determine the presence of naturally occurring asbestos. Concrete samples did not contain detectable naturally occurring asbestos above the polarized light microscopy point count threshold of 0.25 percent at each of the sites (KRRC, 2019a). Based on the above information, removal of these facilities is unlikely to release naturally occurring asbestos, and the proposed action is not subject to the requirements of 17 California Code of Regulations 93105 (Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations) (CARB, 2002).

The proposed action would result in the demolition of the existing structures and other infrastructure at the Lower Klamath Project facilities. Some of the existing structures on the project sites were constructed prior to 1978. Accordingly, there is the potential for asbestos-containing materials to be present in the structures that would be demolished as part of the proposed action. Demolition of structures with asbestos-containing materials can result in potential exposure of people to airborne asbestos. Inhalation of asbestos can cause long-term health effects such as reduced respiratory function, fibrotic lung disease (asbestosis), lung cancer, and mesothelioma. Enlargement of the heart can also occur as an indirect effect from the increase resistance of blood flow through the lungs.

KRRC conducted the most recent asbestos-containing materials surveys between August and December 2018 as part of the HBMS. During 2018, sample and analysis was performed in accordance with EPA Natural Emission Standards for Hazardous Air Pollutants requirements. Detectable asbestos above 0.1 percent was identified in several materials (e.g., surfacing materials, thermal system insulation, and miscellaneous materials). KRRC and its representatives will be performing a Level II Project Facilities Inspection in the future.

J.2.3 Regional Haze

To protect visibility in Class I federal lands (e.g., national parks and scenic areas), EPA adopted the Regional Haze Rule in 1999. This rule lays out specific requirements to ensure improvements in the anthropogenic components of visibility at 156 of the largest national parks and wilderness areas across the United States, which are referred to as Federal Class I areas. The goal of the Regional Haze Rule is to ensure that visibility on the 20 percent of the most impaired days continues to improve at each Federal Class I Area, and that visibility on the 20 percent least impaired days does not get worse. The vast majority of Class I Areas are in the West (118), with 29 in California, including Yosemite and Sequoia National Parks. Good visibility is essential to the enjoyment of national parks and scenic areas. Across the United States, regional haze has decreased the visual range in these pristine areas from 140 miles to 35–90 miles in the west, and from 90 miles to 15–25 miles in the east. This haze is composed of small particles that absorb and scatter light, affecting the clarity and color of what humans see in a vista. The pollutants (also called haze species) that create haze are measurable as sulfates, nitrates, organic carbon, elemental carbon, fine soil, sea salt, and coarse mass. Anthropogenic sources of haze include industry, motor vehicles, agricultural and forestry burning, and dust from soils disturbed by human activities. Pollutants from these sources, in concentrations much lower than those that affect public health, can impair visibility anywhere (CARB, 2009).

To comply with the Regional Haze Rule, CARB developed a Regional Haze Plan in 2009 (2009 Plan) that sets out a long-term path towards attaining improved visibility in national parks and other scenic areas, with the goal of achieving visibility which reflects natural conditions by year 2064. Unlike State Implementation Plans that require specific targets and attainment dates, the Regional Haze Rule requires states to provide for a series of interim goals to ensure continued progress. The state Haze Plans must be submitted to EPA for review and approval. Progress towards the interim goals is evaluated in a progress report that is required to be prepared every five years. Additionally, a plan revision with new interim goals is required every 10 years.

The 2009 Plan sets forth visibility goals and represents California's broader western regional effort to assess the visibility improvements for the first interim goal period of 2018. Currently, no other interim goals have been finalized.

An update of the 2009 Plan will address the second planning period from 2018 to 2028. The western states have built upon the lessons learned in the first planning period (i.e., 2009–2018) to work toward new tools and methodologies for understanding regional haze in the second planning period. Regional haze planning in the future will require additional improvements in the analysis of anthropogenic emissions, as well as improvements to quantify natural and international emissions (Uhl et al., 2019).

J.3 ENVIRONMENTAL EFFECTS DETERMINATION METHODS

This analysis uses estimates of emissions that would occur from construction activities involved with the removal of the dams and related infrastructure, haul and worker commuter trips, land restoration activities, as well as other project elements. These estimates came from a variety of emissions models and spreadsheet calculations, as identified in California Water Board 2020, Appendix N, *Air Emissions for the Lower Klamath Project*. Appendix N analyses include emissions generated by off-road equipment exhaust, off-road fugitive dust, on-road fugitive dust and exhaust, and supporting activities (restoration activities using helicopters and marine workboats).

No increases in operational emissions would occur as part of the proposed action; therefore, this analysis considers only construction-related air quality impacts. Operational emissions under current conditions are estimated to be significantly greater than operational emissions under the proposed action because the existing operational emissions generated by the four Lower Klamath Project facilities (e.g., emissions from employee traffic, emissions from maintenance equipment and minor repairs, fugitive dust from traffic on unpaved roads) would be eliminated, and production levels at the two hatcheries post-dam removal would decrease relative to current conditions. Overall, it is anticipated that there would be a net decrease in operational emissions post-dam removal under the proposed action.

The air quality impact modeling described in Appendix N, Air Emissions Modeling (California Water Board, 2020) for the Lower Klamath Project is based on the information available in EIR Appendix B Definite Plan as well as conservative assumptions regarding construction-related activities (e.g., overlapping of construction phases, equipment horsepower ratings).

J.3.1 Quantification of Criteria Air Pollutants

Quantification of air pollutant emissions was conducted using a combination of methods, including the use of emission factors from the EPA's published AP-42: Compilation of Air Emissions Factors, exhaust emission factors from the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Road Construction Emissions Model (RCEM), conservative assumptions regarding project activities (e.g., overlapping of construction phases, equipment horsepower ratings), and the California Emissions Estimator Model (CalEEMod) version 2016.3.2. Although the RCEM model was created by SMAQMD, this model is recommended for use throughout California for California Environmental Quality Act (CEQA) analyses.

Exhaust emissions from construction equipment were estimated using SMAQMD RCEM, version 9.0. Although the model was developed by SMAQMD, emission rates and engine usage factors for construction equipment are based on the same CARB-approved model (i.e., OFFROAD 2011) used in CalEEMod and statewide for conducting emissions modeling and is therefore appropriate for use in this analysis (SMAQMD, 2019). Exhaust emissions from supplemental construction equipment such as

lawnmowers, chippers, and chainsaws were estimated using OFFROAD 2007 because these equipment types are not included in the SMAQMD's RCEM. Additional supplemental construction equipment including worker boats and helicopters were estimated using EPA and the Federal Office of Civil Aviation emissions factors, respectively. Rock blasting activity emissions were also estimated using AP-42 emissions factors for explosive detonation. The CARB EMFAC 2017 model was used to estimate emissions from on-road vehicles from worker commute trips and truck hauling trips. Fugitive dust emissions from construction activity (e.g., grading, earthmoving, stockpiling of material), travel on roads for truck haul trips, and worker commute trips were estimated using AP-42.

The proposed action schedule was used to determine when the maximum construction activity would occur, based on anticipated activity phasing, for comparison of emissions to maximum daily thresholds of significance. Overall, the construction phasing was determined based on Appendix B: Definite Plan – Section 8.6 Construction Schedule. Generally, the dates associated with construction phases in the Definite Plan were pushed forward one year to acknowledge KRRRC's recent proposed schedule adjustments (KRRRC, 2019b); the overall duration of each phase/subphase remained approximately the same.

Equipment activity data (e.g., type, quantity, hours/day) were associated with the appropriate major construction phase (e.g., pre-dam removal, dam and powerhouse removal, restoration). However, after a review of the anticipated construction phasing presented in the Definite Plan, activity hours were further split into subphases for Copco No. 1 and Iron Gate Dams to isolate activities that would occur prior to the major dam removal activities. For Copco No. 1 Dam demolition, activities were sub-divided into three subphases; dam modification, powerhouse demolition, and dam demolition. For Iron Gate Dam removal, activities were also sub-divided into three subphases; dam modification, fish hatchery at dam toe demolition, and dam demolition. For this analysis, it was assumed that the recreational facilities removal and the supporting construction or pre-dam removal construction phases would occur prior to major dam removal activity. Because these phases would occur prior to dam removal, they are not included in the calculation of the maximum daily emissions scenario. The maximum daily emissions scenario would occur during dam removal.

In determining the potential maximum daily emissions, the main dam demolition phases for Iron Gate, Copco No. 1, Copco No. 2, and J.C. Boyle were all assumed to overlap by at least one day. Activities associated with blasting would also potentially occur during each of the main dam demolition phases. Lastly, restoration of all four dams would overlap with the four dam demolitions and blasting activities. Appendix N, table RE-N-3 (California Water Board, 2020) provides the overall anticipated construction schedule and general phasing. Maximum daily emissions were estimated by reviewing the overall project schedule in the Definite Plan and determining which phases would overlap to generate the highest emissions.

Since issuance of the Draft EIR in 2018, KRRC has proposed and agreed to implement mitigation measures to reduce emissions of NO_x and PM, including Mitigation Measures Air Quality (AQ)-1 (Off-road construction equipment), AQ-2 (On-road construction equipment), AQ-3 (Trucks used to transport materials), AQ-4 (Blasting-related dust control measures) (KRRC, 2019c), and AQ-5 (General construction dust control measures) (KRRC, 2019d) (see section J.4 in this appendix). Mitigation Measure AQ-1 requires the use of off-road construction equipment (50 horsepower or greater) to meet EPA Tier 4 Final emissions standards, or Tier 3 and Tier 4 interim emissions standards if adequately documented that no Tier 4 Final equipment is available or feasible. Mitigation Measures AQ-2 and AQ-3 require on-road construction equipment and heavy-duty trucks to be equipped with engines that meet the 2010 model year or newer emissions standards. Mitigation Measure AQ-4 requires dust control measures to minimize fugitive dust emissions during blasting operations at Copco No. 1 Dam. Mitigation Measure AQ-5 requires dust control measures during general construction activity to minimize fugitive dust emissions from exposed surfaces and track-out onto paved roads. Appendix N (California Water Board, 2020) provides estimates of emissions without Mitigation Measures AQ-1 through AQ-5, as well as an estimate of the percent reduction in emissions that would occur after implementation of Mitigation Measures AQ-1 through AQ-5. These estimates primarily focus on the reductions in NO_x that would occur from the implementation of Mitigation Measure AQ-1 and the reduction in PM₁₀ that would occur from the implementation of Mitigation Measure AQ-5.

J.3.2 Significance Criteria

For the purposes of this analysis, an air quality impact would be significant if one or more of the following criteria are met:

- Substantially conflict with or obstruct implementation of the California Regional Haze Plan.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the SCAPCD is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial toxic air contaminant concentrations.
- Create objectionable odors adversely affecting a substantial number of people.
- Cause release of emissions that exceed 250 pounds per day for NO_x, volatile organic compounds (VOC), PM₁₀, PM_{2.5}, or sulfur oxides (SO_x); or 2,500 pounds per day for CO (SCAPCD Rule 6.1).
- Activities or emissions considered inconsistent with Oregon's Regional Haze Plan (Oregon DEQ, 2009).

The proposed action would also occur within 100 kilometers of several mandatory Federal Class I areas, which are areas in which visibility was declared by Congress to be an important value (Clean Air Act, Section 169A). The following Class I areas could be affected by the proposed action or its alternatives.

- Crater Lake National Park (Oregon)
- Gearhart Mountain Wilderness (Oregon)
- Lava Beds National Monument (California)
- Marble Mountain Wilderness (California)
- Mountain Lakes Wilderness (Oregon)

Oregon's Regional Haze Plan (Oregon DEQ 2009) indicates that the current rules addressing construction-related activities in Oregon are sufficient to prevent visibility impairment in Oregon Class I areas. Rules that address construction activities include Oregon Administrative Rule (OAR) 340-208-0110, which sets opacity limits for visible emissions from any air contaminant source and OAR 340-208-0210, which addresses fugitive emissions from a variety of sources.

California's Regional Haze Plan (CARB, 2009) indicates that CARB's In-Use Off-Road Diesel Vehicle Regulation (adopted on July 26, 2007) will reduce PM and NOx emissions by 74 percent and 32 percent, respectively, from current levels. CARB expects this measure to be sufficient to mitigate visibility impacts from construction activities.

J.3.3 Air Quality Impacts

The following paragraphs describe potential impacts due to the implementation of the proposed action.

Vehicle exhaust and fugitive dust emissions from dam removal activities could increase emissions of VOC, NOx, CO, SO2, PM10, and PM2.5 to levels that could exceed Siskiyou County's thresholds of significance. Emission sources include exhaust emissions from off-road construction equipment, on-road trucks, construction worker employee commuting vehicles; and fugitive dust emissions from unpaved roads and general earth moving activities. General earth moving activities that could generate fugitive dust include the operation of construction equipment on the site and removal of excavated materials (cut/fill activities).

Table 2 summarizes predicted uncontrolled peak daily and annual emission rates for VOC, NOx, CO, SO2, PM10, and PM2.5 for the proposed action. This analysis uses the conservative assumption that the peak day of construction could occur at the same time for each dam; therefore, the peak daily emissions are additive. The analysis assumes that dust control measures like watering and erosion control fabrics would be required by the U.S. Department of the Interior (Interior). In addition, the calculations assume that all haul roads would be covered in gravel with minimal silt content. As a result, these

measures are included as part of the project and are not considered to be mitigation measures.

Table 2. Proposed Action Maximum Daily Emissions by Construction (Source; California Water Board 2020, Appendix N).

Location	Peak Daily Emissions (pounds per day)					
	VOC	CO	NO_x	SO₂	PM₁₀	PM_{2.5}
Iron Gate	44	255	391	11	73	21
Copco No. 1	25	146	205	24	10	14
Copco No. 2	19	448	159	23	73	13
J.C. Boyle	62	354	542	14	92	28
Blasting	-	13	3	0	-	-
Restoration	45	200	222	19	24	10
Maximum Daily	196	1,415	1,520	92	272	86
Significance Criteria	250	2,500	250	250	250	250

Notes: Values shown in bold exceed the SCAPCD thresholds of significance in Rule 6.1 (Construction Permit Standards for Criteria Air Pollutants). Emissions calculations are provided in Appendix N cited above.

Key: VOC = volatile organic compounds; CO = carbon monoxide; NO_x = nitrogen oxides; SO₂ = sulfur dioxide; PM₁₀ = inhalable particulate matter; PM_{2.5} = fine particulate matter

Cofferdams would be constructed at the four facilities during deconstruction activities. Concrete rubble, rock, and earthen materials that would come from the dam removal activities would be used as possible to construct the cofferdams. Since the cofferdams would be constructed from materials salvaged from the dam demolition activities, emissions associated with construction would already be included in the emissions inventory. Additional emissions could occur when the cofferdams are later demolished, but this activity would not cause any changes to the significance determinations. Table 2 shows maximum daily emissions resulting from construction of the proposed action. Any adverse impacts would be temporary.

As shown in table 2, NO_x and PM₁₀ emissions exceed the threshold for the combined construction phase of dam removal, blasting, and restoration. These three phases were assumed to overlap in time, generating the maximum daily emissions. Pre-dam removal activities (Fall Creek Hatchery modification; access, road, bridge, and culvert improvements, recreation facility removal, flood improvements, Yreka water supply pipeline relocation, seed collection, and invasive exotic vegetation control) were assumed to occur before the major dam removal activities, and therefore, emissions associated with these activities did not contribute to the maximum daily emissions.

Demolition of Copco No. 1 Dam could generate concrete dust, which has a high pH. Dust control measures as described in the mitigation measures identified in section J.4 below, would be used to control concrete dust to the maximum extent feasible. **The impact on air quality from emissions of NOx and PM10 from the construction of the proposed action would be a significant impact. Implementation of mitigation measures identified in section J.4 below, may reduce emissions of NOx to a less than significant level; however, emissions of PM10 would remain significant and unavoidable, and it is likely that NOx emission would also remain significant and unavoidable.**

Restoration actions could result in short-term and temporary increases in criteria pollutant emissions from vehicle exhaust and fugitive dust from the use of helicopters, trucks, and barges. Barges may be used to actively promote erosion of reservoir deposits during drawdown. Following drawdown of the reservoirs, revegetation efforts would be initiated to support establishment of native wetland and riparian species on newly exposed river-side sediment. Aerial application, using helicopters, drones, or fixed-wing aircraft, would be necessary for precision applications of material near sensitive areas and the newly established river channel. Trucks would also be used as necessary to provide seeding. Additional fall seeding may be necessary to supplement areas where spring seeding was unsuccessful.

A combination of techniques was used to estimate emissions from reservoir restoration activities. Emissions from aerial application were estimated using the Federal Aviation Administration's Emissions and Dispersion Modeling System. Emissions from barges were estimated using the following sources:

- Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data (EPA, 2000)
- AP-42, Chapter 3.3: Gasoline and Diesel Industrial Emissions (EPA, 1996)
- Title 17 California Code of Regulations, Section 93115.7: Air Toxic Control Measure for Stationary Compression-Ignition Engines – Stationary Prime Diesel-Fueled Compression-Ignition Engine (>50 bhp) Emission Standards
- Title 13 California Code of Regulations, Section 2423: Exhaust Emission Standards and Test Procedures—Off-Road Compression-Ignition Engines

Emissions from ground support equipment were estimated using the emission factors for off-road engines identified above and EMFAC for on-road motor vehicle emissions. As shown in table 3.9-4, *Klamath Facilities Removal, Final Environmental Impact Statement/Environmental Impact Report* (Interior and California DFG, 2012) emissions from reservoir restoration would not exceed significance criteria. **The impact on air quality from reservoir restoration activities would be less than significant.**

Relocation and demolition of various recreation facilities could result in short-term and temporary increases in criteria pollutant emissions from vehicle exhaust and fugitive dust. The demolition of the facilities would change recreational opportunities from lake-based recreation to river-based recreation. This change would require several recreation facilities to be reconstructed or demolished. On- and off-road construction equipment would be used to complete these activities, which would occur after the dam demolition actions. As shown in table 3.9-5 of the 2012 EIR (Interior and California DFG, 2012), emissions from the relocation and demolition of recreation facilities would not exceed significance criteria. **The impact on air quality from the relocation and demolition of the various recreation facilities would be less than significant.**

Vehicle exhaust and fugitive dust emissions from dam removal activities could exceed the de minimis thresholds in 40 CFR 93.153 that would require the development of a general conformity determination. Emissions from trucks and employee commuting could occur within the Klamath Falls UGB, the Klamath Falls non-attainment area (PM_{2.5}), or the Medford-Ashland AQMA; therefore, emissions that would occur within these areas are subject to the requirements of general conformity. If the total of direct and indirect emissions is below the general conformity de minimis thresholds in 40 CFR 93.153, then no further action is warranted, and a general conformity determination is not required.

While only emissions that would occur within the designated non-attainment or maintenance areas would be subject to general conformity, it is not possible to separate those emissions from the project total. As a result, total emissions from haul trucks and employee commuting were compared to the general conformity de minimis thresholds as a conservative analysis. Emissions from trucks and employee commuting are less than the general conformity de minimis thresholds identified in tables 3.9-3 through 3.9-5, Interior and California DFG 2012. Therefore, a conformity determination is not necessary for any of the maintenance or non-attainment areas. **As a result, a general conformity determination is not required.**

Fugitive dust emissions from demolition activities could impair visibility in Federal Class I areas. Demolition activities would be conducted in compliance with Oregon and California regulations related to fugitive dust emissions. In addition, any fugitive dust emissions would be short term and temporary and would not have long-term effects related to visibility. **Impacts related to visibility would be less than significant.**

Short-term exposure of sensitive receptors to substantial toxic air contaminant concentrations. The areas surrounding Iron Gate Dam, Copco No. 1 Dam, and Copco No. 2 Dam is sparsely populated with few sensitive land uses. The nearest sensitive land uses to the major construction activities are recreational facilities located at Copco No. 1 and Iron Gate Reservoirs, along with hiking trails around the Fall Creek development. The next closest sensitive land uses include scattered residences that are located along the Klamath River. The closest homes to construction sites are located over 2,000 feet from Copco No. 1 Dam, over 2,700 feet from J.C. Boyle Dam, over 3,500 feet from Copco No.

2 Dam, and over 4,000 feet from Iron Gate Dam. As noted above, there are also several modular homes located at Copco Village that are currently occupied by PacifiCorp staff. These homes are located within the Limits of Work and range from 850 feet to 2,200 feet west of the Copco No. 2 Powerhouse. Prior to the beginning of dam deconstruction activities, it is anticipated that these homes would be vacated. However, for the purposes of this analysis, it is conservatively assumed that the homes at Copco Village would be occupied.

This section evaluates the proposed action's potential to create a significant hazard to sensitive receptors (e.g., residents and recreationists) near the construction sites through exposure to substantial TAC concentrations during construction activities.

According to CARB, the majority of the estimated health risk from TAC can be attributed to relatively few compounds, the most important being particulate matter from diesel-fueled engines (diesel PM) (CARB, 2013). Diesel PM differs from other TAC in that it is not a single substance but rather a complex mixture of hundreds of substances. Although diesel PM is emitted by diesel-fueled, internal combustion engines, the composition of the emissions varies depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present.

With regards to exposure of diesel PM, the dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher level of health risk for many exposed receptors. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period.

Construction-related activities would result in temporary, intermittent emissions of diesel PM from the exhaust of off-road, heavy-duty diesel equipment. On-road diesel-powered haul trucks traveling to and from the construction areas are less of a concern because they would not stay on site for long period of time. Sensitive receptors in the vicinity of the construction sites would potentially be exposed to diesel PM from heavy equipment and vehicle emission diesel exhaust during construction. However, even during the most intensive construction phases, there would not be substantial TAC concentrations, except in the immediate vicinity of the active construction sites, because concentrations of mobile-source diesel PM disperse rapidly with distance. Concentrations of mobile-source emissions of diesel PM are typically reduced by 60 percent at a distance of approximately 300 feet (Zhu et al., 2002) and 70 percent at a distance of approximately 500 feet (CARB, 2005). Construction activities for the proposed action and associated emissions would vary by construction phase and the emissions to which nearby receptors would be exposed would also vary throughout the construction period. As construction activities would take place at several construction sites, the concentration of diesel PM in any one location would be limited.

Since the recreation facilities near the construction sites would be closed during dam removal activities, it is not anticipated that recreationists would be exposed to substantial TAC concentrations during construction activity. As noted above, the closest residences are located approximately 850 feet away from the construction sites where the major construction activity associated with the proposed action would occur. Due to the short-term nature of the proposed construction activity and the fact that the nearest residences are located approximately 850 feet from where the major construction activity will occur, it is not anticipated that sensitive receptors residing at the closest residences would be exposed to substantial TAC concentrations during construction activities. Therefore, impacts from the major construction activity associated with the proposed action would be less than significant.

Some of the pre-dam removal activities may be located closer in proximity to sensitive land uses than the major construction activities associated with the proposed action. However, due to the limited scale and duration of these activities it is not anticipated that they would expose sensitive receptors to substantial TAC concentrations. Based on the emissions modeling conducted, maximum daily emissions of diesel PM (modeled by PM10 which is conservatively considered a surrogate for diesel PM), would not exceed 5 lb/day for all pre-dam removal activities, combined. This maximum daily emission level represents all pre-dam removal activities; however, individual subphases (Fall Creek hatchery modification; access, road, bridge, and culvert improvements; recreation facility removal; flood improvements; Yreka water supply pipeline relocation; seed collection and invasive exotic vegetation control; and Iron Gate Hatchery removal) would result individually in fewer emissions. Thus, due to the dispersive properties of diesel PM, concentrations from individual construction sites would be lower, resulting in less exposure to any one receptor. In addition, the use of off-road heavy-duty diesel equipment associated with pre-dam removal activities would be limited to the construction duration of less than two years but with each individual subphase being shorter (i.e., one month to six months). As construction progresses, activity intensity and duration would vary throughout the various geographic locations. As such, no single receptor would be exposed to substantial construction-related emissions of diesel PM for extended periods of time. Thus, given the temporary and intermittent nature of construction activities associated with the pre-dam removal activities, the dose of diesel PM to any one receptor would be limited. Therefore, impacts from the pre-dam removal activities would be less than significant.

As discussed earlier, an investigation was conducted of the potential for naturally occurring asbestos to occur both in the bedrock of the Lower Klamath Project boundary, as well as in the concrete used to construct the dams. An investigation was also conducted of the potential for asbestos-containing materials to occur in the structures proposed for demolition (KRRC, 2019a).

Naturally occurring asbestos has also been identified as a TAC. The naturally occurring asbestos investigation concluded that it is unlikely that the bedrock in the Lower Klamath Project boundary and the concrete used to construct the dams contain

naturally occurring asbestos. Therefore, impacts related to the handling of naturally occurring asbestos would be less than significant. Although unlikely, if naturally occurring asbestos is encountered either during bedrock-disturbing activities, or in concrete during demolition activities, KRRC or its representatives will handle the naturally occurring asbestos in accordance with, as relevant, the federal EPA's fact sheet, Naturally Occurring Asbestos: Approaches for Reducing Exposure (March 2008) and the Guide to Normal Demolition Practices Under the Asbestos NESHAP (September 1992) (KRRC, 2019a).

As discussed earlier, detectable asbestos above 0.1 percent was identified in several materials in the structures proposed for demolition (e.g., surfacing materials, thermal system insulation, and miscellaneous materials) that could become airborne during project activities. Asbestos-related work (i.e., abatement and disposal of asbestos-containing materials) will be performed by KRRC and its representatives in compliance with, as relevant, local, state, and federal regulations including California Division of Occupational Safety and those implemented by the SCAPCD (KRRC, 2019a). Implementation of mitigation measures will reduce potential impacts to workers and the closest sensitive receptors from airborne asbestos to less than significant levels.

Therefore, the exposure of sensitive receptors to TAC concentrations during construction activity is less than significant with mitigation. **Impacts related to TAC would be less than significant.**

J.4 PROPOSED MITIGATION MEASURES

Article I. A Construction Emissions Mitigation Plan, to include the following air quality (AQ) mitigation measures, would be developed and implemented prior to construction activities associated with the proposed action. In addition to all applicable local, state, or federal requirements, the following control measures (Fugitive Dust, Mobile and Stationary Source and Administrative) would be included in the Construction Emissions Mitigation Plan to reduce impacts associated with emissions of PM and other toxics from construction-related activities.

AQ-1 Off-Road Construction Equipment Engine Tier:

For the construction activities occurring within California, any off-road construction equipment (e.g., loaders, excavators) that are 50 horsepower or greater must be equipped with engines that meet the EPA Tier 4 Final emissions standards for off-road compression-ignition (diesel) engines, unless such an engine is not available for a particular item of equipment. To the extent allowed by CARB off-road diesel-fueled fleets regulations, Tier 3 and Tier 4 interim engines will be allowed when the contractor has documented, with appropriate evidence, that no Tier 4 Final equipment or emissions equivalent retrofit equipment is available or feasible (CARB, 2016). Documentation may consist of signed statements from at least two construction equipment rental firms.

AQ-2 On-Road Construction Equipment Engine Model Year

Any heavy-duty on-road construction equipment must be equipped with engines that meet the model year (MY) 2010 or newer on-road emission standards.

AQ-3 Heavy-Duty Trucks Engine Model Year

Any heavy-duty trucks used to transport materials to or from the construction sites must be equipped with engines that meet the MY 2010 or later emission standards for on-road heavy-duty engines and vehicles. Older model engines may also be used if they are retrofitted with control devices to reduce emissions to the applicable emission standards.

AQ-4 Blasting-Related Dust Control Measures

Dust control measures will be incorporated to the maximum extent feasible during blasting operations at Copco No. 1 Dam. The following control measures will be used during blasting activities as applicable: Conduct blasting on calm days to the extent feasible. Wind direction with respect to nearby residences must be considered. Design blast stemming to minimize dust and to control fly rock.

AQ-5 General Construction Dust Control Measures

To reduce fugitive dust emissions, the following additional measures will be implemented:

- Water all exposed surfaces as appropriate to control fugitive dust through sufficient soil moisture. Under normal dry-season conditions this is generally a minimum of two times daily. Watering of exposed surfaces is not necessary when soils are already sufficiently wetted (e.g., during rain). Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Install stabilized construction entrances where appropriate, to include geotextile fabric and/or coarse rock to manage the amount of soil tracked onto paved roadways by motor vehicle equipment, and suspended in runoff, from the active construction sites.

In addition, the Construction Management Plan would be modified to require that KRRC give preference to contractors using prescribed equipment that meets or exceeds EPA's exhaust emission standards for model year 2010 and newer heavy-duty highway compression-ignition engines.

J.5 MITIGATED AIR QUALITY IMPACTS

The use of EPA Tier 4 engines, as proposed by Air Quality Mitigation Measure AQ-1, can reduce diesel exhaust (i.e., PM₁₀) and NO_x emissions by up to 90 percent over Tier 1 engines (SMAQMD, 2016a). However, construction fleets in California

comprise a combination of engines, ranging from Tier 1 to Tier 4, and as older equipment are rebuilt or replaced, the composition of higher tiered engines will increase. At this time, the ratio of Tier 4 or Tier 3 engines the construction fleet will have cannot be determined. Further, certain equipment types/sizes are not always available in Tier 4 engines, so it cannot be guaranteed that the entire fleet can be composed of Tier 4 engines (California Water Board, 2020, Appendix N). As shown above in table 2 (table RE-N-6, California Water Board, 2020, Appendix N), maximum daily emissions of NO_x were estimated to be as high as 1,520 lb/day, and therefore, an 84 percent reduction in emissions would be needed to achieve the 250 lb/day threshold. Considering that statewide average construction fleet emissions continue to improve, and the unlikelihood that Tier 4 engines would be available for all equipment types, the needed 84 percent reduction in NO_x emissions would not be achieved and emissions would remain above the 250 lb/day threshold for NO_x (California Water Board, 2020, Appendix N).

The use of on-road construction equipment and heavy-duty trucks that meet MY 2010 or newer emissions standards, as proposed by Mitigation Measures AQ-2 and AQ-3, can also reduce diesel exhaust (i.e., PM₁₀) and NO_x emissions. However, due to the uncertainty of the specific model year emissions standards that will be met by the construction fleet for the proposed action, providing an accurate quantification of these reductions was not feasible. Therefore, it is estimated that the needed 84 percent reduction in NO_x emissions would not be achieved, and emissions would remain above the 250 lb/day threshold for NO_x (California Water Board 2020, Appendix N).

Implementation of the dust control measures in Mitigation Measures AQ-4 and AQ-5 can reduce fugitive dust by up to 50 percent. As noted above, the implementation of Mitigation Measure AQ-1 could also significantly reduce exhaust emissions (i.e., PM₁₀). As shown above in table 2, maximum daily emissions of PM₁₀ were estimated to be as high as 272 lb/day, and approximately 77 percent of these emissions would be from fugitive dust and 23 percent would be from exhaust. Therefore, a 50 percent or greater reduction in fugitive dust and exhaust emissions would reduce PM₁₀ emissions well below the 250 lb/day threshold.

With the implementation of Mitigation Measures AQ-1 through AQ-5, construction emissions from the proposed action would still result in significant and unavoidable impacts from NO_x.

J.6 REFERENCES

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APPENDIX K—TRIBAL VIEWS ON DAM REMOVAL

APPENDIX K

TRIBAL VIEWS ON DAM REMOVAL

(as summarized by FERC staff)

This summary does not speak for the participating Tribes or provide their perspectives on the proposed Lower Klamath Project decommissioning and dam removal. Such perspectives have been provided by the Tribes in countless letters and meetings over the last two decades. Instead, this summary provides a very brief account of each participating Tribe's general position regarding the removal of the J.C. Boyle, Copco No. 1 and No. 2, and Iron Gate Dams as contained within the more recent (post-2017) public record filed with the Commission with the caveat that, throughout the process, the Tribes' voices have spoken for themselves.

From time immemorial, the Lower Klamath River has been the life spirit of the indigenous people who have resided on its shores and have relied on the resources that it provides. As mentioned by the Hoopa Valley Tribe¹ and later reiterated by the Yurok Tribe,² the fishery of the Klamath River was “not much less necessary to the existence of the Indians than the atmosphere they breathed” *Blake v. Arnett*, 663 F.2d 906, 909 (9th Cir. 1981) (quoting *United States v. Winans*, 198 U.S. 371, 381 (1905)).

The importance of the Klamath River to the regional Tribes is reflected in the extensive record of correspondence, interviews, and words spoken at project meetings during the proposed relicensing of the Klamath Hydroelectric Project (FERC No. 2082) by representatives of a number of Tribes, including, but not limited to, the Hoopa Valley Tribe, Karuk Tribe, Yurok Tribe, Klamath Tribes, Quartz Valley Indian Reservation, Shasta Indian Nation, Shasta Nation, and Resighini Rancheria. Subsequent comments received from the Tribes regarding the proposed removal of the four dams associated with the Lower Klamath Project have continued to evidence the ties that these Tribes have to the river and have further documented their strong views.

Section 4.2.15 of the California State Water Resources Control Board's (California Water Board) Scoping Report for the Lower Klamath Project License

¹ Hoopa Valley Tribe. Motion to Intervene and Comments Regarding Notice of Application for Surrender of Project License. Filed on February 11, 2021 ([20210211-5093](#)).

² Yurok Tribe. Comments on the Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Lower Klamath Project Surrender and Removal filed on August 20, 2021 ([20210820-5045](#)).

Surrender Environmental Impact Report (April 2017; filed April 9, 2020³) summarizes the perspectives and comments of a number of Tribal representatives on the proposed project. These comments include, but are not limited to:

- Concerns regarding the health of the river and water quality and a desire for river restoration.
- Potential benefits to recreational fishing and the desire for a traditional fishery to be reestablished.
- Concerns regarding potential effects of the removal of the dams on cultural resources and traditional cultural properties.
- Concerns regarding the potential effects of low river flows on Tribal ceremonies.

Since that time, consultation with Tribal organizations has continued, through written correspondence in response to Klamath River Renewal Corporation's (KRRC) application and also as expressed at numerous Cultural Resources Working Group, Tribal Caucus, and Federal Energy Regulatory Commission (FERC or Commission) consultation and scoping meetings. Tribal attendance at these meetings is documented in the KRRC's May 20, 2021, response to the Commission's April 26, 2021, request for additional information.⁴ This consultation continues to reiterate many of these same comments and views identified in the Water Board's EIR.

In a January 16, 2018, scoping meeting,⁵ members of the Hoopa Valley Tribe expressed support for removal of the Lower Klamath Project dams, but also concerns regarding potential effects on Tribal fishery rights and fishery management. In its subsequent Motions to Intervene filed on February 11, 2021,¹ and February 26, 2021,⁶ the Hoopa Valley Tribe further explained that the location of the Hoopa Indian Reservation, which was established by the federal government in 1864, was selected because it is

³ California State Water Resources Control Board. Final Environmental Impact Report for the Lower Klamath Project License Surrender, Volume II, Part 1. filed on April 9, 2020 ([20200409-5054](#)).

⁴ KRRC. Response to April 26, 2021, Additional Information Request, Attachment 2, Response to AIR-2, National Historic Preservation Act Consultation Record (20210520-5129).

⁵ FERC. Transcript of the January 16, 2018, Scoping Meeting, Hoopa Valley Tribe Neighborhood Facilities, Hoopa, CA ([20180116-4007](#)).

⁶ Hoopa Tribe. Motion to Intervene and Comments Regarding Notice of Application for Transfer of License. Filed on February 26, 2021 ([20210226-5312](#)).

located within the Tribe's traditional territory and also because of its location proximate to the Trinity and Klamath Rivers and to the natural resources these two rivers provide. The Tribe stated that one of the intents of the federal government in choosing this location for the reservation was to ensure that the Tribe would be "self-sufficient" and would be able to "achieve a moderate living based on fish." In its filings, the Tribe asserted that the decommissioning and removal of the four Lower Klamath River developments would be "necessary and appropriate to restore significant anadromous fish habitat and to mitigate and restore water quality in the Klamath River...such decommissioning and removal is necessary to open up additional habitat, improve water quality, reduce fish disease levels, and to provide other benefits that will help preserve and protect the Klamath River's anadromous fish populations that the Tribe depends on for its culture, subsistence, and economy." In more recent correspondence filed on April 26, 2022,⁷ the Hoopa Valley Tribe reiterated its support for removal of the Lower Klamath Project facilities and the amelioration of project-related impacts associated with blocked fish passage, loss of habitat, and inadequate instream flows.

In a scoping meeting held on January 17, 2018,⁸ representatives of the Karuk Tribe expressed concern regarding algae blooms, decreased salmon populations in the Klamath River, and correlations between a decrease in salmon consumption and Tribal health issues and that "the flavor of algae we have here is important because it's not only a problem for fish health but it's a human health risk." A Tribal member commented that "time is of the essence for dam removal." In its Motion to Intervene filed on February 12, 2021,⁹ the Karuk Tribe explained that its ancestral homelands are based along the middle Klamath River and, despite historic hardships, Tribal members "remained in our traditional territory refusing to succumb to the violence and oppression" of others and that "Karuk fishermen continue to fish using traditional methods today as they have for time immemorial." The Tribe refers to the studies that have described the negative effects of the Lower Klamath Project dams on the river and asserts that that removal of the four dams "is key to restoring runs of salmon at-risk of extinction and dramatically improve water quality in a river basin plagued annually by massive blooms of toxic blue-green algae" and that the Tribe is "no longer able to access enough fish to meet even the needs of religious ceremonies much less subsistence needs." In its comments on the draft EIS filed on April 18, 2022,¹⁰ the Karuk Tribe stated that it "continues to unequivocally

⁷ Hoopa Valley Tribe. Comments on the draft EIS for the Lower Klamath River Project ([20220426-5052](#)).

⁸ FERC. Transcript of the January 17, 2018, Scoping Meeting, Karuk Department of Natural Resources, Orleans, CA ([20180117-4003](#)).

⁹ Karuk Tribe. Motion to Intervene ([20210212-5116](#)).

¹⁰ Karuk Tribe. Comments on the draft EIS for the Lower Klamath River Project ([20220418-5137](#)).

support the removal of the Lower four Klamath River dams” and that the “benefits of dam removal must be realized as soon as possible.”

These same concerns about the river have also been expressed by the Yurok Tribe. In a scoping meeting held with the Tribe on January 19, 2018,¹¹ a Tribal member commented that the Lower Klamath dams should be removed “so that the river can begin to heal, to be able to provide, and sustain the salmon runs which in turn feed many other animals, people, and give people joy.” In the meeting, Tribal members affirmed their commitment to dam removal. In its Motion to Intervene filed on February 12, 2021, the Tribe reiterated that it has occupied the lowest segment of the Klamath River since time immemorial. Like the Hoopa Valley Tribe, the Yurok Tribe explained that the Yurok Reservation was established in its current location so that the Tribe “could maintain its fishing and river-centric way of life, reserving to the Tribe fishing and water rights to support that lifestyle.”¹² Further, in its comments on the Commission’s Notice of Intent,¹³ the Tribe refers to the 2012 Secretarial Determination Environmental Impact Statement (EIS)/Environmental Impact Report and states that, since that time, “the crisis has only worsened, and in no small part due to the dams, toxic algae effects to the river, record low salmon runs, a suicide epidemic and further entrenchment of poverty on the reservation, all of which can be tied to the continued damage to the River in part due to the presence of the dams” and that “the salmon are going extinct right before our eyes and another year delay could lead to the tipping point beyond which we can save Klamath River salmon.” Finally, in a meeting between Commission staff and representatives of the Yurok Tribe held on October 11, 2021, a member of the Yurok Tribal Council shared that high algae levels in the Klamath River were discouraging individuals from swimming and recommended that prompt action be undertaken to ensure the health of the river.¹⁴ In its comments on the draft EIS filed on April 18, 2022,¹⁵ the Tribe stated that “dam removal will help the runs of salmon survive as climate change effects begin to be felt more acutely” and that it “continues to support dam removal.”

¹¹ FERC. Transcript of the January 19, 2018, Scoping Meeting, Yurok Tribe, Klamath Tribal Office, Klamath, CA ([20180119-4008](#)).

¹² Yurok Tribe. Motion to Intervene ([20210212-5017](#)).

¹³ Yurok Tribe. Comments on the Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Lower Klamath Project Surrender and Removal filed on August 20, 2021 ([20210820-5045](#)).

¹⁴ FERC Memo ([20211013-4000](#)).

¹⁵ Yurok Tribe. Comments on the draft EIS for the Lower Klamath River Project ([20220415-5072](#)).

In November 2020, both the Karuk Tribe and the Yurok Tribe indicated their commitment to removal of the J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate Dams by signing a Memorandum of Agreement (MOA) with the State of Oregon and the State of California, PacifiCorp, and KRRC. The purpose of the MOA is to implement the amended Klamath Hydroelectric Settlement Agreement.

The Klamath Tribes of southern Oregon, consisting of the Klamath, Modoc, and Yahooskin-Paiute people,¹⁶ have also actively participated in consultation. In a scoping meeting held on January 18, 2018,¹⁷ Tribal representatives expressed concern regarding algae and the importance of reestablishing indigenous fish populations. According to its November 14, 2017, Motion to Intervene regarding the Lower Klamath Project and also the Klamath Project (FERC No. 2062),¹⁸ the Klamath Tribes reiterate that they retain Treaty-reserved hunting, fishing, and gathering rights along the Klamath River (*Kimball v. Callahan* 493 F.2d 564 (9th Cir. 1974) (“*Kimball I*”); *Kimball v. Callahan*, 590 F. 2d 768 (9th Cir. 1979)(*Kimball II*)). Additionally, according to court decisions, the Tribes have “reserved water rights to sufficient water instream to support the populations of fish and wildlife on which those Treaty rights depend” (*United States v. Adair*, 723 F.2d 1394 (9th Cir. 1983)). In its motion, the Tribe states that it is “obligated by its constitution and culture to ensure that it supports every effort to remove the dams and re-open the Klamath River.” At the January 18, 2018, scoping meeting,¹³ a member of the Modoc Tribe commented that, when the Klamath River dams were constructed, “you took a big chunk out of this whole chain—the eco-system that now we are seeing the damages” to salmon and suggested that “we can maybe turn back the clock a little bit and make this area a little bit closer to what it was before.” Additionally, at a subsequent February 5, 2018, Tribal consultation teleconference meeting,¹⁹ a Tribal representative expressed concern regarding potential effects on inundated cultural resources, fish habitat, the elimination of the project reservoirs as a source of water for fire-fighting purposes, liability issues, and potential economic effects. The representative stated that “it would be premature of us to support this without further involvement of the Tribe.”

On January 19, 2021, the Shasta Indian Nation filed its Notice of Intervention for the proposed decommissioning. In its notice, the Shasta Indian Nation comments that its

¹⁶ The Modoc Nation is based in Oklahoma, but the Klamath Tribes and Modoc Nation consider themselves related.

¹⁷ FERC. Transcript of the January 18, 2018 Scoping Meeting, Klamath Tribes Administration Building, Chiloquin, OR ([20180118-4007](#)).

¹⁸ Klamath Tribes. Motion to Intervene and Motion for Permission to File Motion to Intervene After Deadline. Filed November 14, 2017 ([20171114-5012](#)).

¹⁹ FERC. Transcript of February 5, 2018, Modoc Tribal Consultation Meeting. ([20180313-4001](#)).

aboriginal homelands include currently inundated lands at the Copco No. 1, Copco No. 2, and Iron Gate Reservoirs and states that “ancestors of the present-day membership of the Shasta Indian Nation had their lands taken by eminent domain during the construction of the Copco Dams.”²⁰ Further, the Shasta Indian Nation expresses concern regarding submerged cultural, ceremonial, and burial sites that are located beneath these three reservoirs. On March 1, 2022, representatives of the Shasta Indian Nation met with Commission staff and were clear that the construction of the Lower Klamath River Project facilities displaced the Tribe, resulted in an inability to visit sacred places, and had detrimental impacts on the Tribal community.^{21,22} In subsequent letters filed on April 18, 2022,²³ and July 1, 2022,²⁴ the Tribe reiterates these views and its desires for a return of the lands that it once occupied.

The Shasta Nation also participated in consultation and attended numerous meetings. During the prior Klamath Hydroelectric Project relicensing, the Shasta Nation filed a letter to Commission staff on April 27, 2004, stating that “the dams/structures in the Iron-Gate/Copco Complex must be decommissioned immediately and removed in their entirety from the river’s riparian area and the area restored to its formal natural condition.” However, according to the notes from a November 16, 2018, Tribal Caucus meeting, the Shasta Nation had more recently expressed concerns regarding the removal of the four dams, and KRRC had sent them a letter “acknowledging their position of non-support” to dam removal and inviting their continued participation in the caucus meetings with the caveat that the meetings would be held with the assumption that the dams would be removed.²⁵ During the November 2018 meeting, the Shasta Nation expressed concerns regarding this letter, but the details regarding these concerns are not provided in

²⁰ Shasta Indian Nation. Motion to Intervene/Notice of Intervention for Federal Energy Regulatory Commission’s Klamath (P-2082-062) and Lower Klamath (P-14803) Projects, Regarding Notice of Application for Surrender of License ([20210119-5021](#)).

²¹ Shasta Indian Nation. Summary and follow-up of March 1, 2022, Tribal Consultation Meeting ([20220309-5002](#)).

²² FERC. Transcript of March 1, 2022, Shasta Indian Nation Tribal Consultation Meeting ([20220321-4000](#)).

²³ Shasta Indian Nation. Comments on the draft EIS for the Lower Klamath River Project ([20220418-5467](#)).

²⁴ Shasta Indian Nation. Comments on draft Historic Properties Management Plan for the Lower Klamath River Project ([20220701-5271](#)).

²⁵ KRRC. Response to April 26, 2021 Additional Information Request, Attachment 2, Response to AIR-2, National Historic Preservation Act Consultation Record, pg. 693 ([20210520-5129](#)).

the meeting notes. The Shasta Nation’s current views on the proposed decommissioning and removal of the dams is not known.

The Quartz Valley Community of the Quartz Valley Indian Reservation in Scotts Valley is fed by Shackleford Creek, which receives salmon from the Klamath River via the Scott River. In a scoping meeting with the Tribe held on January 16, 2018,²⁶ Tribal representatives expressed concern about the timing of dam removal, fish migration, and a desire to see as many fish as possible in the Scott River prior to the initiation of work associated with decommissioning. At a subsequent June 4, 2019, Cultural Resources Working Group meeting, a representative of the Tribe stated that the Klamath River would “be beautiful once it’s a free-flowing river again.” In its comments on the draft EIS filed on April 19, 2022,²⁷ the Tribe reiterated that the “long-term benefits of removing the Klamath dams will far outweigh the short-term detrimental effects” and that “dam removal will result in lasting improvements to water quality and fish populations.”

The U.S. Environmental Protection Agency recognizes the Resighini Rancheria as having water quality authority over water resources of the Rancheria and, because it borders the Klamath River, it maintains riparian water rights.²⁸ Representatives of the Rancheria participated in Klamath Hydroelectric Project relicensing consultation and provided comments on the Commission’s Draft EIS for that project. The Rancheria was sent an invitation to participate in the Cultural Resources Working Group but did not initially respond. The Tribe later requested consultation with KRRC, which occurred on January 22, 2020. During that meeting, and subsequent informal discussion, the Tribe expressed concerns for water quality, the decline of trust species, the protection of cultural resources, support for dam removal, their identity and connection to the Klamath River as Yurok people, as well as protection of their Tribal water and fishing rights. Additionally, in earlier letters to the Commission filed on January 18, 2005,²⁹ and November 29, 2006,³⁰ the Rancheria expressed its position regarding dam removal and

²⁶ FERC. Transcript of the January 16, 2018, Scoping Meeting, Quartz Valley Indian Reservation, Fort Jones, California. ([20180116-4008](#)).

²⁷ Quartz Valley Indian Reservation. Comments on the draft EIS for the Lower Klamath River Project ([20220419-5066](#)).

²⁸ KRRC. Response to April 26, 2021, Additional Information Request, Attachment 5, Response to AIR-5, Phase II Archaeological Research Design and Testing Plan, pg. 113 ([20210520-5129](#)).

²⁹ Resighini Rancheria. Follow-up Comments Regarding December 16, 2004 Government-to-Government Meeting with FERC Representatives filed January 24, 2005 ([20050124-5068](#)).

³⁰ Resighini Rancheria. Comments on the Draft Environmental Impact Statement (DEIS), Klamath Hydroelectric Project filed November 29, 2006 ([20061129-5052](#)).

stated that the Commission must “remedy the abridgement of our traditional rights as long recognized by the federal government and guide the river’s return to good health and allow the restoration of the fish on which we and other Tribes rely. The Council believes that dam removal is the path you must follow to honor that commitment and that such actions must be taken expeditiously to avoid irretrievable and irreversible harm to both Public Trust and Tribal Trust resources.” In its comments on the draft EIS filed on April 18, 2022,³¹ the Rancheria stated that “dam removal will result in lasting improvements to water quality and fish populations” and was clear that the “long-term benefits of removing the Klamath dams will far outweigh the short-term detrimental effects.”

A representative of the Confederated Tribes of the Siletz Indian Reservation also attended two consultation meetings (November 29, 2018, and June 4, 2019) and inquired about recreation closures, sedimentation and siltation, coldwater fish refuge areas, and cultural sites but did not express an opinion regarding the removal of the Lower Klamath dams.

Representatives of the Trinidad Rancheria have not attended any of the Cultural Resources Working Group or Tribal Caucus meetings associated with the Lower Klamath Project and have not forwarded an opinion regarding dam removal.

In summary, consultation with the participating Tribes indicates a strong support for the removal of the J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate Dams with the consensus being that removal is necessary to restore anadromous fish habitat and improve water quality in the Lower Klamath River. While many Tribes have also expressed concern regarding issues such as sediment passage, exposure and/or erosion of significant cultural resources, the record indicates that most Tribes have supported removal of the dams as quickly as possible.

³¹ Resighini Rancheria. Comments on the draft EIS for the Lower Klamath River Hydroelectric Project Surrender and Removal ([20220418-5063](#)).

**APPENDIX L—COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT
STATEMENT**

APPENDIX L

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

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L.1 GENERAL OVERVIEW OF ISSUES ADDRESSED IN COMMENTS RECEIVED FROM OPPONENTS AND PROPONENTS OF DAM REMOVAL

Opponents of dam removal (204 comment submittals received, including Siskiyou County, the Jackson County Board of Commissioners, State Representative E. Werner Reschke, the Klamath Drainage District, Klamath Irrigation District, Siskiyou County Farm Bureau, and Siskiyou County Water Users Association [SCWUA]) collectively express concern about 39 issues; the most frequently mentioned are:

- Loss of fire protection afforded by the reservoirs (68 percent)
- The need for the reservoirs for irrigation and food production (44 percent)
- The importance of the reservoirs to sustain downstream flows and provide flushing flows (41 percent)
- Violation of the Klamath Basin Compact (35 percent)
- Release of sediments and toxic materials (32 percent)
- Destruction of wildlife habitat and threatened and endangered species (27 percent)
- Loss of reservoir-based recreation, including fishing and hunting opportunities (26 percent)
- Loss of renewable hydroelectric energy (26 percent)
- impacts on soil stability, domestic water supply, property values and tax revenues (17 percent)
- Historic blockage of salmon migration above Copco No. 1 Reservoir (17 percent)
- Lack of outreach and public input and adequacy of draft environmental impact statement (EIS) (8 percent)
- Provision of anadromous fish passage without dam removal (9.5 percent)
- Loss of reservoir flood control (7 percent)
- Increasing salmon runs through hatchery operation and predator control (3.4 percent)

Proponents of dam removal (326 comment submittals, 463 signatures to the Environmental Protection Information Center [EPIC] petition, and letters supporting dam removal by the U.S. Department of the Interior [Interior], the U.S. Environmental Protection Agency [EPA], the Offices of the Governors of the States of Oregon and California, Tribes [Yurok, Karuk, Resighini Rancheria, and Quartz Valley], PacifiCorp, the Klamath River Renewal Corporation [KRRRC], California Department of Fish and Wildlife [California DFW], California State Water Resources Control Board [California Water Board], California Natural Resource Agency, Pacific Coast Federation of

Fishermen's Associations [PCFFA] and Institute for Fisheries Resources, and numerous conservation groups [27 comment letters]) all strongly favored removal of the four Lower Klamath dams. Specifically, commenters generally noted that:

- The draft EIS is thorough and robust; the analysis carefully considers the potential environmental effects of the proposed action with staff modifications; the analytical record is comprehensive and includes scientific, technical, engineering, economic, and environmental studies compiled over two decades; and the document analyzes an appropriate range of alternatives (68 percent).
- Dam removal would eliminate water quality and aquatic resource effects associated with these facilities, open upstream spawning habitat to anadromous species, alleviate the causes of fish mortality from disease and increasing water temperatures (by providing access to cool-water refugia, reducing fish crowding, and reducing the population of annelid disease hosts) (72 percent).
- The environmental protection, mitigation, and enhancement measures proposed, along with staff's additional recommendations, would adequately protect environmental resources; restore the landscape of the areas that are currently impounded within the project reach to a more natural state; and help to sustain and restore water quality and the salmon runs that are of profound cultural and socioeconomic importance to the Tribes (72 percent).

Comments on the draft EIS provided by the public, state and federal agencies, and non-governmental organizations (NGOs) are summarized below, categorized by topical headings.

L.2 DRAFT EIS ADEQUACY

L.2.1 Range of Alternatives

Comment L.2.1-1: Klamath Irrigation District comments that the EIS's narrow focus on fish populations in the Klamath River necessarily produced alternatives that are laser-focused on minimizing impacts on fish at the expense of all the other interested parties to the Klamath Hydroelectric Settlement Agreement (KHSA), who were major participants in the planning of this project. This is not to say that Klamath River salmonids should be wholly sacrificed for the benefit of these other parties. Rather, the Klamath Irrigation District argues, additional alternatives must be considered that seek to minimize impacts on the Klamath Irrigation District and other similarly situated water users, as well as the other parties listed in the KHSA, and provide protection to the salmonids, sucker fish, and other biological resources currently supported by Upper Klamath Lake water. Further, it is clear from the 2020 Environmental Impact Report (EIR) prepared pursuant to the California Environmental Quality Act, Public Resources Code § 21000, et seq. (CEQA), that such alternatives exist. In fact, the 2020 EIR is a readily available resource from which those alternatives could be pulled. The draft EIS only analyzes, essentially, a single alternative to inaction and pays lip service to the word "alternative," by framing

the “proposed action” and “proposed action with staff recommended modifications” as separate and/or different. However, it is clear that the Federal Energy Regulatory Commission (FERC) only gave actual consideration to the adoption of its preferred alternative, in violation of the National Environmental Policy Act’s (NEPA) mandate to consider a range of feasible alternatives. FERC must revise the EIS, which will necessitate production of a broader range of alternatives that FERC must then analyze with the actual purpose of the project in mind.

SCWUA, Siskiyou County, Jackson County, and the Klamath Irrigation District all comment that the range of alternatives considered is too limited and ignores analyzing all reasonable alternatives. Siskiyou County recommends that FERC analyze a “phased approach alternative” and a “federal takeover alternative.” The commenters state that longstanding Council on Environmental Quality (CEQ) guidance clearly explains that the range of alternatives FERC is obliged to consider “includes all reasonable alternatives, which must be rigorously explored and objectively evaluated.” In a “phased approach” alternative, after the initial dam is removed and the environmental health of the Klamath can be adequately monitored and determined to meet a certain biological threshold, the second upstream dam could be removed, and so on. This would provide a more scientifically driven approach to dam removal and ensure that sensitive environmental resources are protected from unproven, potentially catastrophic actions related to simultaneous removal of all dams. They state that FERC should also consider a “federal takeover” alternative. A federal takeover alternative would reduce environmental impacts compared to the proposed action by continuing to generate clean energy, providing successful fish passage, retaining other reservoir benefits including wildfire fighting capacity, and eliminating effects on suckers and adjacent residential uses.

Siskiyou County states that the way issues are presented in the EIS suggests that continuation of operating the dams is the only cause of these issues, without acknowledging other variables such as climate change. The purpose and need should be expanded to include a discussion of the views of the prior science review panels regarding the anticipated ecological and socioeconomic costs and benefits of dam removal. This broadening of the purpose and need statement would allow for more consideration of the phased approach.

Jackson County Board of Commissioners comments that the primary issue is the long-term ability for the people of the region to survive without water and states that the only logical alternative is the no-action alternative. It rejects staff recommendations that it feels are based on information that does not place into consideration the “human cost” of dam removal. It questions information that is presented from PacifiCorp because it has collected hundreds of millions of dollars from its customers. Instead, it comments that the money could have addressed the issues and provided tangible solutions for all the community in the region, not just a no-action alternative.

Many individuals opposing dam removal suggest other alternatives.

Response: NEPA requires that federal agencies consider a reasonable range of feasible alternatives (40 Code of Federal Regulations [C.F.R.] Section 1502.14). Note that the purpose (the specific objective of the agency’s proposed action) and the need (the broader underlying agency need or legal requirement to which the agency is responding) largely determine what constitutes a “reasonable range” of alternatives.

In appendix A of the EIS, we evaluate the alternatives that were submitted during scoping, including phased dam removal alternatives as well as alternatives that involve retaining the dams and providing fish passage (which would encompass the federal takeover alternative); predator control; curtailing commercial, Tribal and recreational fishing; experimental drawdown; repurposing the reservoirs for environmental purposes; establishing additional water storage facilities and juniper removal projects; providing more water from sources with good water quality; building more hatcheries; and improving water quality via treatment. Many of these alternatives were evaluated in detail in California Water Board’s 2020 EIR, and we find that none of these alternatives would adequately address the factors that are increasing salmon disease incidence and fish kills in the Lower Klamath River, which jeopardize all runs of salmon and steelhead that return to the Klamath River and its tributaries. We disagree with the Jackson County Board of Commissioners comment that our analysis does not consider the “human cost” of dam removal and point to our discussions in sections 3.7 (*Recreation*), 3.8 (*Land Use*), 3.9 (*Aesthetics*), 3.10 (*Cultural Resources*), 3.11 (*Tribal Trust Responsibilities*), 3.12 (*Socioeconomics*), 3.13 (*Environmental Justice*), 3.14 (*Public Safety*), and 3.15 (*Air Quality and Noise*), all of which analyze potential effects of the proposed project on humans and human communities.

Comment L.2.1-2: KRRC, the Karuk Tribe, and Interior all state that the range of alternatives evaluated in the draft EIS was appropriate. KRRC comments that the EIS provides a reasonable range of alternatives for purposes of environmental review and a solid basis for determining that license surrender is consistent with the public interest. The proposed action is implementation of a settlement proposal, and KRRC is seeking an order on terms and conditions that are consistent, in all material respects, with the terms and conditions of the KHSA. They state that KRRC and the States of California and Oregon are not seeking a license to operate and maintain the Lower Klamath Project, and that the current licensee (PacifiCorp) has chosen to support the license surrender application rather than relicense the project. FERC cannot compel PacifiCorp to continue to operate the Lower Klamath Project in its current configuration or in some lesser or modified configuration of hydroelectric development. As appropriately determined by FERC staff, none of the other alternatives suggested for inclusion in the final EIS are technically and economically feasible, meet the purpose and need for the proposed action, or meet the goals of the applicants.

The Karuk Tribe views the range of alternatives presented in the draft EIS as reasonable and appropriate for this analysis. In reviewing the recommended staff modifications, the Tribe notes that it collaborated with numerous other signatories to the KHSA, KRRC staff, and consultants.

Interior comments that FERC's draft EIS is thorough and robust, and carefully considers the potential environmental effects of KRRC's proposed action. The draft EIS considers a reasonable range of alternatives, and Interior is pleased that FERC's preferred alternative is the KRRC's proposed action with moderate staff modifications. Interior understands that KRRC intends to propose some clarifications and revisions to some of those modifications, but KRRC is committed to addressing the potential environmental impacts of removing the four dams and facilities and restoring affected lands and resources.

Response: Comments noted.

Comment L.2.1-3: KRRC is grateful for the thorough and exacting analysis of the proposed action, taking into account the voluminous record. KRRC is also grateful for the timeliness of this work. Environmental review is proceeding on the schedule that FERC established in June 2021. KRRC encourages FERC staff and cooperating agencies to continue to work toward the issuance of the final EIS as soon as practicable, and by September 2022.

The Karuk Tribe continues to unequivocally support the removal of the lower four Klamath River dams and is pleased to support FERC staff's recommendation to approve the application to surrender the license, with certain proposed modifications. The Tribe thanks FERC and its staff for the effort involved in meeting the schedule established in the June 2021 notice of intent. The Tribe strongly urges FERC to continue this effort to allow for the release of the final EIS in September 2022 if not before. Persistent drought conditions in the Klamath Basin have made an already dire situation for fisheries even worse. The benefits of dam removal must be realized as soon as possible.

Humboldt County notes that the draft EIS includes 16 staff modification measures. Most of the measures appear to be relatively modest in scope and could likely be readily incorporated into the final project plans. Humboldt County emphasizes that the Klamath River is suffering an ecological crisis, noting that several species of salmonid have already been extirpated from the Klamath and several others such as coho and spring Chinook are on the verge of extinction. The County recommends that FERC carefully consider the risk of requiring mitigation measures that would delay implementation of this project and work closely with KRRC to reach consensus on the final measures. Every year that passes while planning for dam removal is a year closer to extinction for these species that are of critical importance to Humboldt County's economy, regional identity, and the cultures of its native residents.

American Whitewater comments that it appreciates the efforts of KRRC to convene parties for purposes of working collaboratively in good faith to resolve outstanding issues that affect whitewater recreation. It also appreciates the fact that FERC staff have recognized the outstanding issues it identified in its scoping comments and provided a pathway to address them in a manner that will not delay this proceeding and allow environmental review to be completed by September 2022 as scheduled. American Whitewater urges FERC to issue a surrender order shortly thereafter. With the staff-

recommended measures, the permanent, significant, and unavoidable adverse effects on whitewater river users will be appropriately mitigated, and the permanent, significant, beneficial effects on whitewater recreation will be realized. American Whitewater indicates that it remains committed to support efforts to further refine the Recreation Facilities Plan in advance of license surrender and initiation of decommissioning and strongly supports the surrender and decommissioning of the four developments that include J.C. Boyle, Copco 1, Copco 2, and Iron Gate without delay. With the recommended staff modifications, American Whitewater believes the project benefits will be more fully enjoyed by river users and are in the public interest.

Orca Salmon Alliance comments that while it appreciates the goal of the staff modifications to finalize all consultations, management plans, and agreements before surface disturbance commences, the agency reminds FERC of the crisis facing salmon and endangered orcas that is being exacerbated by ongoing drought and marine heat waves and urges FERC to condense this process and move the project forward as soon as possible.

Response: We will continue to move forward as expeditiously as is possible while striving to ensure that all stakeholder concerns are identified and considered.

Comment L.2.1-4: Siskiyou County comments that the proposed action, as described in the 2012 EIS/EIR, required federal legislation to execute the project. Federal legislation was a requirement of the KHSA. The proposed action in the FERC EIS should consider federal legislation as the ultimate approval for the project, given the scale of the dam removal and potential environmental impacts on a regional scale.

Response: The KHSA, signed in February 2010, contemplated dam removal after passage of federal legislation and approval by the Secretary of the Interior. Congress did not act before the December 31, 2015, expiration date, but a Secretarial Determination approving dam removal was made after providing opportunities for public comment, consideration of state and local laws, the assets of non-federal parties, and opportunities for judicial review (section 1.6.9 of the amended KHSA of 2016). Further, several subsequent administrative, legislative, and judicial processes, e.g., California and Oregon water quality certifications, were available in the KHSA to provide interested parties with opportunities to insert, protect, or defend rights and interests. Following several dispute resolution meetings, the States of Oregon and California, Interior, the U.S. Department of Commerce, and PacifiCorp proposed amendments to the KHSA that would eliminate the need for federal legislation and instead achieve dam removal through a license transfer and surrender process, which led to the 2016 amended KHSA. The authority to decide whether to accept an application to surrender the license for a hydroelectric project, and what conditions are appropriate to include in a surrender order, lies with FERC.

Comment L.2.1-5: Siskiyou County requests that FERC recirculate the EIS in a form that addresses the significant issues raised by the County. The existing draft EIS is insufficient to meet the requirements of NEPA to analyze the “environmental impact of the proposed action” and “alternatives to the proposed action” 42 U.S.C. 4332(2)(C).

These provisions have been interpreted to require FERC and other agencies to carefully consider detailed information concerning significant environmental impacts and to consider alternatives when an action may have significant impacts. Reliance on out-of-date information that does not reflect the actual impacts of the action is unlawful and is, by itself, a basis for recirculation.

Response: We incorporated the additional information and concerns identified in the comments on the draft EIS into the final EIS, including any newer sources of information relevant to our analysis. We will consider and address any comments on this final EIS in any surrender order that is issued.

Comment L.2.1-6: SCWUA notes that it believes that the no-action alternative and/or alternate proposals for meeting the agency's goals have not been given enough consideration. The draft EIS states, "Under the no-action alternative, there would be no change in geology and soils, water quantity, land use, aesthetics, socioeconomics, or air quality and noise compared to existing conditions." SCWUA agrees with that statement. However, the EIS goes on to state that "the dams would continue to adversely affect environmental justice communities by changing water quality and decreasing the quality of salmon fishery. The salmon population would likely be severely diminished within several decades due to deteriorating water quality and increased disease incidence." SCWUA strongly disagrees, and notes that the dams actually improve water quality, they do not diminish it; they provide much needed water storage for increased flows during the fall salmon run and prevent sediment and algae from filling in spawning holes downstream of Iron Gate Dam. If the dams are removed, constant sluffing of sediment would be entering the river for years to come.

Response: We evaluate all alternative proposals submitted during scoping in appendix A of the draft EIS and find that none would adequately address the factors that are increasing salmon disease incidence and fish kills in the Lower Klamath River. We also explain that the project reservoirs are not used to store water to improve downstream flows or for any other purpose, other than a very minor amount of flood flow attenuation and the water borrowing practice between PacifiCorp and the U.S. Bureau of Reclamation (Reclamation) that has been implemented in some years. Although our analysis indicates that, under the proposed action, the quality of salmon spawning habitat downstream of Iron Gate Dam could be adversely affected for several years, the number of fall Chinook salmon spawning in this reach constitute only 8 percent of the population of fall Chinook salmon that return to the Klamath River, and nearly all of the coho salmon, spring Chinook salmon, and steelhead that return to the Klamath River spawn in tributaries. Thus, the short-term siltation from the proposed action would adversely affect only a small proportion of the salmon and steelhead populations in the Klamath River Basin, while the disease and water quality issues that must be addressed affect the entire population of all salmonid species that use the Lower Klamath River as a migratory corridor. Regarding effects of the dams on sediments and water quality, please refer to our responses in sections L.5 and L.6.

Comment L.2.1-7: The National Park Service (NPS) supports FERC’s proposed action with staff modifications (preferred alternative) to remove the four dams along the Klamath River. The preferred alternative will bring a restored free-flowing river that will include a range of benefits for fish, water quality, and wildlife. It will also change existing recreation opportunities, including affecting whitewater boating recreation in the Hell’s Corner/Upper Klamath as a result of changes in flow regime post-dam removal. The preferred alternative would remove recreational barriers in the J.C. Boyle and Copco No. 2 bypassed reaches and fund strategically placed river access sites in the former hydroelectric reaches. Providing access to the existing and new whitewater boating reach will help mitigate impacts to the boating community and benefit recreationists and the recreation-based economy of the surrounding communities. Providing well-designed sites will also reduce environmental impacts by directing visitors to appropriate places and discouraging user-created sites. NPS understands that KRRC has agreed to an approach to tree removal that will support boating but also consider potential impacts on fish habitat and cultural resources and supports this approach.

The Quartz Valley Indian Reservation comments that the draft EIS builds on decades of previous studies and analyses, including: (1) FERC’s 2007 EIS for relicensing of the Klamath Hydroelectric Project, (2) Interior and California DFW’s 2012 EIS/EIR for Klamath Facilities Removal, and (3) the California Water Board’s 2020 EIR. It agrees with the conclusions in the draft EIS that the long-term benefits removing the Klamath dams will far outweigh the short-term detrimental impacts. Dam removal will result in lasting improvements to water quality and fish populations and provide salmon with the ability to access the prolific cold-water springs in the Upper Klamath Basin. Despite the warming climate, the water in these springs will remain cool for many decades and provide salmon with the climate-resilient lifeline they will need to thrive in the 21st century and beyond. Dam removal will dramatically reduce the harmful algal blooms that occur each summer in the warm, stagnant water impounded in the reservoirs.

Orca Salmon Alliance agrees with the draft EIS’ conclusion that the no-action alternative would have a long-term, significant, adverse effect on both the Klamath’s anadromous salmon runs and the Southern Resident orca. Retaining the dams will continue to drive the decline of Klamath River salmon by blocking migration routes, negatively affecting water quality, and fostering the spread of disease and toxic algae. The presence of these dams has already decimated salmon populations, and, in turn, has negatively affected prey availability for Southern Resident orcas. Retaining the dams will cause further harm to these critically important species. Orca Salmon Alliance also agrees that the anticipated short-term, negative impacts of dam removal on Chinook salmon and the resulting reduced prey availability for the Southern Residents will be outweighed by the overall, long-term benefit of dam removal for both salmon and whales, which the draft EIS notes are “beneficial and significant.” Recent efforts to restore rivers and salmon by removing dams have shown remarkable improvement in river systems and watersheds.

Response: We acknowledge Interior, Quartz Valley Indian Reservation, Orca Salmon Alliance, and Wild Orca’s support for the proposed action with staff modifications.

Comment L.2.1-8: National Marine Fishery Service (NMFS) comments that in an internal review of the biological opinion (BiOp), it found non-substantive errors, such that correction of these errors does not require reinitiating consultation; however, it determined that these errors should be corrected to avoid confusion. NMFS provided a table identifying the page number and paragraph or location of each error, a description of the correction, and a brief explanation of the reason for the correction and requested that FERC attach the enclosed table to the BiOp and incorporate any applicable corrections in the draft EIS.

NMFS determined that correction of these errors in the BiOp does not meet the criteria for reinitiating of consultation in 50 C.F.R. 402.16(a). The proposed action has not commenced; thus, the amount or extent of taking specified in the incidental take statement has not been exceeded. The corrections are not based on new information, and NMFS has not found any information that revealed effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered. The corrections are not based on any modification to the identified action, and NMFS has no information indicating that the identified action has been subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the BiOp. Finally, no new species has been listed or critical habitat has been designated that may be affected by the identified action. Therefore, NMFS has not requested reinitiating consultation.

Response: Comment noted. We reviewed your table and incorporated corrections (where applicable) into the final EIS. We do not anticipate any minor errors, omissions, or inconsistencies will alter our conclusions or result in any delays of this proceeding. We also attached a copy of the correction table to the final EIS as appendix M.

Comment L.2.1-9: An individual commenter notes that the heart of the Klamath watershed was Lower Klamath Lake, which is gone, and there is no talk of restoring it. He further notes that wetlands filter and enhance water quality.

Response: The draft EIS assesses the environmental effects associated with KRRC's proposal to decommission and remove most Lower Klamath Project facilities, which are downstream of Lower Klamath Lake. Because the proposed action would have no effect on Lower Klamath Lake, evaluating the restoration of Lower Klamath Lake is beyond the scope of this EIS.

L.2.2 Lack of or Outdated Studies and Data

Comment L.2.2-1: One individual comments that a central theme throughout the document is an avoidance of scientific data that portrays any long-term or lasting effects of removing the dams. Typical verbiage is "will experience short-term, significant, and unavoidable adverse effects associated with (...). However, over the long term, restoration of a free-flowing Klamath River would create a healthier river with no long-term, adverse effects." This language, repeated throughout the document, indicates that

the authors do not have good evidence to substantiate these statements, especially when there is documentation to the contrary from dam removal projects in other states.

Response: We disagree. We made every effort to consider all available information that is relevant to evaluating the effects of the proposed action, including the vast number of studies that have been conducted over the last 20 years and all of the information that was submitted by commenters during scoping. We include the relevant information in the EIS and have strived to provide hyperlinks to source information wherever possible.

Comment L.2.2-2: Siskiyou County comments that the project documentation relies on outdated technical studies and surveys, with most being more than a decade old and some being substantially older. This is inconsistent with prevailing practices in undertaking environmental review of major infrastructure projects. For example, the water temperature analysis in the section 3.3.3.2, *Water Quality, Affected Environment*, relies on outdated information ranging from 1998 through the mid-2000s. Relying on old measurements such as this can skew the environmental analysis because it does not account for more current trends (such as climate change). To be considered an accurate assessment of impacts from the proposed action, the Commission should be mobilizing new surveys for the EIS, not relying on outdated information on which to base environmental impact conclusions.

Response: We agree that using outdated technical studies and surveys has the potential to result in misleading evaluations; however, we disagree with the implication that the draft EIS relies on outdated technical studies. As stated in the draft EIS on page xxxi, “The analysis was based on information provided by KRRC and PacifiCorp and further developed from previous analyses of the effects of dam removal including EISs and EIRs prepared by the Commission (2007), Interior and California DFG (2012), and the California Water Board (2020a); reports prepared to support the secretarial determination on dam removal and the overview report prepared by Interior and NMFS (2013); water quality certifications (WQCs) and supporting documents issued by the California Water Board and Oregon DEQ; literature searches; information from public scoping, and other information filed on the project record for the Klamath Hydroelectric Project (P-2082) and the Lower Klamath Project (P-14803), including comments filed on the record from federal, state, and local agencies as well as comments from individual members of the public.”

Although section 3.3.3.2 of the draft EIS, which evaluates the effects of the proposed action on water temperature, cites information from 1997 to 2011, it also incorporates conclusions from the 2020 California Water Board EIR and our evaluation of data collected in 2011–2020. Our analysis for the Klamath mainstem temperatures is based on simulations of water temperature from three numeric temperature models that incorporate well-established, commonly used algorithms to represent physical processes. In addition, this analysis incorporates the 0.5 degree Celsius (°C) per decade increase observed by Bartholow between 1962 and 2001 and an analysis for climate change using the period of from 2012 to 2061 (Bartholow, 2005). We have revised section 3.3.3.2 in the EIS to

clarify that the Lower Klamath River under current operations with the Iron Gate Powerhouse intake barrier curtain continues to frequently exceed the EPA 7-day average daily maximum (7DADM) temperature guidelines of 20°C for the protection of salmonid adult migration; 16°C for juvenile rearing; and 13°C for spawning, incubation, and emergence.

Comment L.2.2-3: Siskiyou County states that the EIS relies on older data; recreation use data is from the 2000s that was collected at a part of the initial relicensing process. For example, the following quote from the Recreation section highlights the dated nature of the background sources: “There is high to moderate demand for water-based recreation activities, including swimming and beach activities (California Department of Parks and Recreation, 1998; Oregon Parks and Recreation, 2003). Demand for fishing is high in California and moderate in Oregon (California Department of Parks and Recreation, 1998; Oregon Parks and Recreation, 2003).” These reports are from previous iterations of the Statewide Comprehensive Outdoor Recreation Plans (SCORP). A quick search of the state websites show more recent SCORP plans and sources (some of which are cited later in the document). Regardless, the conclusions drawn from the 1998 and 2003 plans are really a relic of that time and are not applicable to existing or future conditions at this point. The document should be citing the more recent SCORP reports and supporting documents.

Response: California’s recent SCORP documents have focused on identifying and being able to provide park spaces near populated areas. There is little discussion or information about the demand for specific rural, or water-based, recreation that is represented in the vicinity of the Klamath River. Therefore, the cited document provides the most recent information that is most relevant to the discussion. Oregon’s recent SCORP shows similar results for water-based recreation activities and fishing as the cited document. References to the Oregon’s 2003 SCORP in the final EIS have been updated to 2019.

Comment L.2.2-4: KRRC comments that the analytical record reflected in this draft EIS is comprehensive and exhaustive. It includes scientific, technical, engineering, economic, and environmental studies compiled over two decades.

Response: Comment noted.

Comment L.2.2-5: Klamath Irrigation District comments that the draft EIS claims that the natural elevation of Upper Klamath Lake is 4,140 feet above mean sea level (msl), and that modifications were made to allow the lake to be drawn down below that level, to 4,137 feet above msl. However, data in the historical record show these statements are incorrect:

Flow into the Link River was constrained by two basalt-lava reefs: (1) at the mouth of the Link River, naturally holding the waters of the lake around 4,137 feet above msl, using Reclamation’s elevation datum; and (2) just below the inlet to the Klamath Irrigation Project A Canal. Jim Spindor captures the history of the Link River routinely going dry in his article about Yulalona. This fact is further supported by Reclamation’s “Natural

Flow of the Upper Klamath River” study (from 2005), which states the minimum discharge from Upper Klamath Lake was recorded as 0.0 cubic feet per second (cfs) on July 18, 1918. For 0.0 cfs to be achieved at the head of the Link River, the elevation of the lake must be below the elevation of the natural reefs.

The U.S. Geological Survey (USGS) acknowledges Reclamation datum is distinct from USGS records in its “Geological Survey Water Supply Paper 1315-B 1904 through 1950.” When compared to the USGS data, it is clear the graphic depiction of Upper Klamath Lake levels was not adjusted to match the Reclamation datum. This error contributes greatly to the misunderstanding of the natural conditions of Upper Klamath Lake levels. Due to this failure to accurately capture historical water elevation, the draft EIS mischaracterizes the natural levels of Upper Klamath Lake, which serves as a baseline to the analysis therein and should be revised to accurately reflect the available historical data.

Response: According to Reclamation’s 2019 draft environment assessment, Implementation of Klamath Project Operating Procedures 2019-2024, the naturally occurring water surface elevations prior to completion of Link River Dam fluctuated between approximately 4,140 and 4,143 feet above sea level. In addition, Reclamation references bathymetric data to indicate that Upper Klamath Lake’s existing active storage capacity is observed between the elevations of 4,136.0 and 4,143.3 feet above sea level and notes that this is the range in which Upper Klamath Lake has been operated since completion of Link River Dam in 1921. Based on this additional direct source information, we believe the description of historic elevation of Upper Klamath Lake in the EIS is accurate.

L.2.3 Cumulative Effects

Comment L.2.3-1: Klamath Irrigation District notes that the discussion of cumulative impacts in section 2.5 of the draft EIS, discussing the “Reasonably Foreseeable Trends and Planned Actions” fails to analyze past actions that may contribute to the impacts of the project. The 2020 CEQA EIR conducted for the project analyzes the impacts of the project when considered in conjunction with several other policies already in effect, including the NMFS and FWS 2013 Joint BiOp flow requirements for the Klamath Irrigation Project and the additional winter-spring surface flushing flows and deep

flushing flows, as well as emergency dilution flows, that became a requirement in 2017.¹ Additionally, measures PacifiCorp has committed to undertake as part of the KHSA upon certain triggers related to implementation of the proposed project are considered in this cumulative effects analysis (California Water Board, 2018, Vol. I, p. 3-1104). While the draft EIS does mention some of these agency actions, it merely summarizes what they are and does not provide any analysis of their past impacts such that a cumulative impact determination could be made from data therein.

Response: At the time that the draft EIS was issued, CEQ regulations did not require the analysis of cumulative effects in NEPA documents. The CEQ regulations were revised effective May 20, 2022, to restore the requirement to include the analysis of cumulative effects. We include an analysis of cumulative effects in section 3.16 in the final EIS, including the incremental effects of the proposed action on the operation of Reclamation's Klamath Irrigation Project.

Comment L.2.3-2: One individual comments that the text in section 2.5.6 regarding agricultural practices, specifically about cannabis cultivation and grazing, is inaccurate and misleading.

Response: We reviewed the draft EIS regarding agricultural practices in the project area and find it to be accurate. Without knowing the specific statements that are believed to be inaccurate or misleading, we are unable to respond in more detail. No changes were made in the final EIS.

L.3 KRRC MANAGEMENT PLANS

L.3.1 Modifications and Regulatory Approvals

Comment L.3.1-1: KRRC comments that the draft EIS identifies several potential variances between KRRC's management plans and the water quality conditions imposed by the California Water Board and the Oregon DEQ for purposes of section 401 of the Clean Water Act (CWA). The range of alternatives analyzed by the draft EIS encompasses these potential variances, and the draft EIS discloses any environmental impacts associated with the variances. KRRC will update the management plans based

¹ Hoopa Valley Tribe v. U.S. Bureau of Reclamation, et al., 2017 WL 6055456, at *1 (N.D. Cal. 2017) (order modifying injunction); Yurok Tribe, et al. v. U.S. Bureau of Reclamation, et al., No. 3:16-cv-06863, at 1 (N.D. Cal. March 24, 2017)(order modifying injunction); Hoopa Valley Tribe v. National Marine Fisheries Service, et al., 230 F.Supp.3d 1106, 1146 (N.D. Cal. 2017) (order granting motion for partial summary judgment and issuing preliminary injunction); Yurok Tribe, et al. v. U.S. Bureau of Reclamation, et al., 231 F.Supp.3d 450, 490 (N.D. Cal. 2017) (order granting motion for partial summary judgment and issuing preliminary injunction), appeal dismissed, 2018 WL 7917110 (9th Cir 2018).

on ongoing consultation between KRRC and the state water quality agencies with respect to these variances.

KRRC anticipates that any modification to Oregon DEQ's water quality certification will be reflected in the water quality certification to be issued to support KRRC's pending section 404 permit. KRRC anticipates that any modifications to the California Water Board's conditions will be issued sometime after FERC issues its final EIS. The issuance of the final EIS prior to any such action by the California Water Board is significant because KRRC anticipates that the California Water Board will incorporate the FERC EIS as part of the record supporting its decision.

KRRC comments on several California Water Board conditions (1, 3, 5, 8, 10, and 15) as follows:

- *Condition 1*—KRRC filed its updated Water Quality Monitoring and Management Plan (WQMMP) with FERC in December 2021. In that updated plan, KRRC proposes removing one Category 1 (continuous water quality monitoring) station at the following location: Klamath River upstream of Copco No. 1 Reservoir and downstream of Shovel Creek. KRRC will conduct water quality grab sampling at this location consistent with Category 2. In addition, KRRC is seeking modification of California Water Board WQC condition 1 to exclude the monitoring station between Shovel Creek and Copco No. 1 Reservoir from the continuous monitoring requirement with regard to the statement on page 3-101.
- *Condition 3*—KRRC describes several amendments to better align the condition with the updated Reservoir Drawdown and Diversion Plan filed with FERC in December 2021. The California Water Board is aware of this amended Drawdown Plan, and KRRC will include changes to condition 3 in a request for an amendment to the California Water Board WQC.
- *Condition 5*—KRRC proposes to begin surveys for anadromous fish presence after the first year of drawdown with four consecutive years of monitoring and spawning surveys. KRRC consulted with the California Water Board on this proposed change to condition 5 and will include this request in its application for an amended California Water Board WQC. Furthermore, KRRC describes several amendments to better align the condition with the updated Aquatic Resources Management Plan filed with FERC in December 2021. The updated plan was prepared in consultation with the California Water Board, the North Coast Regional Water Quality Control Board (North Coast Regional Board), Oregon DEQ, California DFW, and affected Tribes.
- *Condition 8*—After further consideration of resource impacts, it was determined that the City of Yreka's water line can be permanently attached to the Daggett Road Bridge. The California Public Drinking Water Management Plan is being updated to reflect this change. Prior to construction, KRRC will reach an agreement with the City of Yreka on the estimated water delivery outage

timeframe. Once constructed, the new replacement pipeline section will connect to the existing City of Yreka water supply pipeline. This location prevents Klamath River flows during and after drawdown from affecting that portion of the City of Yreka's water supply conveyance infrastructure.

- *Condition 10*—KRRC will request minor modifications to California Water Board WQC condition 10 to clarify the specific measures required for ground-disturbing activities that could affect water quality (including beneficial uses) that are not addressed by the Construction General Permit or other conditions of the WQC.
- *Condition 11*—KRRC will request that the California Water Board amend condition 11 to bring its requirements in alignment with the December 2021 California Waste Disposal Plan, a subplan of the Waste Disposal and Hazardous Materials Management Plan. Such changes will include clarification that the requirements of Division 2 title 27 of the California Code of Regulations do not apply to on-site disposal of inert, non-hazardous debris resulting from the proposed action.
- *Condition 13*—KRRC, NMFS, California DFW, and PacifiCorp consulted extensively on the most effective approach to the management of Iron Gate Hatchery and Fall Creek Hatchery after the removal of the dams. Based on these consultations, NMFS, California DFW, PacifiCorp, and KRRC conclude that it would be more effective to move all hatchery operations to Fall Creek Hatchery. KRRC will seek an amendment of California Water Board WQC condition 13 to reflect this approach, which is reflected in the NMFS BiOp.
- *Condition 15*—KRRC will request minor modifications to conform with available information regarding the location of groundwater wells that could be affected by the proposed action. This should eliminate any inconsistencies between condition 15 and KRRC's December 2021 Water Supply Management Plan.

KRRC comments that it intends to request amendments to the California Water Board WQC to align it with KRRC's management plans. KRRC anticipates that the California Water Board will rely (in part) on FERC's final EIS to support a decision amending the WQC. KRRC requests that FERC adopt water quality conditions as updated in alignment with KRRC's management plans.

Response: We incorporated KRRC's responses provided in appendix A, table 3 of its comments into the final EIS, and updated the final EIS to include any revisions to the management plans that were filed into the record.

- *Condition 1*—The draft EIS discussion of the WQMMP, including table 2.1-2, which provides the types of monitoring proposed for each station, is based on the December 2021 WQMMP and is consistent with this comment. In addition, we corrected an error on page 3-101 in the draft EIS, in which we incorrectly state that Oregon DEQ condition 2, instead of California Water Board WQC condition

1, includes continuous monitoring in the Klamath River at a station between Shovel Creek and Copco No. 1 Reservoir.

- *Condition 3*—We reviewed and updated the final EIS accordingly based on this information.
- *Condition 5*—We clarified our description of the timing and duration of anadromous fish surveys in the final EIS.
- *Condition 8*—We reviewed and updated the final EIS accordingly based on this information.
- *Condition 10*—We updated the EIS by noting KRRC would request minor modifications to California Water Board WQC condition 10 as stated in this comment and adding an evaluation of this in section 3.3.3.5.
- *Condition 11*—We updated the EIS noting KRRC would request minor modifications to California Water Board WQC condition 11 as stated in this comment.
- *Condition 15*—We reviewed and updated the EIS accordingly based on this information.

Comment L.3.1-2: The Shasta Indian Nation comments that it reached consensus on the mitigation measures included in the California Water Board’s CEQA Findings and Statements of Overriding Considerations for the Lower Klamath Project License Surrender (2020). KRRC agreed to these measures by email on October 18, 2018, and has implemented the mitigation measures included in this plan that are within its control. Many of these mitigation measures are specifically intended to address damage to Tribal cultural resources (TCRs) during the dam decommissioning, removal, and restoration process.

Response: Comment noted.

Comment L.3.1-3: KRRC states that it will modify the Sediment Deposit Remediation Plan, the Water Supply Management Plan, and the Slope Stability Monitoring Plan per the staff modification to provide a public outreach component that specifically addresses communication with environmental justice communities.

Response: We modified the EIS to reflect KRRC’s intent to incorporate this staff recommendation from the draft EIS.

Comment L.3.1-4: KRRC indicates that it will incorporate the staff modifications into updated management plans, with several exceptions where it suggests clarifications and revisions consistent with FERC staff’s objectives of reducing or eliminating environmental effects and alleviating environmental justice concerns. KRRC will file updated plans reflecting staff modifications shortly after FERC issues the final EIS, unless FERC instructs it to do otherwise. The updates will be within the range of alternatives and environmental analysis presented in the draft EIS.

Response: We reviewed KRRC's responses to staff modifications and consider those modifications that KRRC supports to be part of the proposed action in the final EIS.

Comment L.3.1-5: EPA is aware that plans to commence dam removal in 2023 are contingent upon completion of the environmental planning and review process under NEPA and regulatory approvals that were outstanding or subject to modification at the time this draft EIS was published. These include the California Coastal Commission's determination under the Coastal Zone Management Act, a new CWA Section 401 Water Quality Certification from the State of Oregon, updates to the Historic Properties Management Plan (HPMP), an Eagle Conservation Plan, an Air Quality Permit from Siskiyou County, a Stormwater Pollution Prevention Plan, and a CWA Section 404 Permit from the U.S. Army Corps of Engineers (Corps), among others. EPA recommends discussing any authorizations or new information submitted to or from FERC since the publication of the draft EIS (e.g., any changes to the HPMP or Oregon's 401 water quality certification or conditions) and highlighting any changes to significance determinations or additional conditions. EPA also recommends that, in a consolidated fashion (as a narrative or table in chapter 2), the final EIS present the status of all permits or approvals needed to commence pre-construction decommissioning activities to help the public, applicant, and responsible agencies better understand the scope of work and assist with construction planning and scheduling.

Response: We have incorporated all known modifications and planned modifications relative to the proposed action as well as the regulatory requirements that are directly relevant to FERC's responsibility under the Federal Power Act in the final EIS. Given that FERC staff must base its decisions on publicly available information and limit communications with outside parties that could influence its decisions, it is not feasible for FERC staff to ascertain the current status of all permits or approvals required by state and local regulations.

Comment L.3.1-6: Klamath Irrigation District comments that the draft EIS attempts to tier to non-NEPA documents throughout its analysis. Table 2.1-1 shows 16 proposed management plans, each of which has sub-plans. In the EIS, staff recommends completing all of the management plans prior to breaking ground on the project but says nothing about ensuring the activities undertaken to complete those plans are subject to separate NEPA review. The plans are not NEPA documents and tiering to their subsequent preparation is improper. The plans themselves are not attached to the EIS available for public comment, and thus the public is incapable of commenting on them in connection with the analysis in the draft EIS. To the extent the plans contain data relevant to the activities comprising the project, Klamath Irrigation District states that they should at least have been attached to the draft EIS for public review.

Response: The management plans are publicly available on FERC's eLibrary system, and we provide hyperlinks to the most recent version of those plans in a footnote to table 2-2 to make them easily accessible. KRRC is required to file any plans that are further refined on eLibrary, and any comments that are filed on eLibrary relevant to the updated

plans will be publicly available for comment, and any comments filed on eLibrary will be considered and addressed as appropriate in any surrender order issued by FERC. We consider the plans to be sufficiently developed to allow for a thorough NEPA analysis.

L.3.2 Reservoir Drawdown and Diversion Plan

Comment L.3.2-1: KRRC comments that, with regard to the statement on page 3-40 of the draft EIS, drawdown of Iron Gate Reservoir is stated to occur at least two weeks before the primary drawdown of the other facilities. KRRC refers staff to the Reservoir Drawdown and Diversion Plan (December 2021), which does not include a two-week delay between Iron Gate drawdown and the drawdown of the other facilities. The Iron Gate diversion tunnel will only pass 4,000 cfs, which is below flood levels.

Response: We updated the final EIS based on the information provided.

L.3.3 Slope Stability

Comment L.3.3-1: KRRC comments that the California Slope Stability Monitoring Plan, a subplan of the Reservoir Drawdown and Diversion Plan, will be modified to realign affected road segments, engineer structural slope improvements, revegetate affected areas, and include monitoring once a month for six months following drawdown via LiDAR, photogrammetry, and/or ortho-imagery. With respect to private properties, KRRC will provide funding to move or repair damaged structures or purchase affected properties. These measures will be available to cooperating landowners who allow KRRC access to their properties for a pre-drawdown baseline assessment and for subsequent assessments during and after drawdown, as needed, to determine whether and how any reported structural damage is related to the drawdown.

KRRC also comments that, based on further analysis presented in the Oregon Slope Stability Monitoring Plan, the following actions are no longer necessary: (1) the location, schedule, and installation procedures for piezometer wells proposed for the upstream shell and core of J.C. Boyle Dam and procedures to monitor water levels and pore pressure at these locations, and (2) description of all proposed survey monuments and inclinometer installations to monitor slope stability during and following drawdown.

Response: We modified sections 2.1.2.8, 3.3.3.1, and 3.1.3.2 of the final EIS to reflect these modifications.

L.3.4 Construction Management Plan

Comment L.3.4-1: KRRC indicates that it will modify the Construction Management Plan per the staff modification to clarify and incorporate measures AQ-1 through AQ-5 and ENR-1. Regarding the Bureau of Land Management's (BLM) recommendations for restoration of the scour hole and canal (p. 3-282, draft EIS), KRRC has been consulting with BLM on revegetation of upland areas on BLM's property. Based on these consultations, KRRC will develop work plans in consultation with BLM in accordance with the Construction Management Plan to: (1) further develop plantings at the scour hole to include revegetation and contouring of the area where feasible, (2) identify

restoration approach and designs for the power canal demolition area, and (3) apply associated metrics per consultation with the BLM.

Response: We updated the final EIS based on the information provided.

Comment L.3.4-2: One individual comments that the draft EIS discusses altering the natural formations of the river that existed prior to the dams and lakes, including the plan to remove the natural lava dikes (documented in several publications including the book *50 Years on the Klamath*, by John C. Boyle) that currently exist underwater (and evidence of some of these can be seen on the shores in several locations). The commenter notes that no alterations by machine or blasting should be done to remove natural formations.

Response: Neither KRRC nor FERC staff propose to remove any fish barriers that are not human-made or caused by the proposed action (such as blockage of tributary entrances by sediment movement).

Comment L.3.4-3: Siskiyou County provides the following comments related to waste disposal:

1. Siskiyou County comments that KRRC must obtain building permits for all bridge construction and associated demolition permits for any bridges that are proposed to be replaced. Regarding section 4.0 (Copco No. 2 Construction Camp [Copco Village], section 4.5 (Temporary Housing), section 3.0 (Copco No. 1 Construction Camp), section 3.6, (Temporary Power), section 4.0 (Copco No. 2 Construction Camp [Copco Village], section 4.6 Temporary Power) and section 5.0 (Iron Gate Construction Camp, section 5.6, *Temporary Power*) Siskiyou County recommends that KRRC obtain all required permits from state/federal/local jurisdictions and provide FERC with routine inspections. Siskiyou County notes that permits and inspections should be completed for all temporary housing units and associated sanitary sewer laterals, yard hydrants, power, etc.
2. Siskiyou County is strongly opposed to the on-site disposal of any dam demolition components including concrete, embankment earth, structures etc. The County requires that all components and structures associated with the dam be completely removed and reclaimed to the conditions prior to construction of the dams. Additionally, the County requires that all dam components be recycled to the maximum extent and all materials must be sampled and analyzed for adverse contamination in order to be recycled/disposed of appropriately. The County's request regarding demolition and construction of the proposed project includes the following: (1) satisfactorily sample and test soils around all capacitors, transformers and associated equipment that potentially contained Polychlorinated biphenyl compounds (PCBs) and provide all sample data to the County for review and determination for soil removal and proper disposal; and (2) analyze concrete dams and components and provide testing results for

asbestos containing material. If concrete is free of asbestos concrete material is to be recycled and not buried and or disposed of on site. Concrete is not to be utilized as rip rap. KRRC's contractor is not to place concrete rubble along the right riverbank just upstream of the powerhouse to improve the flow conditions past the structure as proposed. Natural rock may be utilized for this purpose. If concrete is found to be non-hazardous, identify and procure contracts with permitted mine quarries that are capable of recycling concrete material or recycle near the source and utilize for road base. The practice of landfilling waste material is not consistent with Assembly Bill 939 known as the California Integrated Waste Management Act of 1989, which requires local county and city jurisdictions to maximize the use of all feasible source reduction, recycling, and composting. Siskiyou County would require that this material be recycled and if contaminated that it be landfilled at an approved site.

3. Regarding section 3.0 (Copco No. 1 Construction Camp), Siskiyou County comments that "Other related facilities" needs to be defined in order to assess the impact of Copco No. 1 construction camp.
4. Regarding section 3.0 (Copco No. 1 Construction Camp), Section 3.3 Access Roads) and section 4.0 (Copco No. 2 Construction Camp [Copco Village], Section 4.3 Access Roads), Siskiyou County comments that the performance standard for all access roads that will be met upon completion of the project needs to be described in detail. The language as it reads is too vague to allow Siskiyou County the opportunity to adequately assess if these standards meet the County's.
5. Regarding section 3.0 (Copco No. 1 Construction Camp, Section 3.4 Laydown and Staging Area), section 4.0 (Copco No. 2 Construction Camp [Copco Village], Section 4.4 Laydown and Staging Area), and section 4.0 (Copco No. 2 Construction Camp [Copco Village], Section 4.4 Laydown and Staging Area), Siskiyou County comments that prior to grading, KRRC and/or its contractors need to provide a copy of the NCRWQCB NPDES/storm water pollution prevention plan to Siskiyou County for review, to determine if the plan meets the County's standards. Consultation with Siskiyou County regarding air pollution control and development of a dust abatement plan is requested by the County prior to project implementation. In addition, the County requests that KRRC or its contractor(s) certify that project work will not be conducted within a serpentine (asbestos containing rock) zone.
6. Regarding section 3.0 (Copco No. 1 Construction Camp, section 3.4, *Laydown and Staging Area*, figure 3-1), section 4.0 (Copco No. 2 Construction Camp [Copco Village], section 4.4 Laydown and Staging Area Figure 4-1), section 5.0 (Iron Gate Construction Camp, section 5.4, *Laydown and Staging Area*, figure 5-1), and section 5.0 (Iron Gate Construction Camp, section 5.4, *Laydown and Staging Area*, figure 5-1), Siskiyou County requests that this figure includes the location of the hazardous materials storage area and designated hazardous waste

storage container location(s). As is, it is difficult for the County to ascertain the hazardous of the proposed laydown areas and the office trailer locations.

7. Regarding section 3.0 (Copco No. 1 Construction Camp, Section 3.8 Fuel Station and Hazardous Materials Storage), section 5.0 (Iron Gate Construction Camp, Section 5.8 Fuel Station and Hazardous Materials Storage), and section 4.0 (Copco No. 2 Construction Camp [Copco Village], Section 4.9 Fuel Station and Hazardous Materials Storage), Siskiyou County requests that KRRC provide a hazardous materials business plan (HMBP) to the Department of Community Development, Environmental Health Division and submit via the California Environmental Reporting System hazardous materials that exceed standard threshold quantities, which are: 55 gallon of flammable liquid, 500 lbs. of a solid, 200 cubic feet of a flammable gas (at standard temperature and pressure). The HMBP should identify hazardous material inventory and associated placarding, and required secondary containment for all fuel storage and any other liquid hazardous materials. KRRC should also provide material data sheets and identify on site location where they will be stored and secured for easy employee access.
8. Regarding section 3.0 (Copco No. 1 Construction Camp, Section 3.9 Utility Water) and section 5.0 (Iron Gate Construction Camp, Section 5.11 Sanitary Facilities), Siskiyou County comments that the County should provide signage on all utility water storage containers/tanks identified as “non-potable water.”
9. Regarding section 3.0 (Copco No. 1 Construction Camp, Section 3.11 Sanitary Facilities), section 5.0 (Iron Gate Construction Camp, Section 5.11 Sanitary Facilities), and section 4.0 (Copco No. 2 Construction Camp [Copco Village], Section 4.12 Sanitary Facilities), Siskiyou County comments that KRRC or its contractor(s) should identify (label) all waste water holding tanks/bladders as “waste water” and maintain to prevent off-site spillage protection. In addition, KRRC or its contractor(s) should specify waste water service frequency and designate licensed waste water hauler and certified disposal facility.
10. Regarding section 3.0 (Copco No. 1 Construction Camp, Section 3.12 Sensitive Areas), section 5.0 (Iron Gate Construction Camp, Section 5.11 Sanitary Facilities), and section 4.0 (Copco No. 2 Construction Camp [Copco Village], Section 4.13 Sensitive Areas), Siskiyou County comments that KRRC or its contractor(s) need to provide the Siskiyou County Community Development and Natural Resources Departments with the sensitive resources report and associated maps identifying and describing all sensitive areas prior to the initiation of project work.
11. Regarding section 4.0 (Copco No. 2 Construction Camp [Copco Village]), Siskiyou County notes that it the County’s understanding that temporary housing facilities are proposed to be located with the office primarily in the form of recreational vehicles. The County requests that KRRC and/or its contractor(s)

ensure that all recreational vehicles/trailers are self-contained and that all waste water is properly disposed of.

Response: We added a recommendation that KRRC consult with Siskiyou County to address these concerns in a revised Waste Disposal and Hazardous Materials Management Plan.

L.3.5 Erosion and Sediment Control Plan

Comment L.3.5-1: KRRC proposes alternative erosion and sediment control approaches for Oregon DEQ WQC condition 8 that are functionally equivalent to several subparts of this condition.

Response: We added this proposed modification as a footnote to section 3.1.3.2 of the final EIS.

Comment L.3.5-2: Siskiyou County comments that Exhibit C of the Erosion and Sediment Control Plan lacks substantial information regarding best management practices (BMPs) in California to mitigate the effects of erosion and sedimentation resulting from the removal of Copco No 1, Copco No 2, and Iron Gate Reservoirs. There is no information in the plan to indicate where the potential disposal sites in California will be located. As Oregon has a separate, state-specific erosion and sediment control plan (Appendix A of Exhibit C), California should have one as well, that outlines the reservoir/state-specific BMPs, stabilization criteria, adaptive management, monitoring specifics, etc. In addition, according to Appendix B of Exhibit C, there was no consultation with any California state agencies regarding the erosion and sediment control plan. Consultation should occur with the appropriate agencies in California, and a California state plan should be developed prior to the final EIS. It should be noted that Siskiyou County made similar comments on June 3, 2021, regarding the Supplemental Surrender Application dated February 26, 2021. “The Erosion and Sediment Control Plan does not contain sufficient detail regarding best management practices (BMPs) to make a determination of adequacy. The plan does not identify areas of anticipated erosion or sediment deposition or specify plans for addressing such concerns. Instead, the plan describes erosion and sediment control measures in general terms that could apply to a variety of land-disturbing activities.”

Response: We concur that the Erosion and Sediment Control Plan does not document consultation with any California state agencies during its development. In the final EIS, we recommend that KRRC develop, in consultation with appropriate agencies and Tribes in California, a California subplan to its Erosion and Sediment Control Plan.

L.3.6 Water Quality Monitoring and Management Plan

Comment L.3.6-1: Regarding Oregon WQC condition 2.e. KRRC comments that it will quantify sediment export using pre-drawdown bathymetric surveys and post-drawdown topographic surveys per the methodology provided in the Water Quality Management Plan (WQMP). The WQMP will provide for ongoing consultation with the State of Oregon to ensure that the methods employed provide a reliable estimate for calculating sediment export from the reservoir.

KRRC also notes that it will modify the WQMP to incorporate the staff modification to include submittal of all reports and correspondence to Native American Tribes that have obtained Clean Water Act treatment as a state.

Response: We updated the EIS by incorporating these KRRC updates into it and now consider them to be part of the proposed action.

L.3.7 Sediment Deposit Remediation Plan

L3.7.1 California Sediment Deposit Remediation Plan

Comment L.3.7.1-1: Siskiyou County comments that while the Sediment Deposit Remediation Plan states that annual reporting will occur pertaining to the implementation of the plan, there is no indication of how long monitoring and reporting will occur. The plan should be updated to include duration of monitoring so that a determination can be made if the length of monitoring/reporting is sufficient.

Response: For the California Sediment Deposit Remediation Plan, staff added a recommendation to the final EIS for KRRC to include the period of time (years) during which KRRC would assess sediment deposits on parcels with a current or potential residential or agricultural land use, for which the property owner has notified KRRC of a sediment deposit that may be associated with reservoir drawdown activities.

For the Del Norte Sediment Management Plan, the final design and implementation of the monitoring plan measures would be determined by KRRC in close coordination with the County; staff expects that at that stage an appropriate schedule would be developed, consistent with the monitoring design.

Comment L.3.7.1-2: Siskiyou County comments that the Sediment Deposit Remediation Plan states that “the Renewal Corporation will only assess sediment deposits on parcels with a current or potential residential or agricultural land use, for which the property owner has notified the Renewal Corporation of a potential sediment deposit that may be associated with reservoir drawdown activities.” The plan as written drastically limits the scope of the remediation plan by scope, location, and process, such that it is inadequate to properly address arsenic-contaminated sediment remediation in comparison with federal and state standards. The plan should include an establishment of baseline arsenic along the entire river reach from the Iron Gate Dam to the outfall to the Pacific Ocean prior to drawdown and then conduct a post-drawdown analysis of the entire reach to identify and remediate arsenic-contaminated sediment deposits with the pre- and post-drawdown

sampling locations developed in quantity and location to provide a scientifically defensible study of the overall reach. Remediation of specific private landowners' sites, as described in section 2.0, should then be implemented as a secondary remediation exercise for targeted deposits of arsenic-contaminated sediment deposits.

Response: Total arsenic concentrations measured in the reservoir sediments samples ranged from 4.3 milligrams per kilogram, dry weight (mg/kg) to 15 mg/kg in J.C. Boyle Reservoir, 6.3 mg/kg to 13 mg/kg in Copco No. 1 Reservoir, and 7.4 mg/kg to 10 mg/kg in Iron Gate Reservoir. While these levels exceed residential soil screening levels of 0.11 mg/kg (DTSC, 2020), the measured levels in the sediment are within the range of naturally occurring arsenic concentration in soils. For example, Hurtado (2015) measured naturally occurring background concentrations of arsenic in soils in southwestern Oregon. Maximum and mean arsenic concentrations were 45.4 and 5.4 mg/kg in the Klamath River province, and 10.9 and 2.8 mg/kg in the Cascade Range province; the Klamath River drains parts of both provinces. Similarly, in 651 soil samples analyzed from southern California, the natural arsenic concentrations ranged from 1.0 to 12 mg/kg with a mean concentration of 6.9 mg/kg (DTSC, 2009). Overall, natural arsenic concentrations in soil listed by EPA (2015) range from 0.1 to 40 mg/kg.

Also, CDM (2011) assessed the chemical composition in the accumulated reservoir sediments and compared it against potential exposure pathways of biota and human receptors to identify potential adverse effects. The results of this evaluation suggested the Klamath Reservoir “sediments can be considered relatively clean, with no chemicals present at levels that would preclude their release into downstream or marine environments.”

For the following reasons, staff considers the approach proposed by KRRC more appropriate to mitigate sediment deposits on private lands, instead of a reach-wide pre- and post-dam removal arsenic study to only then be followed by remediation measures:

- Concentrations in the reservoirs are overall in the range of natural occurring concentrations in soils in the region.
- Elevated sediment loads from dam removal are initially high and then taper off for several months, implying that a post-dam removal study would not start until perhaps six months or later after dam removal, with sample analyses and data synthesis likely requiring another three to six months.
- Large loads of sediment are contributed to the Klamath River also from its tributaries downstream of Iron Gate Dam during floods, which may lead to natural deposition on floodplains and private lands during such high flows throughout the year.
- The approach proposed by KRRC is more immediate (within 60 days of landowner notification) and directly tied to the sediment release from the dam removal. Landowners would be able to respond to any sediment deposition during dam removal on their land quickly, rather than wait for a dam removal study

before mitigation occurred. In addition, the ability of fast responses would limit the likelihood of disputes of the origin of the sediment on private land (i.e., natural loads vs dam removal sediments).

L.3.8 Del Norte Sediment Management Plan

Comment L.3.8-1: KRRC indicates that it will modify the Del Norte Sediment Management Plan per the staff modification to remove the \$14,000 cost cap for removal of sediment deposits attributable to the project from identified boat ramps. The Del Norte Sediment Management Plan will refer to the Memorandum of Understanding (MOU) with Del Norte County and the Crescent City Harbor District.

Response: We modified sections 2.1.2.8 and 3.1.3.2 of the EIS to reflect that KRRC has agreed to this staff-recommended modification.

Comment L.3.8-2: Siskiyou County comments that the Del Norte Sediment Management Plan does not address the deposition of reservoir sediments that have the potential to negatively affect the aquatic habitat of the river below the Iron Gate Dam. Section 2.3.1 of the plan states that “[t]he sediment found within the existing reservoirs at J.C. Boyle, Copco No. 1, and Iron Gate is fine-grained with a high organic material content. The sediment has little sand content and has a high water content and more than 84 percent of the total reservoir sediment volume is silt or finer.” Further, section 2.3.1 states that “[t]he total maximum volume of sediment expected to be released during the dam removal is a fraction of the total sediment load that currently discharges at the Klamath River mouth, and the Trinity River watershed is and will continue to be the largest sediment source within the Klamath River Basin.” However, the section 2.3.1.2 states that “[t]he existing sediment discharging into the Pacific Ocean has a larger grain-size distribution with limited fine-grained silts and clays compared to the expected drawdown period sediment profile to be released to the River below Iron Gate Dam.” Therefore, although the sediment loading from the drawdown period is only a fraction of the total sediment load entering the river and, ultimately, the Pacific Ocean, the sediments from the drawdown (silts and clays) will be much finer than those typically processed through the river under current conditions. As such, the sediment transport and deposition processes in the river during and following the drawdown will likely be modified in response to the dramatic change in grain-size distribution. Siskiyou County comments that the California Sediment Remediation Plan should address this issue through predictive sediment transport modeling and/or post-drawdown sediment aggradation testing to ensure that these excess fine sediments do not negatively affect the river substrate related to the necessary sediment substrates, riverine hydraulics, and associated habitat to support passage, egg laying, hatching, and rearing of native fish and other aquatic species.

Response: The total amount of sediment contributed to the Klamath River downstream of Iron Gate Dam and discharged to the Pacific Ocean annually has been estimated to be 6.1 million tons/year, of which 4.14 million tons/year consist of fine-grained sediment (i.e., silt/clay) (see table 3.1-1 in draft EIS, and references therein). The total amount of

fine-grained sediment estimated to be stored in the four project reservoirs is estimated with 3.57 million tons (table 3.1-2 in draft EIS), of which 1.26 to 1.94 million tons are estimated to be released by dam removal (table 3.1-3 in draft EIS). In other words, even though the average concentration of fine-grained sediment is higher in the reservoirs (84 percent) than in the sediment load discharged naturally to the Pacific Ocean (68 percent), the total load of fine-grained sediment discharged to the Pacific Ocean by dam removal would be less than half of the load discharged naturally by the river to the ocean every year (based on an average hydrological year). Further, the sum of natural sediment and accumulated sediment discharged during a dam removal would be well within historical high-flow events (assuming an average hydrological year). For example, during the extreme 1965 flood, approximately 20 million tons of sediment were discharged naturally to the ocean (figure 3.1-3). Assuming a similar concentration of fines in the total discharged sediment of 68 percent, this would imply that approximately 13 million tons of fine sediment were discharged naturally to the ocean in 1965. High volumes of fine sediment are likely to be discharged during most, if not all, high flow events and from soil erosion following wildfires within the watershed, such as the current 2022 McKinney Fire.

L.3.9 Hatcheries Management and Operation Plan

L3.9.1 Ownership

Comment L.3.9.1-1: KRRC states that it will modify the Hatchery Management and Operations Plan per the staff modification to clarify that PacifiCorp will continue to own the lands occupied by the Fall Creek Hatchery and will own the new facilities.

Response: We revised text in section 2.1.2.11 to incorporate this information into the final EIS.

Comment L.3.9.1-2: California DFW recommends the above-stated modification of the Hatchery Management and Operations Plan (see comment and response **L.3.9.1-1**) and will lease such lands and facilities from PacifiCorp for a period of eight years following removal of Iron Gate Dam.

Response: Comment noted. We incorporated this hatchery management and operations information into section 3.4.3.8 of the final EIS.

Comment L.3.9.1-3: EPA supports the recommendation of FERC staff to clarify future hatchery ownership and operations. EPA suggests that all Tribes concerned about protecting their Tribal resources related to the hatchery be included in any negotiations regarding the transfer of ownership or limits to the term of operations. EPA also suggests including measures for the Tribes to participate in decision-making processes or co-management of the Fall Creek Hatchery as anadromous species reintroduction or adaptive management plans are drafted and when the triggers for extending hatchery operations beyond eight years are determined.

Response: In its comments on the draft EIS, KRRC provided additional detail on the transfer of ownership of the Fall Creek Hatchery to California DFW. In its comments,

California DFW stated that it would coordinate with the Tribes regarding future management of the hatchery. We added this information to sections 2.1.2.10 and 3.4.4 of the final EIS.

L.3.10 Duration of Hatchery Production

Comment L.3.10-1: California DFW comments that it will assess the need to continue raising fish at Fall Creek Hatchery during the eight years following dam removal. Until dam removal occurs and the river returns to a more natural condition, California DFW cannot accurately assess the need for continued hatchery operations. It will coordinate with NMFS, Oregon Department of Fish and Wildlife (DFW), the Tribes, and commercial fishing interests to help inform its assessment. California DFW will consider factors such as river conditions and water quality, the natural recruitment of fish, the effects of climate change, and to what extent, if any, continued operation of the hatchery is necessary. If California DFW determines that continued hatchery operations are appropriate, it will work with PacifiCorp to develop mutually agreeable terms under which PacifiCorp will transfer ownership of the facility to California DFW or extend the lease allowing California DFW to continue operating Fall Creek Hatchery in the ninth and later years after dam removal.

Response: Comment noted. We have incorporated this hatchery management and operations information into section 3.4.3.8 of the final EIS.

Comment L.3.10-2: PCFFA comments that the full restoration of natural salmon production to restored habitat above the dams may take several salmon life-cycles, particularly if the current drought continues. Abrupt “cliff” termination of Fall Creek Hatchery fall-run Chinook production after year eight following Iron Gate Dam removal could cause a sharp “production gap” collapse of fall-Chinook fisheries for several years thereafter unless hatchery mitigation production is phased-out only as increased natural production phases-in and takes its place. This problem is also recognized in the draft EIS. PCFFA and the Institute for Fisheries Resources encourage California DFW to confer with them and with the Pacific Fishery Management Council (PFMC) and the Klamath River’s Tribal fisheries managers on the future management of Fall Creek Hatchery from year nine onward after the year of Iron Gate Dam removal. California DFW should also consider permanently using Fall Creek Hatchery as a long-term gene conservation hatchery for protection of core Southern Oregon/Northern California Coast (SONCC) coho genetic diversity, especially given that ESA-listed stock’s precarious and highly spatially fragmented condition. Carefully preserving SONCC coho genetic diversity will make their ultimate recovery far more certain than leaving things to random chance, especially because genetic drift is highly likely to occur since some SONCC coho “diversity strata” populations within the evolutionarily significant unit (ESU) are now down to only a handful of individuals.

Response: We agree with your comment and note that it is our understanding that California DFW will assess the need to continue raising fish at Fall Creek Hatchery (beyond year 8) during the eight years following dam removal. We note that any license

surrender order associated with the proposed action would only require hatchery production for an eight-year period but would not preclude continued production beyond year eight.

Comment L.3.10-3: The Hoopa Tribe comments that the proposed action must avoid reductions in harvestable fish, and that an alternative that keeps hatchery production nearer to current levels should be considered. The Hoopa Tribe notes that it has previously commented that an alternative under which the Fall Creek Hatchery would be owned and operated by FWS should be examined.

Response: Under the proposed action, California DFW would operate Fall Creek Hatchery for a period of eight years (following removal of Iron Gate Dam). During this period, it would assess the need to continue raising and releasing hatchery fish for a longer period. While it is difficult to determine the effects of the proposed action on the number of harvestable fish, according to California DFW, it would coordinate with the NMFS, Oregon DFW, the Tribes, and commercial fishing interests and evaluate river conditions, water quality, the natural recruitment of fish, the effects of climate change, and Tribal harvest impacts to determine if continued hatchery production beyond year 8 is necessary.

Furthermore, in its BiOp for the surrender and decommissioning of the Lower Klamath Project, NMFS notes that California DFW, Oregon DFW, and the Klamath Tribes are drafting anadromous species reintroduction plans that discuss the potential for modified hatchery operations in the Klamath River to continue beyond the length of time proposed (eight years). Hatchery operations beyond eight years (or potentially cessation of hatchery operations earlier than eight years if warranted) would depend on the level of natural production occurring throughout the Klamath River (including newly available upstream habitat) as indicated by monitoring efforts. Although the specific plans being prepared are not yet finalized, NMFS recognizes that it is reasonably certain that hatchery production would continue to occur at some level beyond eight years if expectations for repopulation of newly available spawning habitat and improved productivity throughout the Klamath River system are not being met.

Regarding the request to evaluate an alternative under which the Fall Creek Hatchery would be owned and operated by FWS, it is beyond FERC's authority to require FWS to assume ownership of the facility. We recommend that the Hoopa Tribe consult with KRRC, NMFS, California DFW, and FWS to assess the feasibility of this option.

Comment L.3.10-4: KRRC does not support staff's recommendation that the Hatchery Management and Operations Plan be modified to clarify the potential that production would continue beyond eight years but noted that FERC approval of removal of the Lower Klamath Project dams and surrender of license for the Lower Klamath Project would in no way prohibit continued operation of the Fall Creek Hatchery beyond the initial eight years specified in the KHSR. This decision will be made by California DFW, in consultation with PacifiCorp and other interested parties, at the appropriate time.

Response: We recognize that any decision to extend hatchery operations beyond eight years following dam removal would be addressed outside of any license surrender order and have clarified this fact in section 3.4.3.8 of the final EIS.

Comment L.3.10-5: KRRC comments that table 2.1-4 references the February 2021 version of the Hatcheries Management and Operations Plan not the December 2021 version. The goals are, however, consistent with those in the December version.

Response: We revised the final EIS to reference the updated, December, version of the plan.

Comment L.3.10-6: Several opponents to dam removal recommend increased use of hatcheries to augment salmon runs. One commenter notes that issues previously submitted multiple times with supporting documentation were ignored in previous FERC Klamath Project decommissioning proceedings, including in the current draft EIS. Specifically, the commenter notes that the Iron Gate hatchery was hailed for decades by agencies and organizations alike as the single greatest addition to Klamath and Pacific anadromous security made possible in the historically inconsistent extreme reach of salmon production as a result of the unnaturally created deep water lake colder water in an amount sufficient to consistently produce millions of salmon, many times more than ever naturally known originating above Iron Gate, even with the inadequate and less consistent prior production from Fall Creek Hatchery upstream. The commenter further states that study regarding potential project reach after destruction at best estimates inconsistent maximum anadromous production less than 25 percent of the current production from Iron Gate Hatchery. Because FERC staff acknowledge that anadromy is unlikely above the project reach, the impacts of that projected reduction in salmon returns is profound in the rationale regarding removal and apparently unconsidered in the FERC EIS decision.

Response: We agree that hatchery production was once thought to be one of the best strategies to mitigate for the loss of fish habitat due to dam construction, and that it can sometimes increase the number of adult salmon that are available for commercial and recreational harvest (at least in the short term). Conservation hatchery programs can also improve the status of natural populations and help preserve unique genetic lineages by increasing the survival of juvenile salmon life stages. However, in recent decades, fishery resource managers have found that over time, large numbers of hatchery produced salmonids can increase fishing pressure on natural populations; and can result in a variety of ecological risks including competition, predation, and disease; and genetic risks of homogenization, resulting in a loss of adaptive evolutionary potential and reduction of population fitness through domestication (Naish et al., 2008). Given this information, the proposed dam removal and decommissioning of Iron Gate Hatchery represents the best long-term and sustainable strategy to recover wild salmon populations in the Klamath River Basin.

L.3.11 Salmon Homing

Comment L.3.11-1: FWS opposes any methods to encourage straying (including imprinting fish to return to non-natal tributaries) of returning adult salmon.

Response: Straying is an important aspect of salmon life history that allows populations to colonize (or in some cases recolonize) newly available habitats. Over time, it can also increase genetic diversity and aid in the development of local adaptations that facilitate survival over a range of environmental conditions. It is unclear why FWS opposes imprinting or other methods to increase the distribution of salmon upstream of the Iron Gate Dam site. Regardless, upon FERC's issuance of any license surrender order, KRRC would assemble an Aquatic Resources Group (ARG) for the purpose of consultation on implementing the Aquatic Resources Management Plan. This work group would include members of KRRC's team, California DFW, Oregon DFW, NMFS, FWS, the California Water Board, the BLM-Klamath Falls Field Office, the Yurok Tribe, the Karuk Tribe, and the Klamath Tribes. Each member will designate a lead to represent it at ARG meetings and serve as its primary contact for all ARG-related matters. This forum would provide an opportunity for FWS to voice its concerns and make any recommendations that it may have regarding salmon recolonization and straying.

Comment L.3.11-2: NMFS states that it agrees with KRRC that the topic of imprinting or planting salmon produced at the Fall Creek Hatchery in other tributaries can be brought to an Aquatic Technical Working Group meeting to discuss further. NMFS will participate in the meeting and, in coordination with California DFW, NMFS will consider the recommendation as part of evaluating the current Hatchery and Genetics Management Plan to determine the extent of modifications necessary to update the plan and permit as a result of the planned relocation of hatchery operations to Fall Creek.

Response: Comment noted.

L.3.12 Reservoir Area Management Plan

L3.12.1 Relationship between the Reservoir Area Management Plan and Other KRRC Plans

Comment L.3.12.1-1: KRRC comments that the Reservoir Area Management Plan (RAMP) will be modified to include appropriate cross-references to the HPMP.

Response: Comment noted.

Comment L.3.12.1-2: EPA comments that it is unclear how the RAMP relates to the Water Quality Management Plan, the Erosion and Sediment Control Plan, the Storm Water Pollution Prevention Plan (to be developed as part of the application for a California NPDES General Construction Permit from the North Coast Regional Water Quality Control Board) and the two state WQCs. Furthermore, EPA recommends discussing the relationship(s) between the RAMP and the above-referenced plans, permits, and certifications (in terms of specificity or primacy) and indicating where there

are common best practices and/or conditions and if there are challenges to resolve regarding conflicting requirements.

Response: KRRC's proposed plans are described in section 2.1.2, and the RAMP is specific to activities that would occur within the existing reservoir footprints, including revegetation measures to reduce erosion and restore terrestrial and riparian habitats. Other project activities outside the reservoir footprints such as road enhancements, bridge enhancements, dam removal, and spoils deposition sites also have the potential to affect water quality. KRRC's Water Quality Monitoring and Management Plan and Erosion and Sediment Control Plan provide BMPs to prevent erosion in these areas and monitoring to ensure BMPs are effective. The Erosion and Sediment Control Plan describes the regulatory requirements in Oregon and California and KRRC's consultation record. The Oregon Erosion and Sediment Control Plan provides BMPs to prevent erosion at material disposal sites in Oregon (limited to the J.C. Boyle facility: scour hole disposal site; left bank disposal site; right bank disposal site; and the J.C. Boyle Powerhouse and tailrace disposal site). The Storm Water Pollution Prevention Plan is a component of the California NPDES permit process and would provide BMPs to prevent erosion and sedimentation associated with project activities in California, including road improvements, disposal sites, and demolition activities. The Water Quality Monitoring and Management Plan describes how KRRC proposes to assess potential water quality effects relating to implementation of the proposed action and to inform adaptive management actions for the protection of aquatic resources and the beneficial uses of the Klamath River.

L3.12.2 Vegetation Monitoring

Comment L.3.12.2-1: One individual comments that five years of vegetation restoration and monitoring is not nearly long enough and sets restoration of landscape and vegetation establishment up for failure. Furthermore, re-establishment or establishment of new invasive exotic species from sources outside the 0.25-mile buffer surveyed are highly likely to occur. The commenter cites yellow starthistle as an example.

EPA supports the reasoning and recommendations of FERC staff to monitor and collect data at least twice per year but notes that monitoring and vegetation sampling needs to occur frequently enough to determine whether plantings or priority species are successful, or whether implementation of adaptive measures is necessary (e.g., supplemental irrigation, re-seeding, changes in plant types) to ensure the rapid establishment of vegetation (California Water Board WQC condition 14(9), p. E-32 of the draft EIS). EPA recommends the final EIS correct the reference to annual monitoring and data collection on page 3-281, which contradicts the twice per year reference on page 3-292.

KRRC, in comments on the draft EIS, states that it will modify the RAMP to include two periods of vegetation sampling each year. The second sampling period will inform adaptive management measures and will be implemented in consultation with the States of Oregon and California. In addition, the Habitat Restoration Group (as established by

the RAMP) will allow for agency oversight on means and methods for successful re-establishment.

Response: We revised section 2.1.2.11 of the final EIS and included two periods of vegetation sampling each year. KRRC will modify the RAMP to include two periods of vegetation sampling each year. The second sampling period will inform adaptive management measures and will be implemented in consultation with the States of Oregon and California. In addition, the Habitat Restoration Group (as established by the RAMP) will allow for agency oversight on means and methods for successful re-establishment. KRRC's RAMP provides a reasonable framework for monitoring and treating invasive exotic vegetation. In summary, section 6.3 of the proposed RAMP states that KRRC will "quantitatively and qualitatively monitor [the spread of invasive exotic vegetation] during the first two (2) years, with implementation of adaptive management where appropriate. Invasive exotic vegetation management will be completed annually in early season and late season implementation phases, as necessary, to maximize treatment effectiveness for specific plant species. A five-year maintenance period (2025-2029) will follow this two-year vegetation establishment period. KRRC will continue quantitative monitoring for the entire five (5)-year maintenance and monitoring period." Thus, there are actually seven years of monitoring proposed rather than five. It is not clear why this monitoring would not be sufficient to ensure appropriate restoration goals are achieved. In each year, if monitoring data determined that the success criteria outlined above are not being met, KRRC will take remedial actions. Furthermore, in section 5.3.3 of the RAMP, KRRC describes that "invasive exotic vegetation management will be completed annually in early season and late season implementation phases, as necessary, to maximize treatment effectiveness for specific plant species. The post-restoration period from 2024 to 2029 will be managed under a forthcoming, invasive exotic vegetation management strategy (to be produced in 2024 and updated annually) and based on the status and abundance of invasive exotic vegetation in 2024." Based on these commitments, we find that sufficient resources will be committed to minimize the spread of invasive exotic vegetation.

We revised section 2.1.2.11 to describe KRRC's revised proposed measures.

Regarding EPA's comment that there is a discrepancy between the monitoring frequency in the draft EIS, we note that page 3-281 of the draft EIS is describing KRRC's proposed monitoring frequency, and page 3-292 is discussing the staff-recommended alternative of two monitoring periods per year. As such, we do not see a need for correction in the final EIS.

L3.12.3 Revegetation and Restoration

Comment L.3.12.3-1: One individual comments that, due to the arid upland conditions around the Copco No. 1 and Iron Gate Reservoirs, establishment of desirable and native perennial and annual plant species will be extremely difficult, also considering the longevity of non-native plant seeds and the presence of a large seedbank (i.e., some species of seeds have a long viability life in the soil of 10 to 50 plus years). Establishment of a healthy plant community that resists invasive weed species takes

many more years (20 to 30 years) of invasive weed management and re-planting of desirable vegetation. The commenter notes that it is difficult for native species to establish from seed and that the EIS does not discuss or consider desirable or naturalized species. Due to the arid and dry conditions of upland areas around the Copco No. 1 and Iron Gate Reservoirs, establishment of desirable and native perennial and annual plant species will be extremely difficult. In Siskiyou County it is an understood rule that dryland establishment may be successful one out of seven years if the one year is wet, and moisture events are staggered enough to nourish under-established roots to maturity.

Response: KRRC's RAMP explicitly acknowledges the challenging natural environment for plant establishment, including variable soil quality, low rainfall, high summer temperatures, and competition from invasive species. Therefore, KRRC identified restoration priorities and included monitoring and adaptive management of revegetated areas. KRRC has proposed success criteria for invasive exotic vegetation based on the frequency of exotic invasive plants in monitoring plots compared to their frequency in reference plant communities. If these success criteria are not being met, adaptive management may be required, and control measures would be implemented. Areas where vegetation is poorly established would be reseeded, and failed woody vegetation plantings would be replaced. Invasive exotic vegetation management would be completed annually in early season and late season implementation phases, as necessary, to maximize treatment effectiveness for specific plant species. Given the various strategies outlined in the RAMP, revegetation of herbaceous species in barren and/or sparsely vegetated areas is anticipated to be achieved in the short term (from less than one to three years). Furthermore, the monitoring and adaptive management proposed in the RAMP would ensure that desirable native plants become established and invasive exotic vegetation is controlled. We have added text to section 3.5.3.1 to address the issue of seed persistence in seedbanks following prolonged inundation.

We discuss the revegetation and seeding components of the plan in section 2.1.2.11 of the draft EIS. The challenges of sowing seeds and ensuring vegetation survival in dry conditions are addressed by KRRC's proposed RAMP. For example, because native species are most adapted to local conditions and some species are difficult to establish from seed, KRRC has contracted with nurseries to amplify native seed stock by planting locally sourced seed stock by planting collected seeds in controlled conditions and harvesting seed heads for use in restoration efforts. Also, the RAMP includes several measures to facilitate successful seeding and planting, including mulching, irrigation, and fencing. It details that "KRRC will install irrigation systems as needed in the riparian areas of Iron Gate (approximately 109 acres) and Copco No. 1 (approximately 98 acres) to increase likelihood of seeding success, facilitate establishment of native vegetation, and promote stabilization of the floodplain of the Klamath River and its tributaries within the project area post-drawdown. Additional areas will receive supplemental irrigation, with primary focus on south facing slopes with lower soil moisture, as needed to meet vegetative success criteria and achieve sediment stabilization." Also, the post-restoration period from 2024 to 2029 will be managed under a forthcoming, invasive exotic species

management strategy (to be produced in 2024 and updated annually) and based on the status and abundance of invasive exotic species in 2024.

Comment L.3.12.3-2: Oregon Wild comments that weed-free, native-only seed mixes should be used for seeding after the reservoir is drawn down and using sterile wheat may not be a good idea because it may cause a boom in the local small animal population that consumes the wheat and decimates the native seedbed. It urges the planting of native willows and other appropriate trees and shrubs in the reservoir footprint along the newly established river channels and tributaries to provide several benefits: (i) provide shade to mitigate temperature problems, (ii) suppress weeds, and (iii) stabilize the loose sediments along the riverbanks and tributary streambanks.

Response: Sterile wheat is a hybrid between common wheat and rye or tall wheatgrass (depending on the type of sterile wheat) that is frequently used as a temporary soil stabilizer due to its rapid germination and root growth. Because the plant is a sterile hybrid, it does not produce seed and will not remain in the vegetation community past the initial growing season. Similarly, because the plant does not produce seed, it provides minimal resources for small animals, and we are not aware of instances where its use has led to increased populations of small mammals. As described in section 2.1.2.11, KRRC proposes to use native cottonwood and willow species, along with other native trees and shrubs to revegetate the reservoir footprints.

Comment L.3.12.3-3: FWS notes that the draft EIS reports that water used for irrigation would be pumped directly out of the river or tributaries and recommends that pumps be screened.

Response: A staff recommendation is included in the final EIS to screen irrigation pumps.

Comment L.3.12.3-4: Siskiyou County notes that KRRC proposes large wood placement to promote habitat complexity in either the tributary channels or the tributary floodplains (draft EIS, p. 2-22). The County comments that there are no plans to anchor these wood structures, which would most likely result in short-term measures that could end up creating log jams that are dangerous for water recreation and will likely end up in the estuary where they provide no benefit to the upriver fish populations.

Response: KRRC's consultant team (River Design Group) has extensive experience designing and implementing large wood placement projects in both large rivers and small streams in California, Oregon, Washington, and Idaho, including one of the largest river restoration projects in the western United States (Kootenai River, Idaho). We are confident their design team will develop projects that will both maximize habitat benefits and minimize risks to humans and their property along the Klamath River.

Comment L.3.12.3-5: KRRC comments that the RAMP will be modified per the staff modification to include such detailed maps for upland areas. For the reservoir areas (e.g., those areas where actual mapping cannot be done before drawdown), KRRC will finalize the detailed maps after drawdown, through adaptive management.

Response: We revised section 2.1.2.11 of the EIS to describe KRRC's revised proposed measures, including detailed maps for upland areas.

L3.12.4 Wetlands

Comment L.3.12.4-1: EPA comments that the Corps' Public Notice for the Clean Water Act Section 404 permit for the project (#2003-279850, dated June 7, 2021) refers to approximately 82 acres of potential jurisdictional waters, including 63.6 acres of wetlands and 18.13 acres of other waters of perennial stream and reservoir areas within the project area. EPA notes that the draft EIS contains other estimates of potentially affected wetland and riparian acreage that do not correspond with the Corps' preliminary determination. The draft EIS estimates that about 57.1 acres of wetlands and 15.5 acres of reservoir-dependent riparian vegetation would be disconnected from their water sources following dam removal and reservoir drawdown (p. 3-285). Previous delineations by KRRC and PacifiCorp in table 3.5-2 show the presence of 71.4 acres of reservoir-dependent and non-reservoir-dependent wetlands and 73 acres of total riparian acreage at the Klamath hydroelectric reservoirs, although riparian areas were not mapped in Oregon (p. 3-300).

EPA recommends that FERC, in consultation with the Corps, resolve any wetland and riparian acreage disparities to present one set of estimates that include previously undelineated wetlands to more accurately quantify and map reservoir-dependent and non-reservoir dependent jurisdictional waters in the project area.

Response: As described in section 3.5.2.2 and table 3.5-2 in the draft EIS, KRRC conducted wetland delineations in 2019 and identified a total of 74.1 acres (not 71.4 as EPA states) of wetlands; 57.1 acres of reservoir-dependent wetlands and 17.1 acres of non-reservoir-dependent wetlands. Because the non-reservoir-dependent wetlands are isolated from reservoir hydrology, reservoir drawdown would not affect them. These values are based on KRRC's 2019 Annual Terrestrial Resources Survey Report, dated March 2020 and filed as an appendix to exhibit E of the amended license surrender application.

Comment L.3.12.4-2: EPA recommends that any adaptive management plan identify desired or priority plant species that are conducive to the creation of additional wetland or riparian habitat and identify success criteria. Additionally, EPA recommends that adaptive management measures be tailored to meet these criteria and promote the establishment of those identified species that would restore or replace wetland or riparian functions and values.

Response: As described in section 2.1.2.11 of the EIS, KRRC's RAMP includes lists of species proposed for use during revegetation activities and provides success criteria that it would use during adaptive management of revegetation efforts. We modified section 2.2.2.11 in the final EIS to provide a reference to the species lists provided in the RAMP. However, rather than recommend priority species for use in adaptive management, we find that KRRC's proposed success criteria, which rely on comparison of revegetated

areas with reference sites and evaluate species richness, tree and shrub density, vegetation cover, and relative frequency of invasive species would provide a more robust assessment of the restored vegetation community and result in restoration of wetland function and values better than focusing on select priority species.

Comment L.3.12.4-3: Wild Orca requests adopting the concept of net ecological gain, which can be defined as: “A goal for a development project, policy, plan, or activity in which the impacts on biodiversity it causes are outweighed by measures taken to avoid and minimize the impacts, to restore affected areas and finally to offset the residual impacts, to the extent that the gain exceeds the loss.”

Response: Comment noted, but we use the term “no net loss” following the Corps’ comments. Furthermore, the terminology aligns with national policy and regulatory programs.

L.3.13 Noxious and Invasive Species

Comment L.3.13.5-1: One individual comments extensively on noxious and invasive species management. The commenter notes that the RAMP management of noxious and invasive species is restricted to a 0.25-mile upland area from the existing shoreline. The presence of such species in tributaries and adjacent uplands would remain an issue in the revegetation areas for many years. Consultation with the Siskiyou County Department of Agriculture could have generated a list of current/known weed species that infest the main stem of the Klamath throughout the river’s whole channel through Siskiyou County. The commenter states that vegetation establishment using native plant seed species is difficult and may be successful one out of seven years. The RAMP does not discuss nor consider non-native desirable or naturalized species and states that only herbicides will be used that have been approved for use by BLM, California DFW, Oregon DFW, California Water Board, Oregon Water Resources Department (Oregon WRD), FWS, NMFS, and Native American Tribes. However, herbicides (all pesticides) intended for use in the State of California must be registered “approved” by the California Department of Pesticide Regulation, a branch of California Environmental Protection Agency. Only CDPR-registered products are allowed to be used in California. Applications also must comply with state laws/regulations and county ordinances. Furthermore, all pesticide laws and regulations (federal, state, and county ordinances) enforcement is implemented by the Siskiyou County Department of Agriculture within the borders of Siskiyou County.

Response: A 0.25-mile buffer around the FERC project boundary is often used in FERC environmental documents for delimiting the geographic scope of analysis for terrestrial resources, and we see no need to modify that area. We find such a buffer is sufficient to identify areas where project effects are likely to occur. Beyond this area, there is increasing potential for non-project effects to influence site conditions, and it is challenging to reliably conclude there is project nexus associated with changes potentially attributable to the project. We understand the concern about the potential spread of noxious weeds into the project area but find that KRRC’s RAMP includes

adequate measures to reduce potential sources of invasive species propagules in areas surrounding the project, which would minimize potential for project activities to transport propagules into the project area. The RAMP also provides for surveys for and treatment of priority invasive exotic species identified within the project area following the completion of deconstruction and reservoir drawdown. Additional surveys for and treatment of invasive species would occur during the restoration monitoring period. Our analysis of this issue is provided in section 3.5.3.3 of the EIS.

The RAMP provides sufficient detail to ensure the speedy revegetation of native plants. It acknowledges that invasive exotic vegetation will invade some communities but proposed monitoring and control measures to reduce these effects. In section 5.3.3 of the RAMP, KRRC describes that “invasive exotic vegetation management will be completed annually in early season and late season implementation phases, as necessary, to maximize treatment effectiveness for specific plant species. The post-restoration period from 2024 to 2029 will be managed under a forthcoming, invasive exotic vegetation management strategy (to be produced in 2024 and updated annually) and based on the status and abundance of invasive exotic vegetation in 2024.” Based on these commitments, we find that sufficient resources will be committed to minimize the spread of invasive exotic vegetation.

We discussed the revegetation and seeding components of the plan in section 2.1.2.11 of the EIS. The challenges of sowing seeds and ensuring vegetation survival in dry conditions are addressed by KRRC’s proposed RAMP.

KRRC is required by law to follow all federal, state, and local regulations. This includes any additional county-specific pesticide regulations set by the County Agricultural Commissioner, which in California, supplement the regulations in Title 3, California Code of Regulations, to locally implement additional requirements on individuals and businesses involved in the sale, possession, and use of pesticides.

L.3.14 Terrestrial and Wildlife Management Plan

L3.14.1 Bats

Comment L.3.14.1-1: KRRC states that it will modify the Terrestrial and Wildlife Management Plan per the staff modification to incorporate the National White-Nose Syndrome Decontamination Protocol.

Response: We have revised section 2.1.2.12, *Terrestrial and Wildlife Management Plans*, to describe KRRC's revised proposed measures.

Comment L.3.14.1-2: California DFW, the California Division of Safety of Dams, EPA, Interior (BLM and FWS), and KRRC comment on FERC staff-recommended measures to install bat gates at conveyances and by-pass tunnels to provide safe sites for maternity colonies, roosting-, and hibernating bats. California DFW, the California Division of Safety of Dams, EPA and Interior (BLM) express concerns that bat gates on some project facilities could create safety concerns, promote vandalism, and become a liability for the (future) Parcel B landowner. KRRC modified its proposal to include use of bat gates on

Copco No. 2 overflow spillway outlet portal and the surge vent opening. California DFW supports use of bat gates in these locations. FWS recommends KRRC install a variety of bat roost structures (rocket boxes and modular bat condo/colony lodge) near the maternity roost at Copco No. 1 and the J.C. Boyle Powerhouse to be used as interim or permanent roosting habitat. Additionally, California DFW requests the TWMP include: (1) additional criteria for the potential removal of structures containing bats between April 16 and August 31; (2) use of bat gates to close portal outlets, tunnels, and other water conveyance structures; and (3) require staff entering areas with potential bat activity to follow the National White-Nose Syndrome Decontamination Protocol (WNS Response Team, 2020).

Response: We revised the staff alternative to only recommend bat gates at the Copco No. 2 overflow spillway outlet portal and the surge vent opening due to safety concerns raised by the agencies. We modified text in section 2.1.2.12 of the final EIS to describe KRRC's revised proposed use of bat gates at these structures; we also modified section 3.5.3.9 to address agency concerns related to safety and vandalism and removed our recommendation for additional bat gates. KRRC is consulting with California DFW, Oregon DFW, and FWS on bat habitat mitigation and to establish appropriate requirements for monitoring and reporting. KRRC will not remove structures containing bats during the April 16 to August 31 period. In section 2.1.2.12 of the final EIS, we recommend that KRRC include revised proposed measures to protect bats in the TWMP and all of FWS's recommended measures.

Comment L.3.14.1-3: Interior recommends changing the dates on pp. 2-37 and 2-57 of the draft EIS to reflect the dates in its comments on section 3.6.3, pp. 3-370 to 3-371, which provide its conservation measures for bats.

Response: We revised the sentence referring to the dates for roost structure removal to clarify that: "KRRC states that the preferred dates for structure removal are March 1 to April 15, and September 1 to October 15." In section 2.3, we recommend a staff modification to "Modify the California and Oregon TWMPs to specify that the preferred time for structure roost removal is September 1 to March 31, as recommended by FWS, rather than the proposed dates of September 31 to April 15, and comply with FWS's recommendations for roost structure removal, if necessary, between April 1 and August 31."

L3.14.2 Reptiles and Amphibians

Comment L.3.14.2-1: KRRC states that it will identify suitable habitats for relocation of non-listed reptiles and amphibians in consultation with resources agencies.

Resource agencies suggest that KRRC consult with the resources agencies to identify suitable habitats for the relocation of non-listed reptiles and amphibians.

Response: Staff revised section 2.1.2.12 in the final EIS to outline KRRC's revised proposed measures, which include identifying suitable habitats for relocation prior to the start of ground disturbing activities and reptile and amphibian relocation activities.

L3.14.3 Nesting Birds

Comment L.3.14.3-1: FWS expresses concern that visual estimation surveys (VES) and avoidance measures for native nesting bird may result in removal of active nests or clearing vegetation near nests. FWS recommends extending VES surveys to surrounding areas so that disturbance to active nests can be avoided if possible and using March 15 as the start of the breeding season. Buffer zones for raptor nests (non-eagle) should be 250 feet and 50 feet for other birds, depending on local habitat conditions and proposed construction activities, behavior of nesting birds, and reproductive stage as determined by an avian biologist.

Response: We revised text in section 3.5.4 of the final EIS to address this recommendation and recommend KRRC revise the TWMPs to incorporate FWS's recommended survey buffers. However, we conclude KRRC's proposed definition of the nesting season is appropriate for the project area.

L3.14.4 Eagles

Comment L.3.14.4-1: EPA, Interior (FWS), and KRRC provided comments on the Eagle Conservation Plan. KRRC notes that it developed its Eagle Conservation Plan in consultation with FWS. Once finalized, KRRC will confirm with the California Water Board that the Eagle Conservation Plan meets the requirements of California Water Board WQC condition 17. KRRC requests that FERC adopt its Eagle Conservation Plan as approved by FWS. EPA comments that KRRC should continue to consult with FWS and other resource agencies to prepare the Bald and Golden Eagle Management Plan and the incidental take permit and append these documents to the final EIS. California Water Board condition 17 anticipates nest removal, which is not currently in the Bald and Golden Eagle Protection Act (BGEPA) permit application. In addition, FWS requests that staff clarify plan requirements regarding focused surveys, limits of work, disturbance buffers around eagle nests, and eagle nests removal without a Service's permit. FWS states that it plans to release a draft environmental assessment, anticipated for the end of May 2022, to further inform a final Eagle Take Permit. FWS suggests the staff modification only reference the implementation of the take permit. Furthermore, FWS requests several editorial changes in the Eagle Conservation Plan regarding buffer zones for golden- and bald eagles.

Response: We added text to section 2.1.2.12 to provide the current status of KRRC's consultation with FWS regarding the proposed Eagle Conservation Plan and Incidental Take Permit. We also modified text in section 3.5.3.9 to provide our analysis of the proposed plan.

Comment L.3.14.4-2: Interior comments that California Water Board condition 17 describes activities that are not part of the permit application submitted to FWS for a BGEPA permit. The plan called for by the California Water Board condition anticipates nest removal, which is not currently in the BGEPA permit application. In addition, Interior comments that staff should add the following clarifications to plan requirements:

- (1) Focused surveys should occur within 2 miles of planned work using helicopters and blasting, per regional golden eagle buffer recommendations.
- (2) ‘Limits of work’ should include power line removal activities and, if necessary, tree removal in Ward’s Canyon, for the purposes of surveys that are required within 1 to 2 miles of limits of work.
- (3) Disturbance buffers: use FWS national recommendations for bald eagle; FWS regional guidelines for golden eagle. Exclude automatic buffer reduction to 0.25 miles if out of line of sight for golden eagle. Note: with BGEPA permit for disturbance, buffers would not be applied at all eagle nests.
- (4) Eagle nests, even if inactive, are protected under BGEPA. No eagle nests should be removed without a permit from FWS. The requested eagle permit does not include a request to remove nest, nor to render eagle nests temporarily unavailable.

Response: We added text to section 2.1.2.12 to provide the current status of KRRC’s consultation with FWS regarding the proposed Eagle Conservation Plan and Incidental Take Permit. We also modified text in section 3.5.3.9 to provide our analysis of the proposed plan. Once finalized, KRRC will confirm with the California Water Board that the Eagle Conservation Plan meets the requirements of California Water Board WQC condition 17.

Comment L.3.14.4-3: Interior comments that the table on page C-3 reports zero cost for developing/implementing the Eagle Conservation Plan. There will be costs for monitoring eagles.

Response: We revised the cost table to provide costs for eagle surveys.

Comment L.3.14.4-4: Interior comments that places in the document relating to eagles that refer to “construction noise” should be replaced with “disturbance.”

Interior also comments that, for both bald and golden eagle (pp. 3-333 to 3-334), the available habitat/occurrence section simply lists some (but likely not all) known nests. It states that it would be better to just acknowledge that there is nesting, foraging, and roosting habitat throughout the project area, and it is known to be occupied by both species.

Response: We have revised text in the document to clarify potential effects on the proposed project on eagles include all potential disturbance, not just construction noise. We also revised table 3.5-6 to address Interior’s comment related to locations of suitable habitat.

Comment L.3.14.4-5: California DFW requests development of an eagle conservation plan that includes occupancy and nest productivity surveys; timing restrictions on vegetation clearing and construction noise; monitoring of active eagle nests; and coordination with FWS, California DFW, and Oregon DFW. KRRC submitted an Eagle Conservation Plan and Incidental Take Permit application to FWS on January 10, 2022. California DFW understands that KRRC developed this Eagle Conservation Plan in

consultation with FWS. California DFW coordinated its review of the Eagle Conservation Plan with KRRC and does not have any comments on the plan.

Response: We added text to section 2.1.2.12 to provide the current status of KRRC's consultation with FWS regarding the proposed Eagle Conservation Plan and Incidental Take Permit. We also modified text in section 3.5.3.9 to provide our analysis of the proposed plan.

L.3.15 Recreation Facilities Plan

Comment L.3.15-1: KRRC comments with regard to the Sidecast Slide that it will modify the Recreation Facilities Plan to fragment certain boulders in the active channel. These boulders, identified in consultation with interested whitewater organizations, are shown in a technical memo that is attached to KRRC's comments. KRRC will use appropriate means and methods to break apart these boulders in the pre-drawdown year. KRRC will not disturb or move any boulders outside the active channel, or that might result in slope instability.

Response: We modified the EIS to reflect KRRC's proposal to break apart certain boulders at Sidecast Slide, and that this measure will be incorporated in a revised Recreation Facilities Plan.

Comment L.3.15-2: KRRC comments that it will remove selected trees in the active channel of the Copco No. 2 bypassed reach to restore the river to a more natural condition.

Since the release of the draft EIS, KRRC consulted with the commercial outfitters and whitewater groups (regarding navigability issues), NMFS, FWS, and California DFW (regarding impacts on fish habitat), and Shasta Indian Nation, and Yurok, Karuk, and Klamath Tribes (regarding TCRs), to select such trees and develop the means and methods of removal. KRRC will use appropriate means and methods to avoid disturbing the banks (including TCRs) or cause any material sediment discharge in the water column.

In consultation with the State of California, KRRC will post signs and conduct public outreach to discourage boating by non-expert boaters in Ward's Canyon, which will involve difficult and hazardous conditions due to high gradient and boulders, regardless of which trees remain.

Thus, KRRC proposes modifying the Recreation Facilities Plan to specify that it will: remove the selected trees identified in a tree removal plan to be provided to FERC; use such means and methods so as to avoid disturbing the banks (including TCRs) or cause any material sediment discharge in the water column; and post signs and conduct public outreach, in consultation with the State of California, to inform the public of hazardous conditions for boaters in Ward's Canyon.

Response: We have modified the EIS to reflect KRRC's proposal to remove selected trees in the active channel of the Copco No. 2 bypassed reach, and that this measure will be incorporated in a revised Recreation Facilities Plan.

Comment L.3.15-3: KRRC states that it will modify the Recreation Facilities Plan to construct river access within the existing reservoir footprints of J.C. Boyle and Copco Reservoirs. KRRC will also modify the plan, in cooperation with the States of Oregon and California, to specify an approach to secure funding for the construction of additional access sites.

Response: We have modified the EIS to reflect that these measures are now part of the proposed action.

Comment L.3.15-4: KRRC states that it will modify the Recreation Facilities Plan to include protocols for consultation with Upper Klamath Outfitters Association regarding schedule for construction activities and will include additional signage in Spanish and Hmong.

KRRC notes that tables 2.1-9 and 2.1-10 reference the February 2021 version of management plans. These references should be updated to the December 2021 versions of the plans. The tables contain inaccuracies in terms of the timing of when facilities would be removed and new facility information. This updated information will not alter the effects analysis.

Response: We have updated references to KRRC's management plans and any information contained therein in the final EIS.

L.3.16 Historic Properties Management Plan

Comment L.3.16-1: KRRC states that it will modify the HPMP, appendix C, section 7.1 to refine and clarify the procedures and buffer area for addressing inadvertent discoveries. KRRC is consulting with Tribes and the Oregon State Historic Preservation Officer (SHPO) regarding this refinement, is seeking input from the California SHPO, and will submit the updated HPMP to FERC.

Response: We modified the EIS to reflect that the revised HPMP was filed on May 2, 2022.

L.3.17 Water Supply Management Plan

L3.17.1 Fire Management Plan

Comment L.3.17.1-1: KRRC states that it will modify (or augment) the Fire Management Plan (FMP), a subplan of the Water Supply Management Plan, to confirm:

1. Addition of dry hydrants that meet National Fire Protection Association standards at Fall Creek confluence and Iron Gate Dam/Hatchery boat launches;
2. Removal of Deer Creek and Beaver Creek dry hydrants;

3. Installation of a boat ramp at Copco Valley site within the Copco No. 1 Reservoir area;
4. CAL FIRE or a local firefighting agency would be responsible for storage, deployment, and fill of portable water tanks (per memorandum of understanding under development with CAL FIRE); and
5. Addition of five dip tanks to be reflected in revised FMP (per a memorandum of understanding under development with CAL FIRE).

Response: We have modified the EIS through incorporation and evaluation of this update to KRRC's proposal.

Comment L.3.17.1-2: Siskiyou County comments that the current Fire Management Plan (FMP) states that the long-term fire management measures will be completed through cooperative agreements with fire agency successors. We assume that these successors are the current fire and wildfire response crews that operate in the area, but this should be clarified. The cooperative agreements have yet to be established at the publishing of the draft EIS, and there is no mention to what will be included in the cooperative agreement. Prior to finalization of the final EIS, clarification on these agreements should be included in either an updated FMP, or in the final EIS.

Response: KRRC finalized MOUs with the Oregon Department of Forestry Southwest Oregon District and Klamath Lakes District on May 17, 2021, and June 1, 2021, respectively. On April 20, 2022, KRRC finalized an MOU with CAL FIRE.

In additions, KRRC filed information with its comments on the draft EIS, updating its progress in addressing stakeholder concerns regarding its Fire Management Plan, including a technical memorandum addressing the placement and control of monitored detection system cameras, changes to the location of dry hydrant sites, the development of new river access points for fire trucks, and an increased number of dip tanks provided to CAL FIRE for local use.

Comment L.3.17.1-3: Siskiyou County asks who will be responsible for long-term maintenance of the fire management measures? As of now, the FMP states that these costs will be addressed in the cooperative agreements. If the costs are put onto the already limited resources of the Siskiyou County Fire Protection Districts, compensation from KRRC will be required.

Response: Funding wildfire monitoring and detection system equipment and fees associated with ALERT wildfire monitoring system are covered for 20 years as stated in the April 20, 2022, MOU with CAL FIRE. Funding beyond that timeframe could be addressed via further consultation among the County, KRRC, and fire-fighting agencies.

Comment L.3.17.1-4: Siskiyou County comments that outreach to landowners and approvals are necessary prior to the implementation of a camera monitoring system.

Response: The MOU identifies the existing Paradise Craggy fire lookout site as the preferred location for the establishment of a camera monitoring system. Any site selected

for the camera system would be outside of the project boundary and thus outside FERC's jurisdiction. The licensee is expected to acquire the necessary rights or approvals by the existing landowner to implement any actions required by FERC. KRRC is working with the existing landowner to obtain the approvals necessary for implementation of the proposed camera site.

Comment L.3.17.1-5: Siskiyou County comments that as mentioned in the FMP, the current reservoirs have been providing a large fuel break in an area that is prone to wildfires. This large fuel break also protects homes/properties on either side of the reservoirs. With the removal of the dams, there will be a very narrow fuel break of just the river, especially after revegetation efforts are implemented. The County recommends that a mitigation measure of implementing fire breaks within the ASE be part of the final EIS.

Response: The reports filed by REAX Engineering and Spatial Informatics Group indicate that the capacity to fight wildfires will not be diminished by removal of the reservoirs. As described in the MOU, the Fire Safe Council of Siskiyou County will be provided with drum chipper equipment to create defensible spaces around structures. Creating defensible spaces should reduce the need for the former fuel break created by the reservoirs. Private landowners are typically responsible for establishing fuel breaks as they deem necessary to protect their own interests. BLM and the U.S. Department of Agriculture, Forest Service (Forest Service) are responsible for determining the need for fire breaks on the land they manage. The states will take on this responsibility for any land that is acquired post surrender. We consider the FMP to be adequate.

Comment L.3.17.1-6: Siskiyou County comments that changes in the hydrograph and increased drought conditions due to climate change may result in sedimentation of existing deep pools, which therefore may not serve as a long-term solution for fire management and access to water. An adaptive management plan is requested to address the potential impacts of climate change, potential lack of water in the Klamath River, and sedimentation of pools.

Response: An analysis of water availability following removal of the project reservoirs conducted by Reax Engineering for KRRC's Fire Management Plan identifies a potential 137 helicopter bucket sites available, based on an estimated minimum 900 cfs river flow. Sedimentation of existing pools is expected to occur throughout the river system and the location of sites suitable for helicopter bucket use may change annually during the few years following dam removal, however potential bucket sites are expected to be available at minimum river flows. Additionally, four helicopter dip tanks and eight collapsible dip tanks will be supplied to the Siskiyou Fire Chiefs Association for deployment within the project footprint for fire suppression actions. We consider these measures to be adequate.

L.4 WATER QUANTITY

L.4.1 Flood Control

Comment L.4.1-1: Several opponents of dam removal comment that dam removal would eliminate the ability to control flooding, and water control would be inconsistent or eliminated.

SCWUA notes, that although the reservoirs were not designed for flood protection, they do provide a potential lifesaving delay in a flood surge, allowing notification of those in its path and an opportunity to escape.

The Klamath Drainage District comments that, although most recently the Klamath Basin has faced a lack of water supply, forecasts predict more extreme weather events in the future, including the probability of flooding. Removing the dams removes operational tools for managing and mitigating flood events. The Klamath Drainage District sits just above the subject dams. In the past, the district has been called upon to take water during high storm events, and, if the dams are removed, flooding will be more frequent. The Klamath Drainage District cannot bear the burden of preventing downstream flooding without adequate resources or compensation. The draft EIS fails to address unmitigated flood control risks.

Response: Our analysis in section 3.2.3.2 indicates that removal of the Lower Klamath Project dams would have no effect on the magnitude of major flood events because the reservoirs provide a limited amount of active storage and fill to capacity very quickly during major flood events. After the reservoirs are filled to capacity, they pass all inflow and provide no buffering of peak flows in the Lower Klamath River.

Analysis presented by Interior and California DFG (2012) indicates that the Lower Klamath Project reservoirs provide less than 7 percent attenuation of any 100-year flood event, and that the existing 100-year peak discharge would increase from 31,460 cfs to 33,800 cfs following the proposed action. In addition, in its 2020 EIR, the California Water Board indicates that 98 percent of the active surface water storage along the Klamath River is provided by Upper Klamath Lake behind Link River Dam, and the Lower Klamath Project provides the remaining 2 percent of the active storage on the river. As such, while we recognize the Lower Klamath Project does provide some flood protection, flood peaks would occur about 10 hours earlier under the proposed action, and flows under the proposed action would not be much higher than existing conditions. As noted in the final EIS, under the proposed action the applicant would work with both the National Weather Service River Forecast Center and the Federal Emergency Management Agency (FEMA) to identify any expected changes to the existing Klamath River floodplain so that the agencies can issue flood warnings as appropriate.

We acknowledge the valuable service that the Klamath Drainage District provides in managing water levels around Upper Klamath Lake during wet to extremely wet water years. Because effects of the proposed action on flooding would be minor, we do not expect the district would be required to take significantly higher amounts of water during high storm events or bear the burden of preventing downstream flooding.

Comment L.4.1-2: Siskiyou County comments that as stated in section 3.2.3.2 (pp. 3-39 through 3-42 of the draft EIS, KRRC proposes to work with willing landowners to implement a plan to address the significant flood risk following dam removal for the 36 habitable structures (including permanent and temporary residences) located in the altered 100-year floodplain between Iron Gate Dam and Humbug Creek. However, the potential impacts on environmental resources or identification of potentially hazardous materials from relocating, elevating, or other methods to relocate or remove these structures is not identified. The EIS should be revised to identify these impacts.

Response: In its June 2018 Definite Plan, KRRC identifies 34 habitable structures within the existing 100-year floodplain between Iron Gate Dam and Humbug Creek and two additional habitable structures within the altered (i.e., no dams) 100-year floodplain. Under the proposed action, where feasible, KRRC would work with the owners of these 36 structures to move or elevate them above the altered 100-year floodplain. Staff expects that the approach/plan for each structure would be highly structure-specific and would include issues such as mitigation approach; effects on environmental resources, hazardous waste, and other issues, as applicable; and compliance with all applicable laws and regulations.

Comment L.4.1-3: Siskiyou County comments that it is unclear whether changes in the FEMA 100-year floodplain boundary would affect potentially developable lands (section 3.2.3.2, figures 3.3-39, 3.3-40, 3.3-41 in the draft EIS). These figures show post-dam increases in flood depths that may be within areas with planned developments and could affect private property potential. The analysis should include effects on habitable structures, along with any planned development, private property, or land uses that would allow for future development (or use).

Response: Potential effects of the proposed project on the elevation of the 100-year floodplain are discussed in section 3.2.3.2, *Effects of Changes in Water Quantity on Downstream Flooding*. Here we note that removal of the dams would result in an increase of the 100-year flood elevation by 1.65 feet from Iron Gate Dam (RM 193) to Bogus Creek (RM 192.6) and 1.51 feet on average from Bogus Creek to Willow Creek (RM 188). Two habitable structures would be in the new floodplain that are not currently in the existing floodplain. KRRC proposes to work with landowners to move or elevate structures that may be affected by increased flood elevations. We are unaware of any planned developments in this area.

L.4.2 Klamath River Basin Compact

Comment L.4.2-1: Opponents of the proposed action state that that it would violate the Klamath River Basin Compact that includes the orderly, integrated, and comprehensive development, use, and conservation of water resources in the Klamath Upper Basin (the use of water for domestic purposes; the development of lands by irrigation and other means; the protection and enhancement of fish, wildlife and recreational resources; the use of water for industrial purposes and hydroelectric power production; and the use and control of water for navigation and flood prevention). Opponents, especially those who own

property in the vicinity of the projects, comment that dam removal would affect domestic water supplies, water for agricultural needs and wildlife refuges, and would increase droughts in the region by flushing stored water in reservoirs down the river.

Jackson County Board of Commissioners requests that FERC take no action that would allow the removal of the four dams listed in the Lower Klamath Project. The preservation of these dams is vitally important to neighboring counties and their citizens, including Jackson County, Klamath County, and Siskiyou County. These counties were participants and negotiators to the Klamath River Basin Compact. The Board notes that FERC's EIS letter for comment, dated February 25, 2022, refers to this relationship. The Jackson County Board of Commissioners considers the scope and nature of the proposed project a matter of County concern because the water behind the dams is, and continues to be, a public trust resource.

Response: Water supply in the Klamath River Basin is controlled by existing water rights, irrigation demands, and environmental flow requirements. The four Lower Klamath dams were built for power generation, and none of the water rights for the Lower Klamath Project facilities are for seasonal water storage or irrigation purposes.

The Klamath River Compact, which became effective with the consent of Congress in 1957,² created the Compact Commission, with one representative from Oregon, one from California, and one federal representative (Reclamation has been designated to hold that position), to administer the Compact. The purposes of the Compact are to promote the orderly, integrated, and comprehensive development of the water resources of the Klamath River Basin for domestic and industrial use, irrigation, fish and wildlife, recreation, hydropower, navigation, and flood protection; and to further intergovernmental cooperation and comity regarding these resources.

Any effects of the proposed action on downstream facilities used to divert water for consumptive use would be mitigated by measures included in KRRC's California Water Supply Management Plan. We acknowledge that there is some potential that measures associated with the proposed action could affect the storage and release of water from Upper Klamath Lake, but based on our analysis, the overall effect of the proposed action is likely to increase the amount of water that is available for consumptive uses compared to the no-action alternative (please see our response to comment **L.4.3-1**, below).

Comment L.4.2-2: EPA notes that comments filed with FERC to date indicate that the public often fails to distinguish between the Upper Klamath Irrigation Project in Oregon, operated by Reclamation, and the Lower Klamath Hydroelectric Project, regulated by FERC, both located within the Upper Klamath River Basin. To avoid further public confusion and improve public understanding, EPA recommends that the final EIS clearly distinguish Reclamation's Upper Klamath Irrigation Project from the Lower Klamath

² Pub. L. No. 85-222, 71 Stat. 497 (1957).

Hydroelectric Project area at the beginning of the document and in the Introduction and Project Description sections.

Response: We updated the final EIS to clearly distinguish between Reclamation's Klamath Irrigation Project and the Lower Klamath Project.

L.4.3 Effects on Agriculture

Comment L.4.3-1: EPA comments that while the draft EIS discusses potential effects on surface water supplies and the water rights of downstream users, it does not analyze potential effects on upstream water rights with the same level of detail. Section 3.2.2.2 describes how water stored in Lower Klamath Project reservoirs has been released to help Reclamation meet minimum instream flow requirements below the Iron Gate Dam, charge irrigation canals, and support the Tule Lake National Wildlife Refuge; thereby allowing Reclamation to extend water supplies seasonally to irrigators and wildlife refuges.

Because of intense interest by upper basin users in any potential loss or changes to water delivery, EPA suggests that the final EIS include details in section 3.2.3.3 of the potential effects of dam removal on upstream users given that Reclamation would no longer have access to Lower Klamath Project stored water to meet other obligations. EPA also suggests that the final EIS summarize or provide citations to the analysis found in the California Water Board EIR (2020) to support the conclusion that potential reductions in supplemental deliveries to irrigation project users may be offset by potential net gains of up to 6,200 acre-feet of water per year (p. 3-44).

Response: We updated the final EIS with citations to the analysis conducted by the California Water Board in its 2020 EIR to estimate the net gain in water saved by reduced evaporation. We also expanded our analysis to include consideration of the likely effects of the proposed action on water releases made from Upper Klamath Lake to reduce disease incidence in the Lower Klamath River. Reclamation currently allocates 50,000 acre-feet of water for this purpose in years meeting specific operating criteria and, given the ongoing trend of increasing temperatures and associated increases in the severity of fish kills from disease outbreaks, we believe that the need for flow releases to control fish disease would increase over time under the no-action alternative. However, the need for such releases would be reduced or eliminated under the proposed action as a result of several effects that would reduce the incidence on fish disease. These effects include: (1) reduced densities of spawned-out fish carcasses, the source of myxospores that infect annelids, below Iron Gate Dam due to the restoration of access for salmon to upstream habitat and discontinuing the release of salmon smolts from Iron Gate Hatchery; (2) reduced temperature stress due to increased access to cool-water refugia; and (3) reduced density of annelid hosts for *C. shasta* due to the restoration of sediment transport processes and the elimination of annelid food sources provided from the reservoirs. As a result, the overall effects of the proposed action are likely to increase the amount of water available to upstream users compared to the no-action alternative.

Comments L.4.3-2: Klamath Water User’s Association comments that the draft EIS discusses an issue it raised in its scoping comments that relates to potential consequences of eliminating the practice of “borrowing” from PacifiCorp’s reservoirs. The borrowing arrangement has been used to reduce releases from Upper Klamath Lake at specific times, to maintain water in Upper Klamath Lake, or to allow for diversion of water that otherwise would not occur. This operation can be especially important early in the irrigation season when crops need water. The rate of borrow is much greater than the season-long rate of evaporation that occurs from PacifiCorp’s reservoirs.

Klamath Drainage District notes that drought and ESA regulations have resulted in significantly diminished water deliveries to Reclamation’s Klamath Irrigation Project irrigators in recent years. Although not traditionally operated for this purpose, the hydropower dams have provided a water supply benefit to irrigators that receive water from the Klamath Project. This benefit is shared by Tribal and environmental interests, as more water has been made available to various species. Harnessing the limited operational storage in the dam facilities has enabled operational flexibility to reduce releases from Upper Klamath Lake at times identified as beneficial for suckers. If the dams are removed, so goes the flexibility afforded by the related facilities.

Response: Water stored in Copco No. 1 and Iron Gate Reservoirs has been loaned from PacifiCorp in some years to help Reclamation meet NMFS’s 2019 BiOp requirements for flows below Iron Gate Dam, allowing Reclamation to extend water supply to Klamath Irrigation Project water users above Keno Dam (e.g., provide water to irrigators and the wildlife refuges), and meet BiOp requirements in Upper Klamath Lake. This arrangement was used to provide 15,400 acre-feet of water in 2014, 20,000 acre-feet of water in 2018, and 10,000 acre-feet in 2021. Borrowed water then had to be repaid by a date specified by PacifiCorp.

Any effects on the amount of water available for consumptive use from the loss of this borrowing arrangement would likely be compensated for by a reduction in the amount of water that would be released under the terms of the current and future BiOps to control fish disease. Given the ongoing trend of increasing temperatures and associated increases in the severity of fish kills due to disease outbreaks, the need for flow releases to control fish disease would only increase under the no-action alternative. However, under the proposed action, the need for such releases would be reduced or eliminated as a result of the expected beneficial effects of the proposed action on the incidence on fish disease described in our response to comment **L.4.3-1**.

Comment L.4.3-3: Klamath Irrigation District comments that although the draft EIS recognizes the potential for impacts on water right holders, there is no mention of actual potential impacts on the lands irrigated by those waters, whether to the property values of those lands or to the businesses of the hundreds of irrigators who depend on reliable irrigation supplies from stored water in Upper Klamath Lake. This is even though the draft EIS (p. 3-43) explicitly recognizes that commenters have already noted that “the proposed action would eliminate the ability of the Lower Klamath Project reservoirs to

provide supplemental water during extreme dry periods.” The draft EIS (p. 3-44) recognizes that “the proposed action would potentially result in reduced supplemental deliveries of 10,000 to 20,000 acre-feet.”

Response: As explained in our response to the preceding comment (L.4.3-2), we have revised our analysis to account for flow releases to control disease incidence, and do not expect the proposed action to result in any reduction in water supply to upstream irrigators compared to the no-action alternative.

Comment L.4.3-4: Klamath Drainage District notes that upon execution of the amended KHSA and ensuing Klamath Power and Facilities Agreement, the District and other water users were told that the removal of the four dams would improve the water quality in the river, resulting in less water needed in the river for the fishery. In other words, water quality would be more important than water quantity. Klamath Drainage District agrees with this concept. However, there has been no real assurance that this concept will be carried through or that less water will be demanded in the river post-dam removal. KRRC has not provided compelling evidence that less water will be required in the river, nor has it provided data to suggest water quality improvements. The draft EIS also lacks the evidence that dam removal will require less water in the river due to water quality improvements.

Response: See our response to comment L.4.3-1.

Comment L.4.3-5: Klamath Water User’s Association comments that section 2.5 (p. 2-60) and section 2.5.3 (p. 2-66) refer to Klamath River flows required by a 2017 court order. That order has been ineffective since April 2019. These pages also refer to flows required by an FWS BiOp and that is not correct. Recent BiOps by NMFS have not necessarily “required” specific flows but have assumed specific flows. Finally, the extent of the application of section 7(a)(2) to the operation of the Klamath Irrigation Project is in dispute.

Response: We reviewed the recent history of NMFS and FWS’s consultation and Reclamation’s annual operation plans for the Klamath River Project. We then revised text to describe that, in October 2019, when new information came to light showing that there would be effects on SONCC coho, Reclamation reinitiated consultation with NMFS and FWS and developed an Interim Operations Plan; it has since been operating the Klamath Project with annual operation plans. We updated the EIS text to account for the ongoing extreme drought conditions for the third consecutive year afflicting the Klamath Basin. Specifically, the hydrologic conditions are currently preventing and will continue to prevent Reclamation from operating the project consistent with the conditions anticipated to occur for species listed as threatened or endangered under the ESA in Upper Klamath Lake, Gerber and Clear Lake Reservoirs, and the Klamath River, as specified in the NMFS’s and FWS’s BiOps issued on March 29, 2019. Although the interim plan and decisions being made by Reclamation may result in the incidental taking of an endangered species, Reclamation has taken steps under the ESA to address the difficult drought situation in the Klamath Basin.

Comment L.4.3-6: SCWUA comments that inadequate attention has been given to acknowledging the positive aspects of the hydropower facilities beyond their value in providing clean carbon-free energy on a 24/7 basis. One of these is the necessity of flushing the Klamath during low water periods, a court ordered flushing routine will no longer be able to be followed.

Phil John Brown comments that each “flushing flow” on the Klamath River sends enough water to fill the Lower Klamath National Wildlife Refuge straight to the ocean, which could save the Pacific Flyway. In addition, there is the possibility that the flushing flow does not help with *C. Shasta* at all.

One individual comments on the flow and flushing requirements highlighted in *Klamath River Flow Requirements* on p. 2-66, but this section does not address where those additional non-natural flows will be taken from.

Response: As explained in our response to comment L.4.3-1, the need for flushing releases to control salmon disease incidence should be reduced or eliminated under the proposed action.

Comment L.4.3-7: Siskiyou County notes that on page 2-66 (Klamath River Flow Requirements), the text indicates that Reclamations’ Klamath Irrigation Project would continue to affect water quality and aquatic habitat in the Klamath River. Siskiyou County asks how removing the dams can be a reasonable action when long-term water quality and compliance with total maximum daily loads (TMDLs) are uncertain. The County asks what the purpose of dam removal is if substantial improvements in water quality and aquatic habitat are unknown.

Response: While water quality and aquatic habitat in the Klamath River would continue to be affected by the quality of inflowing water from the upper basin and operation of Reclamation’s Klamath Irrigation Project, our analysis of the benefits of the proposed action does not assume that upstream TMDLs would be fully implemented. Most importantly, the proposed action is expected to substantially reduce the incidence of disease-related fish kills and allow salmon and steelhead to access cool-water refugia that will be increasingly important if the current trend of increasing water temperatures continues, as predicted by the climate change models discussed in the EIS.

Comment L.4.3-8: One individual comments that the photo shown in figure 5-3 of the RAMP shows green pastures from flood irrigating an active ranch managed for livestock grazing and supported a wide variety of wildlife. This expanse of green (pasturelands) will not exist without irrigation and will not be able to support the wildlife or livestock currently using the area. Furthermore, the commentor notes that the EIS does not address the working cattle ranch and pastures upriver (northeast) from Copco Lake to the northern border of Siskiyou County. The irrigated lands (pasturelands) in this expanse of the river channel support wildlife, plant life, wetland areas and livestock. Under the proposed action, this important micro-ecosystem will be lost along with all the life it supports.

Response: The EIS acknowledges that there may be some short-term, less than significant, adverse effects on water rights. However, implementation of KRRC's Water Supply Management Plan would mitigate effects on water rights holders. Its subplan, the California Water Supply Management Plan (appendix A) describes the measures KRRC proposes to implement to protect water supplies and beneficial uses of waters in California that would be affected by the proposed action. During the pre-drawdown period, KRRC would contact each water right holder and determine if the diverter is interested in having their system evaluated for potential effects. During drawdown and for up to two years following drawdown, if an adverse effect is reported, KRRC would investigate and implement measures (e.g., repairs to pumps and sediment clearing) to allow the water right holder to divert water in the same manner and quantity as before drawdown. Therefore, we find that that irrigation would continue on the land referenced in the photo.

In section 3.5.5 of the draft EIS, table 3.5-1, the "Developed and Disturbed Habitats" in the Lower Klamath Project area includes pastures and irrigated hayfields that are distributed over 544 acres. It notes that the area along the Klamath River from the Iron Gate Development to Shasta River has a substantial number of pasture/irrigated hayfields.

Comment L.4.3-9: Siskiyou County Farm Bureau comments that much of the regulation Siskiyou County agriculture faces relates to the health of local salmon populations in Klamath River tributaries. Accordingly, the Farm Bureau is in favor of any projects that will increase the numbers of salmon spawners in its watercourses (which have increased steadily over the past decade). The Farm Bureau reports grave concerns over the removal of the Klamath Hydroelectric Facilities and this project's potential negative impact on salmon populations. Although the Farm Bureau understands that this project purports to be beneficial to salmon populations on the Klamath River, some risk exists that the release of tons of sediment down the mainstem of the river and the loss of augmenting flows from the reservoirs during critical migration periods could negatively affect the Klamath salmon populations for some period of time. In this possible scenario, the regulatory impact on Siskiyou County agriculture would be devastating. The draft EIS makes no accommodation for this possibility and does not consider the regulatory burden on agriculture should the salmon populations decrease as a result of this unprecedented on-stream deconstruction project. The final EIS should make provisions for the fact that any negative impacts of project failure will fall primarily on the agricultural community.

Response: The effects of the proposed action on salmon populations in the Klamath River and its tributaries have been studied in detail for over a decade, including several peer-reviewed reports summarized in Interior and NMFS's 2013 Overview report. Our analysis incorporates these prior analyses as well as a considerable volume of newer information. The extensive analyses summarized in previous EISs and EIRs, and the additional analyses provided in this EIS, all indicate that the proposed action would be beneficial to the salmon runs in the Klamath River and its tributaries. Given the trends of increasing water temperatures and disease incidence, the analysis in this EIS

demonstrates that the risks of the no-action alternative to the populations of salmon in the Klamath River Basin greatly outweigh the risks of the proposed action. Regarding salmon populations in tributaries to the Klamath River, any negative effects of the proposed action on those populations would only occur during the drawdown year when high suspended sediment concentration (SSC) levels would adversely affect salmon migrating to and from the tributaries. Under the no-action alternative, the adverse effects of poor water quality and conditions that are conducive to fish disease would continue to worsen over time and would affect all salmon populations that use the Lower Klamath River as a migratory corridor.

Comment L.4.3-10: One individual comments that “KRRC would investigate and implement measures (e.g., repairs to pumps and sediment clearing) to allow the water right holder to divert water in the same manner and quantity as before drawdown” (draft EIS, p. 2-45). Water right holders/diverters on the Scott River, Shasta River, and all tributaries that flow into the Klamath River need to be guaranteed that water rights and diversions are kept as they were prior to the KRRC plan and implementation.

Response: Under the proposed action, KRRC would remove the dams associated with the Lower Klamath Project, and PacifiCorp would release its current hydropower rights back to instream water uses. The proposed action would not affect water rights on tributaries to the Klamath River. If any diversions are disrupted as a result of the proposed action, KRRC would implement measures to restore the affected diversion to a condition prior to commencement of the proposed action.

Comment L.4.3-11: Klamath Drainage District comments that the amended KHSA promises to memorialize certain agreements to ensure adequate and reliable water supply to irrigated agriculture in exchange for support and speedy execution of the agreement. The EIS ignores the relationship between the subject dam facilities’ impact of changed hydrology downstream and the operations of the Klamath Project upstream. Meeting the terms of the KHSA to formalize agreements to protect irrigated agriculture must be a condition discussed and detailed in the EIS.

Response: Please see our response to comment **L.4.3-1** regarding the effects of the proposed action on water available to irrigated agriculture.

Comment L.4.3-12: Klamath Drainage District comments that the draft EIS is overly narrow in its scope, ignoring the historical agreements that led to this moment and the related components of those agreements. The amended KHSA contemplates transfer of title to Keno Dam to Reclamation as a natural sequence following the subject dams’ removal. The Klamath Power and Facilities Agreement addresses certain actions to prevent the costs of Keno operation and maintenance, rehabilitation, improvement, and other costs from being reimbursable by Klamath Project irrigators. However, these protections have not been realized. Accordingly, the EIS must address the socioeconomic impacts of potential increased costs to agricultural water users.

Response: Transfer of the Keno Dam to Reclamation is not part of the proposed action and is beyond the scope of our analysis here. Keno Dam is part of the Klamath Project No. 2082, and its disposition will be considered when abeyance of the relicensing proceeding for the Klamath Project No. 2082 is lifted.

Comment L.4.3-13: The Klamath Irrigation District comments that the impacts on irrigators due to water supply reduction is almost entirely ignored in the draft EIS. To the extent mitigation of those impacts are addressed in one of the cadre of management plans referenced, the public is largely kept in the dark, and the acts comprising those plans are conducted without NEPA review. Finally, FERC bases its decision on factually inaccurate and/or disingenuous data regarding the natural conditions of the Klamath River and Upper Klamath Lake, as well as on faulty and hidden assumptions regarding rights to the water in Upper Klamath Lake. Klamath Irrigation District requests FERC decline to approve a final EIS until the document reflects the “hard look” required by the law, based on accurate and complete historical data. Klamath Irrigation District also requests that FERC consult with the District to ensure that impacts on the irrigators are adequately treated in the document so the public will know the full potential aftermath of dam removal.

Response: We expanded our analysis of potential effects on agriculture and find that the proposed action is likely to have a beneficial effect on water supplies compared to the no-action alternative (see responses to comments L.4.3-1, L.4.3-2, and L.4.3-3). The management plans represent the proposed action, and links to the current management plans are provided in the EIS. The final EIS reflects the volume of information gathered through years of studies, additional information requests, and public outreach to provide a full analysis of the proposed action, as required by NEPA. We have no evidence or reason to believe that the data provided on the record is inaccurate, disingenuous, or faulty.

L.4.4 Coordination of Klamath Irrigation Project Operations with the Proposed Action

Comment L.4.4-1: Reclamation reiterates the need for ongoing, frequent, and detailed coordination between Reclamation and KRRC relative to finalizing and adaptively managing all temporary flow control measures that are anticipated during the reservoir drawdown and post facilities decommissioning phases of the project. It recommends that coordination efforts between Reclamation and KRRC should also include NMFS and FWS to ensure a full understanding of what is needed to implement the proposed action with staff modifications such that Reclamation can ensure it meets the temporary flow control measures to the fullest extent possible given its ESA requirements, Tribal trust responsibilities, contractual obligations, and existing operational constraints.

Response: We updated the final EIS to include NMFS and FWS in any consultation between KRRC and Reclamation regarding any temporary flow control measures that may be implemented during the drawdown phase of the proposed action. If drawdown is scheduled to occur in a year with above average flows, there could be some benefit in releasing some water from Upper Klamath Lake to create storage to control flows during

drawdown, which would help avoid flows exceeding the discharge capacity of the reservoir outlets and subsequent refill events that would increase the duration of high SSCs. However, we do not believe that the consequences of such refill events would warrant any changes in Reclamation's operations if those changes would be likely to adversely affect upstream water users.

Comment L.4.4-2: Klamath Water User's Association notes that the first full paragraph on page 2-22 of the draft EIS states that "[a]dequate flows in the tributaries and the main river channel within reservoir areas are critical for active sediment evacuation activities." The text goes on to read that "[a]ctive measures to increase discharge in the river are infeasible." Klamath Water User's Association comments that it does not know how to interpret that statement. Similarly, text on page 3-39 discusses operations of Upper Klamath Lake ("temporary flow control measures") to facilitate dam removal, but the Association finds this text ambiguous and indicates that it is not appropriate to omit the evaluation of these issues; nor is proper to piecemeal the evaluation of impacts by deferring any consideration of direct and indirect impacts of changes in water availability for any use.

Klamath Water User's Association also notes that its scoping comments included the statement that "the EIS must consider whether and how dam removal could create a demand for Klamath River flows to flush sediment or otherwise facilitate the proposed action or its overall objectives. The Association finds no explicit recognition of this question or concrete information that answers the question, and requests that this information be disclosed. Like regulatory constraints that limit the ability to divert and use water, a demand for Klamath River flow makes less water available for irrigation and wildlife uses (or, for that matter, for retention in Upper Klamath Lake). Although Klamath Water User's Association does not believe that Upper Klamath Lake can (legally) or should be operated to provide flows related any dam removal activities, it notes that there is inadequate disclosure of whether and how the planning may contemplate that kind of operation

Klamath Drainage District comments that the draft EIS fails to adequately address scenarios for flushing sediment during the deconstruction phase. Section 3.2.3.1 of the draft EIS assumes there will be high flow seasonal opportunities to flush sediment without the need for supplemental flows. However, the draft EIS also must consider how to facilitate the proposed action without an aspired high flow and without affecting Klamath Project operations. Section 2.5.3, page 2-66, notes Reclamation will coordinate with KRRC; however, this statement fails to provide adequate options or assurances for project water. Because the Klamath Drainage District has both a right to stored water in Upper Klamath Lake and a live flow water right, it faces a unique impact that must be addressed in the EIS.

Response: Regarding the overall effect of the proposed action on water availability, please see our response to comment **L.4.3-1**. Also, we modified sections 3.2.3.3 and 3.4.3.3 of the EIS to include discussion of the potential use of water stored in Upper

Klamath Lake to flush sediment accumulations. As we discuss in section 3.4.3.3., sediment deposited in gravel during reservoir drawdown is likely to adversely affect the incubation and emergence of salmonids (primarily fall Chinook salmon) that spawn in the mainstem of the Klamath River downstream of Iron Gate Dam during the drawdown year. We modified the text to note that these adverse effects could extend for one or more additional years. However, we also conclude that the release of additional water from Upper Klamath Lake to assist with sediment flushing would not be justified due to adverse effects on agriculture and because: (1) very few steelhead, spring Chinook, or coho salmon spawn in the mainstem Klamath River; (2) only a small proportion (estimated at 8 percent) of the Klamath River fall Chinook salmon population spawns in the mainstem Klamath River (most fall Chinook spawn in tributaries); (3) most of the fish that spawn in the mainstem are likely to be progeny of hatchery fish; and (4) many salmon will likely continue to move upstream until they find suitable spawning habitat.

Comment L.4.4-3: Klamath Irrigation District comments that in several places, the draft EIS appears to assume that Reclamation has authority to release flows from Upper Klamath Lake (draft EIS at, inter alia, sections 2.1.2.1, 2.5.3, 3.1.3.1, and 3.1.3.2). However, in 2014, Oregon WRD issued a determination regarding water rights in Upper Klamath Lake, titled the Amended and Corrected Findings of Fact and Order of Determination. Among other things, the document determined that Reclamation possesses rights to store water in Upper Klamath Lake but not to use that stored water; Klamath Irrigation District and other irrigators were found to possess rights to use the stored water. The draft EIS makes numerous claims about using flow volume to control the total concentration of sediment in the Klamath River and to effect reservoir drawdown, but it offers no analysis of how it proposes to accomplish those objectives in the manner stated without invading Klamath Irrigation District's water rights. FERC has not entered into any agreement to use stored water in Upper Klamath Lake to which the irrigators hold rights. Thus, the draft EIS fails to disclose to the public a significant—and erroneous—underlying assumption about the water at issue. As such, the draft EIS fails as an informational document, and FERC must revise the document to fully inform the public of the true availability of water for the project.

Response: Please see our response to comment L.4.4-2.

Comment L.4.4-4: Klamath Drainage District notes that KRRC proposes to use “sediment jetting” as was used in the Mill Pond Dam Removal Project located on Sullivan Creek near Seattle City Light's Boundary Hydroelectric Project (section 3.3.3.1, p. 3-80). The draft EIS fails to acknowledge, however, that the Mill Pond Dam Removal Project also required additional releases from Sullivan Lake Reservoir to move sediment downstream.

Response: The sole purpose for this reference to the Mill Pond Dam Removal Project is to provide the basis for our assumptions on the range of SSCs that would result from KRRC's proposed sediment jetting flows. We note that removal of the Mill Pond Dam, which impounded 63 acres, differs in many ways from KRRC's proposed removal of the

Lower Klamath Project's four dams that impound about 2,260 acres. Therefore, we did not revise the EIS as suggested.

L.4.5 Water Rights

Comment L.4.5-1: SCWUA comments that Siskiyou County has two reserve water rights totaling 120,000 acre-feet from the Klamath River granted to it in 1956. These rights are being held by the California Finance Department pursuant to request of the Siskiyou Board of Supervisors. These rights were referenced in the 2012 EIR and were given to the County as a County of Origin and are still valid. SCWUA comments that these rights have not been considered in the EIS.

Siskiyou County Farm Bureau, also commenting on the 120,000 acre-feet of reserved water rights granted in 1956. Development of these water rights may prove to be important in improving Shasta River spawning habitat by removing or reducing late summer diversions from that valuable spawning stream and replacing the reduced Shasta diversions with less environmentally valuable water from the mainstem of the Klamath River. Past engineering and plan development related to these water rights were made in consideration of the current Klamath dam structure. Dam removal may hurt Siskiyou County's ability to develop these rights and will certainly reduce the value of past engineering related to these rights.

Response: As noted in section 3.2.2.2 of the EIS, none of the water rights held by PacifiCorp for the Lower Klamath Project facilities are for seasonal water storage or irrigation purposes. We acknowledge Siskiyou County's 1956 "State filing" water rights totaling 120,000 acre-feet from a point of diversion at the current location of Iron Gate Dam. We recognize that State filing water rights are to preserve water for future use and development consistent with a coordinated plan such as California's state water plan or a county general plan. Ultimately, under the proposed action, PacifiCorp's existing water rights would transfer to instream rights and would not affect water supply availability for downstream users.

Comment L.4.5-2: Klamath Water User's Association comments that, in the last sentence of the ending paragraph at the top of page 3-475 of the draft EIS, there is no citation. The Treaty expressly reserves rights to hunt and fish on the reservation. In the Klamath Basin Adjudication, both the Oregon WRD and the Klamath County Circuit Court ruled that the Tribes have no water rights in waters that are not on or bordering the former reservation. The cases cited on page K-5 of the draft EIS in support of the same assertion do not hold that there are hunting, fishing, and gathering rights along the Klamath River under the 1864 Treaty.

Response: We updated the final EIS based on this information.

Comment L.4.5-3: One commenter notes that issues previously submitted multiple times with supporting documentation were ignored in FERC Klamath Project decommissioning proceedings, including in the draft EIS. The commenter notes that the 'return the Klamath to a natural regime' to 'justify' unilaterally imposing both permanent and long-

term damages to the region and community contradicts FERC own earlier ‘assurances’ and ignores project realities submitted to FERC in detail multiple times. Actual photographs, as well as documented area experience, show the Klamath River as occasionally completely subsurface late summer in various years as far downstream as the Shasta River and as high upstream as Link River, which is not very good for the fisheries and salmon runs. A repetitive ‘crisis’ has been artificially created over the past 20 years by requiring totally unnatural successively higher historically non-existent Upper Klamath Lake levels, along with previously unknown downstream Klamath late summer flows and concurrent blatantly unnatural springtime artificial ‘flushes,’ all of which continue to occur to zero statistically identifiable ‘benefit’ for coho and negative impacts to suckers as the only species upon which those failed allocations are theoretically based. Regional studies have seen the study administrators state that it is clear that increased documented natural disease conditions expected upon project destruction and evidenced by already failed experiments will ‘likely require increased pulses.’ Those historically unnatural flows and Upper Klamath Lake levels, already supplemented from artificially stored ‘environmental’ waters, can only come from the complete confiscation of the remainder of the stored water owned by area irrigators, to the massive detriment of regional groundwater recharge and wildlife refuges. Those circumstances will create an unnatural regime unsustainable and evidenced to fail. However, FERC appears to be unconcerned that the non-energy related agenda they are endorsing is destined to fail.

Response: The commenter appears to be conflating changes in hydrology associated with the use of storage in Upper Klamath Lake by the Klamath Irrigation Project with the effects of the Lower Klamath Project dams, which have minimal effects on seasonal flows in the Lower Klamath River because of their limited storage capacity. Regarding the overall effects of the proposed action on salmon disease incidence and the health of salmon populations, please see our responses to **L.4.3-9** and **L.4.3-6**.

L.4.6 Groundwater and Domestic Wells

Comment L.4.6-1: KRRC is seeking modification of California Water Board WQC condition 15 that KRRC would monitor groundwater levels at a minimum of 10 locations within 2.5 miles of the California reservoirs to conform with available information regarding the location of groundwater wells that could be affected by the proposed action.

Response: We updated the final EIS accordingly.

Comment L.4.6-2: Siskiyou County notes that the EIS should explain with more specificity the conclusion that the project would mitigate all potential groundwater supply impairments post-drawdown.

Response: As noted in the final EIS, removal of the Lower Klamath Project reservoirs could result in a decrease of groundwater levels and a corresponding decrease in production rates in existing wells to a degree that interferes with existing or planned uses. However, KRRC is committed to providing temporary water supplies to each affected

well user until long-term measures such as motor replacement, well deepening, or full well replacement have been implemented.

L.4.7 City of Yreka Water Supply

Comment L.4.7-1: KRRC notes that the description of the City of Yreka's water line in section 2.1.2.15 must be updated to reflect the current 100 percent design. The new, permanent water line will be attached to the new Daggett Road Bridge. KRRC will provide a revised description, including 100 percent design specifications, by June 2022. The revised design reduces both in-water and upland ground disturbance.

Response: We updated section 2.1.2.15 to reflect the current 100 percent design.

L.4.8 Miscellaneous Clarifications

Comment L.4.8-1: Klamath Irrigation District notes that the available recorded hydrologic time period includes natural hydrology in the Klamath River prior to the development of Reclamation's Klamath Irrigation Project (also known as the Klamath Project) and private hydroelectric facilities (water years 1905 to 1912), the period which major irrigation and power peaking facilities were developed. Figure 3.2-1 presents the average daily flow in the Klamath River at Keno, Oregon, prior to the development of dams and includes three different water years, representing conditions that range from wet to dry. These statements, and figure 3.2-1, are misleading given the following facts:

- The period between 1904 and 1912 was extremely wet, in the W-4 category for many years and in the W-1–W-3 categories for most of these years. Using these years to calculate average precipitation and flows in the Klamath River significantly skews the analysis.
- Before 1890, the Lost River Slough naturally evacuated water away from the Klamath River below the Link River, sometimes flowing at 1,200 cfs (538,597 gallons per minute away from the Klamath River) for significant periods. This slough was diked in 1890, preventing losses from the Klamath River to the Tule Lake sump.
- In 1912, 47,000 acre-feet of water was added to the Klamath River from the Lost River Diversion Channel.
- Prior to 1919, the Link River would routinely quit flowing in late July. Historical records indicate the native Klamath name for the river was "Yulalona," meaning receding and returning water, which matches with photographic and written evidence demonstrating little to no flow of water from Upper Klamath Lake occurred in low-precipitation years. Since 1919, water has continuously flowed through the Link River, augmenting the Klamath River below Keno when no water would be naturally available.
- In 1906, the Keno Cut on the McCormick tract created a channel for the Klamath River at Keno to allow water to pass at 4,078 feet above sea level (6 feet lower than the natural reef), allowing the natural sludge of Lower Klamath

Lake to pass through at a much higher than natural rate. Further, as early as 1909, centrifugal pumps were installed near various dikes to pump water from the Lower Klamath Lake marshlands, thus unnaturally increasing the flow over the Keno reef during the wet period between 1904 and 1912.

- Both Reclamation's 2005 "Natural Flow of the Upper Klamath River" and Hardy et al (2006) ignore the impacts of modifications to the Keno reef, redirection of the Lost River, pumping efforts to export water from Lower Klamath marshlands, and the installation of dikes across Lower Klamath Lake in 1907 and 1908, which directly resulted in increased flows, above natural conditions, since 1890.
- Finally, the draft EIS fails to analyze precipitation data, published by F.P. Keen, highlighting known extended dry periods in the Upper Klamath Basin. "In 1923 F.P. Keen began a study of tree rings in the Klamath Lakes Basin which was published in 1937...[Keen showed that,] from 1800 to 1838 precipitation was above average...the years 1823, 1829, 1830, 1831, and 1833 had below average precipitation. From 1839 to 1854 the climate was dry and there were few really wet years." Other historical data also reflects prolonged dry period in the Klamath basin, such as statements from immigrants passing through the area from 1846 through the 1850s.

Klamath Irrigation District also states that FERC should revise the analysis in the draft EIS to include a more representative range of water years, prior to the various augmentation projects beginning in 1890, to establish an accurate baseline to support its analysis.

Response: We acknowledge Klamath Irrigation District's assertion that the period between 1904 and 1912 was an extremely active hydrologic period and appreciate the provided resources. When developing background text for inclusion in final NEPA documents, we typically rely on existing and scientifically peer reviewed hydrological datasets (e.g., existing USGS data). We acknowledge that existing data may not capture all historical water development activities for a given watershed, but given the extensive hydrological record used for our analysis (1905 to 2020), we believe the existing data capture the overall trend of the Klamath River system. Our intention in figure 3.2-1 was to present the hydrograph of the Klamath River prior to development of the dams included in the Lower Klamath Project, not necessarily using the flows presented in figure 3.2-1 as a baseline for additional analysis about the amount of instream flows available in the Klamath River prior to development. Overall, the majority of analysis presented in the final EIS focus on the effects of the proposed action on each individual resource and if a return to natural conditions would more positively support those resources. Ultimately, the flow in the Klamath River following the proposed action would be based on current climatic trends, and we do not expect a certain level of flow to necessarily return.

However, based on review of Klamath Irrigation District's additional resources, we agree that the period from 1904 to 1912 includes more wet water years than other comparable periods in the USGS hydrological record. Although we carried the existing figure 3.2-1 into the final EIS because it still presents the hydrological period of the Klamath River prior to development of the Lower Klamath Project, we updated the final EIS to note that, hydrologically, the period from 1904 to 1912 included more above average water years compared to other similar length periods in the USGS hydrological record.

Comment L.4.8-2: Reclamation comments that relative to the statement in section 3.2.3.1, *Project Deconstruction Effects on Water Quantity* that, "Reclamation could use additional water stored in the Clear Lake and Gerber Reservoirs to help meet contractual water supply deliveries, but these reservoirs have limited storage capacity," additional clarity should be included to recognize that although Clear Lake Reservoir has never spilled, its storage capacity is essentially unlimited. It is the discharge capacity that is limited: Clear Lake Reservoir and Gerber Reservoir have limited discharge capacity due to potential impact of high Lost River flows on water quality of the potable aquifer at Bonanza. Additionally, the subject statement seems to imply that operation of Reclamation-managed facilities in the Lost River Basin may contribute in some way to meet Reclamation's Klamath River Basin operational requirements and/or be in consideration for assisting in the facility decommissioning efforts. Reclamation recommends revision of this statement or inclusion of additional language to clarify that operation of Clear Lake and Gerber Reservoirs are outside the scope of the proposed action occurring within the Klamath River Basin.

Response: We revised the statement in section 3.2.3.1 of the final EIS in accordance with Reclamation's recommendation.

L.5 SEDIMENT MOVEMENT, SUSPENDED SEDIMENT AND CONTAMINANTS

L.5.1 Bank Stability

Comment L.5.1-1: Siskiyou County comments that the EIS should include an evaluation of the potential negative impacts related to suspended sediments and a professional engineering analysis of rim stability.

Response: Staff considers analyses to investigate the stability of the banks and rim of the reservoir appropriate to identify potential areas of unstable slopes following drawdown of the reservoirs. The RAMP includes multiple years of monitoring.

L.5.2 Reservoir Sediment Storage and Transport Estimation

Comment L.5.2-1: SCWUA comments that in other recent dam removal projects the amount of sediment has been seriously underestimated and believes that this project is no exception.

Response: Several surveys have been performed to assess the quantity of sediment in the project's reservoirs, as specified for example in Reclamation (2011). Surveys included bathymetric surveys of the three large reservoirs with subsequent comparisons to pre-dam surveys, and field investigations through borings. Inaccuracies in volume estimates could be introduced by a number of factors, such as (1) from different methods used for the survey prior to dam construction ("pre-dam") versus the more recent survey (including different resolution of collected data), and (2) the selected locations and number of borings would require assumptions regarding their representativeness to verify accumulated sediment thicknesses. However, this survey and analysis approach is considered suitable for a reasonable estimate of sediment volumes. A larger factor of uncertainty is the volume of sediment that would ultimately be mobilized. As table 3.1-3 of the draft EIS indicates, estimates of this volume range between 1.5 and 2.4 million tons (dry weight), which is 36 to 57 percent of the accumulated sediment in the reservoirs (depending on hydrological conditions (i.e., flow magnitude and duration) during drawdown and dam removal). This range, however, is considered in the EIS' impact analyses. Information on sediment chemistry is provided in final EIS sections 3.3.3.1 (*Suspended Sediment and Contaminants*) and 3.4.3.6 (*Effects of Contaminants on Aquatic Resources*).

Comment L.5.2-2: Siskiyou County comments that the impounded sediment analysis is based on old data collected in 2004–2005 and 2009–2010 (section 2.4, appendix B, California Water Quality Monitoring Plan). These timeframes do not account for sediment transport and impoundment from the major fires that occurred in northern California and southern Oregon since 2010, including but not limited to the 2014 Boles and Happy Camp Complex Fires, the 2017 Salmon August Complex Fires and Eclipse Complex Fires, the 2018 Klamathon and Natchez Fires, and the 2021 River Complex 2021 Fires.

Response: As stated in both the draft EIS and the proposed Water Quality Monitoring and Management Plan (KRRC, 2021b), the volume of sediment in the project's reservoirs was estimated based on bathymetric surveys conducted as recently as 2018, and the evaluation for potential contaminants in the reservoir sediments was based on analyses of samples collected in 2004-2005 and 2009-2010. Therefore, sediment transport and accumulation that occurred in 2010-2018 is included in the estimated sediment volumes but not the evaluation for potential contaminants. Although numerous fires have occurred in northern California and southern Oregon since 2010, all but one of the fires listed in the comment occurred outside of the basin contributing to the project reservoirs. The National Interagency Fire Center (2022) database indicates that between 2010 and 2018 two fires occurred in areas that directly contribute to the project's reservoirs (the 2014 Beaver Creek Complex fire and the 2018 Klamathon fire). Neither of these fires burned many if any structures; therefore, we conclude that sediment loads from them would not significantly increase the concentration of potential contaminants accumulated in the project's reservoirs.

Comment L.5.2-3: Siskiyou County comments that the analysis of the volume of sediment deposited in Copco No. 1 and Iron Gate reservoirs relies on old data (“... high resolution bathymetric surveys conducted in 2002 and 2018”, Section 5.1, Appendix B, California Water Quality Monitoring Plan). It comments that these data do not include sediment deposition and loading from increased wildfire activity between 2018 and 2021, and, with major fires occurring in both southern Oregon and northern California from 2018 to 2021 (Bootleg Fire and River Complex Fires in 2021, Brattain Fire and Slater/Devil Fires in 2020, Lime Fire 2019, and Miles Fire and Klamathon Fire in 2018), reservoir sediment loading would likely increase. It recommends conducting new bathymetric surveys prior to the dam removal so that the appropriate exhibits to the EIS can be updated and a sediment transport adaptive management plan can be written.

Response: Sediment volume estimates in the reservoirs reflect the volume of sediment that has accumulated in the J.C Boyle, Copco No.1, and Iron Gate reservoirs for 64, 104, and 60 years, respectively, since their construction. The accumulated volumes integrate sediment contributed during dry years, wet years, years of extensive forest logging, and also from wildfires in the watershed throughout the dams’ history. The total sediment behind the dams by 2009 was estimated by Reclamation (2011a) and extrapolated to 2020 and 2022 by Reclamation and California DFW (2022) and California Water Board (2020), respectively. As the California Water Board (2020) states, the “increase in sediment volume between 2020 and 2022 is an order of magnitude less than the uncertainty of the 2020 total sediment volume estimates, so model results using the 2020 sediment volumes would still be applicable to the Proposed Project.” Given that the estimated sediment volumes in the reservoirs integrate the various conditions of the reservoirs since their construction over many decades (and in the case of Copco No.1 more than a century ago), staff considers effects from recent wildfires sufficiently integrated in the volume estimates and within the margin of uncertainty.

Comment L.5.2-4: Siskiyou County comments that the method to quantify sediment exportation is flawed because measurements are proposed to be taken after drawdown is complete (section 5.2, Appendix B, California Water Quality Monitoring Plan). During drawdown, sediments will be transported outside of each reservoirs’ footprint, downstream into the Klamath River and other tributaries; therefore, the quantity of sediment within the reservoirs’ footprints will be diminished and not accurately accounted for. The county recommends quantifying sediment before drawdown activities to accurately account for the amount of sediment that will be released into the Klamath River as a result of the project.

Response: Dam removal is estimated to remove 36 to 57 percent of the sediment accumulated in the reservoirs. For reasons stated in our response to **L.5.2-3**, the volume of accumulated sediment in the reservoirs is reasonably well understood. Some shift of sediment within the reservoirs may have occurred (or may occur before dam removal) since the 2018 bathymetric surveys but this is not expected to be substantial, and shifted sediment is likely retained within the reservoir footprints. In part because of these reasons, staff considers the approach proposed by KRRC in its Water Quality Monitoring

and Management Plan suitable to arrive at a meaningful estimate for the volume of sediment released from the reservoirs by dam removal. Any potential effect on sediment volumes from any shift within the reservoirs since 2018 would be comparatively minor and within the margin of uncertainty of the surveys.

Comment L.5.2-5: Siskiyou County comments that, as stated in the comments for sections 5.1 and 5.2, quantification of sediments in the reservoirs is outdated (section 5.3, Appendix B, California Water Quality Monitoring Plan). Therefore, the methodology for quantifying the sediment transport and deposition between Iron Gate and Cottonwood Creek as a result of the project should account for the potential increased sediment loading in the reservoirs due to the wildfire activity in southern Oregon and northern California between 2018 and 2021. It recommends new bathymetric surveys prior to the drawdown to accurately account for the sediment transport that will occur from project implementation.

Response: Fires contribute sediment from erosion of exposed soil and from settling airborne dust particles. However, the velocities in the Klamath River between Iron Gate Dam and Cottonwood Creek would prevent settling of dust particles in this reach from becoming river substrate in this reach. Regarding eroded soil particles, the footprints of fires that occurred in the region since 2018 were mostly outside of the watershed for Klamath River tributaries in this reach. Eroded soil particles from fires in the Klamath River watershed upstream of Iron Gate Dam would either be mostly captured by the dam closest to the fire upstream (coarser particles such as sand) or remain in suspension and mostly be transported to the Pacific Ocean (fine particles). For example, some soil eroded from the Bootleg Fire may have been captured by Upper Klamath Lake but would in essence not have affected the Klamath River reach below Iron Gate Dam. For these reasons, staff considers the use of 2018 bathymetric data suitable for the comparison with post-drawdown conditions.

Comment L.5.2-6: Siskiyou County comments that, despite efforts expressed to shorten the period of high sediment load in the Klamath River during and following drawdown, channel aggradation will likely remain an issue for a very long time, especially considering how climate change is changing flow dynamics in many streams located in semi-arid to arid climates like the Klamath. An adaptive management plan should be written with appropriate mitigation measures to offset the possible impacts of channel aggradation on aquatic resources and water quality in the Klamath River.

Response: Based on our review of the project record, it is unlikely channel aggradation would result in degraded water quality conditions in the long term because the majority of the fine sediments released from the project reservoirs would be transported downstream within two years of dam removal. Sediment deposition would, however, likely result in the complete loss of many fall-run Chinook redds and eggs in the drawdown year and would likely reduce spawning success and egg survival in the following year, but these adverse effects would be unlikely to persist in subsequent years. Sediment deposition and subsequent erosion would also have the potential to interfere

with, or block, fish passage in the mainstem and at tributary confluences located downstream of J.C. Boyle Reservoir. As described in section 2.1.2.9, *Aquatic Resources Management Plan*, the measures in KRRC's proposed Tributary-Mainstem Connectivity Monitoring Plan were developed to aid in the identification and removal of any project-related fish migration barriers that could develop in the former reservoir areas and dam footprints, and in the mainstem Klamath River between Iron Gate Dam and Cottonwood Creek. As such, implementing KRRC's Tributary-Mainstem Connectivity Monitoring Plan would ensure that adult salmonids and Pacific lamprey entering the Klamath River have access to important spawning and rearing habitats and that these species have access to refuge from high suspended sediments during dam removal and seasonal high-water temperatures. Also, please see our response to comment **L.4.4-2**.

L.5.3 Sediment Transport Downstream of the Project

Comment L.5.3-1: Siskiyou County comments that removal of the four dams and drawdown of the reservoirs will constitute an extreme watershed hydromodification on the entire Klamath River Basin that will result in channel responses and secondary and long-term bank stability issues in the Klamath River and tributaries not only within the project areas, but also in the downstream reaches of the Klamath River. These channel responses can and will have significant impacts on the river and tributary channels themselves as well as impacts on the adjacent lands via channel bank failure and migration. The county comments that natural stabilization of the channels will occur over time through natural geomorphic processes, but this could take many decades or longer, and the excessive sediment loads in the Klamath River resulting from these secondary bank instabilities associated with the channel responses will negatively impact the water quality of the river through this entire period.

The RAMP describes restoration, monitoring, and adaptive management to address the initial bank stability effects resulting from the dam removals and reservoir drawdown within the hydroelectric reach of the Klamath River and tributaries within this reach, including stream restoration relative to geomorphic, aquatic habitat, and fish passage conditions. This plan appears adequate for this reach but does not address the negative secondary bank stability effects that are likely to occur downstream of the hydroelectric reach, as described above, and that are likely to result in impaired stream function from a geomorphic, aquatic habitat, and fish passage perspective throughout the downstream reaches. It is recommended that the stream geomorphic, aquatic habitat, and fish passage restoration, monitoring and adaptive management components within the RAMP be expanded to include the Klamath River and tributary outfalls downstream of the hydroelectric reach.

The effects on sediment transport from the proposed actions presented in the draft EIS again only consider the sediment impacts from the initial release of the impounded sediments from the dam removal and do not address the secondary and long-term excess sediment issues that will result from the long-term channel response and evolution

resulting from the extreme watershed hydromodification that the dam removals, reservoir drawdowns, and reservoir sediment discharges constitute.

Response: To address the effects of sediment deposition (and bank stability) on aquatic habitat access downstream of Iron Gate Dam, KRRC proposes to implement its Tributary-Mainstem Connectivity Plan to ensure adult salmonids and Pacific lamprey continue to have access to important mainstem and tributary spawning habitat. Under this plan, KRRC would evaluate the sediment conditions at nine tributary-mainstem confluences (four sites in the hydroelectric reach and five sites in the 8-mile reach of the Klamath River extending from Iron Gate Dam to Cottonwood Creek) (Bogus Creek, Dry Creek, Little Bogus Creek, Willow Creek, and Cottonwood Creek and at the Shovel Creek confluence with the Klamath River above the Copco No. 1 Reservoir). The five tributaries within the 8-mile reach below Iron Gate Dam were selected because they are recognized as influential tributaries (e.g., historical fisheries of importance or important cool-water sources) in the mid-Klamath River. Although Shovel Creek is outside the 8-Mile Mainstem Reach (i.e., upstream of Copco No. 1 Reservoir), KRRC selected it for connectivity monitoring due to its historical and/or potential habitat for adult salmonids. The monitoring frequency would be variable based on the season and year and would be developed in consultation with the ARG, using adaptive management. If monitoring identifies any tributary confluence blockages, KRRC would consult with the resource agencies to determine whether the blockage should be removed to ensure volitional passage for adult Chinook salmon, coho salmon, steelhead, and Pacific lamprey.

KRRC would also implement (and update) its Spawning Habitat Availability Report and Plan, a subplan of the Aquatic Resources Management Plan. The subplan describes the habitat surveys and spawning habitat target metrics KRRC would use to inform the need for spawning habitat enhancements to offset the loss of spawning habitat in the mainstem Klamath River following reservoir drawdown. The updated subplan would describe the results of habitat surveys in the hydroelectric reach (typical reach characteristics, the total amount of available spawning habitat, all man-made fish barriers encountered during the surveys), and the timing of the implementation of spawning habitat enhancement activities if such activities are determined to be necessary. As recommended by the ARG, the Spawning Habitat Availability Report and Plan focuses primarily on the potential impacts to Chinook salmon and steelhead. If, based on the surveys, one or more of the target metrics have not been met in the reservoir reach, KRRC would, in consultation with the ARG, determine if gravel augmentation or other actions to improve spawning and rearing habitat are appropriate. In addition, KRRC may also take certain actions in connection with the implementation of the Reservoir Area Management Plan, including fish passage barrier removal, installation of large woody material, riparian planting for shade coverage, gravel augmentation, wetland construction or enhancement, bank stabilization, and cattle exclusion fencing.

Again, note that KRRC would use an adaptive management framework to interpret its monitoring data and take adaptive management actions, including the correction of any

sediment deposition blockages, when necessary to achieve the reintroduction goals in the Klamath River upstream of Iron Gate Dam.

Comment L.5.3-2: PFMC comments that the draft EIS accurately explains that the normal bedload sediment carrying capacity for the Klamath River is very large, and that any additional sediment loads from dam removal would not cause sediment loads to exceed the normal range of river carrying capacity.

Response: Comment noted.

Comment L.5.3-3: EPA comments that adverse impacts [of suspended sediments] are expected to diminish with distance downstream of the hydroelectric reach; however, simulated sediment load figures are only provided for the stretch of river half a mile downstream from Iron Gate Dam (p. 3-80; Figures 3.3-20 – 3.3-24). The draft EIS shows background SSC levels under 10,000 mg/l at River Mile [(RM)] 129.4, RM 59, and RM 5 during median and severe impact years for chinook (Figures 3.3-26 – 3.3-28). It is not clear what the projected sediment load would be at various points downstream or what effects adding the peak value of 15,000 milligrams per liter SSCs to background levels would have on downstream water quality or fish. EPA recommends that the final EIS discuss whether previous modelling efforts have simulated the range and extent of SSC levels and potentially adverse effects farther downstream from Iron Gate Dam. Finally, EPA requests that the EIS provide support for the statement that project releases of SSCs would be relatively small as compared to existing conditions due to dilution from downstream tributaries and springs (p. 3-80).

Response: The draft EIS incorporates KRRC's updated SRH-1D modeling results, which include simulations for daily SSCs at four Klamath River locations (RMs 193.1, 129.4, 59, and 5) for both the 1961-2008 hydroperiod under baseline (KRRC refers to this as background) and for its current proposal. KRRC's BA (2021f) summarizes the simulated SSCs for median and severe impacts on Chinook salmon, coho, and Eulachon based on an evaluation of the magnitude and duration of simulated SSCs at times and locations where each life stage would likely be present. The draft EIS includes figures of simulated SSCs at RM 193.1 (figures 3.3-20, 3.3-22, 3.3-24, and 3.3-25), RM 129.4 (figure 3.3-26), RM 59 (figure 3.3-27), and RM 5 (figure 3.3-28). We revised the EIS by adding tables of the range of SSCs for median and severe impact years on coho salmon, which further documents that SSCs would be diluted as water flows downstream.

Comment L.5.3-4: Siskiyou County comments that it is disingenuous to assume salmon and steelhead can tolerate SSCs greater than 20,000 mg/l without considering other environmental factors such as temperature and DO (draft EIS, p. 3-206). If all three factors are borderline lethal at the same time (highly likely) survival is likely not possible.

Response: We acknowledge the combined effects of dam removal on water quality would have a substantial adverse effect on anadromous salmonids during and immediately following dam removal; however, based on our analysis in section 3.4.3.3 of

the EIS, these impacts would be relatively minor and mostly mitigated. As a result, we continue to find that the beneficial effects associated with dam removal would outweigh any short- or long-term adverse effects associated with the proposed action.

Comment L.5.3-5: Siskiyou County comments that the staff, and frankly many of the preceding reports and studies, go to great lengths to accentuate the positive and gloss over the possible negative outcomes. For example: “Under the proposed action, SSCs during this period [fall Chinook outmigration to the ocean in the fall] would only be slightly higher under most of the hydrological conditions that were modeled, except for the worse impacts on fish scenario, in which case SSCs would be high enough to cause major physiological stress” (draft EIS, p. 3-209).

Response: In our analysis, we use the best available information to assess the effects of the proposed project on aquatic resources and have attempted to clearly describe both the positive and negative effects of dam removal on anadromous fish. For example, in section 3.4.3.3, *Effects of Changes in Suspended Sediment Concentrations and Sediment Deposition on Aquatic Resources*, we state that, under the proposed action, peak SSCs in portions of the Klamath River downstream of the Iron Gate Dam site are expected to exceed 20,000 mg/l for hours or days, depending on hydrologic conditions during facility removal. In that same section, we also note that yearling and older salmonids (such as salmon and steelhead) can survive high SSCs for considerable periods of time, and acute lethal effects generally occur only if concentrations exceed 20,000 mg/l. We do not consider this glossing over the negative effects of the proposed action on aquatic resources.

Comment L.5.3-6: Siskiyou County notes that the draft EIS states that the proposed action will likely result in reduced abundance of benthic macroinvertebrates (BMI) in the Klamath River downstream of Iron Gate (draft EIS, p. 3-216). The Klamath WQ EIR clearly points out that BMI will be wiped out by the proposed action and will likely not recover for several years. This would result in depletion of a critical food source for rearing salmon and steelhead juveniles over several year classes.

Response: We added your referenced EIR BMI information to section 3.4.3.4, *Effects of Suspended Sediment on Benthic Macroinvertebrates*, of the final EIS.

Comment L.5.3-7: KRRC comments that it has, in cooperation with Del Norte County, prepared an analysis of potential sediment impacts on Crescent City Harbor. Del Norte County’s technical representatives provided comment on the scope and content of this study and participated in the development of the measures that the parties agreed upon to address project-related sediment impacts that might occur (including the appropriate share of dredging costs to be paid by KRRC). The underlying technical analysis is attached to KRRC’s comments (Attachment 5). KRRC indicates that this analysis was incorporated into the Del Norte Sediment Management Plan. Further, KRRC and Del Norte County have entered into an agreement that addresses KRRC’s obligations to address any project-related impacts on Crescent City Harbor. See Memorandum of

Understanding Between the County of Del Norte, the Crescent City Harbor District and KRRC (Mar. 3, 2021), FERC accession no. 20210304-5117.

Response: The approach proposed by KRRC, in collaboration with Del Norte County, and as reflected in the Del Norte Sediment Management Plan, is suitable to address potential impacts on the harbor from the sediment released during drawdown. We removed the text that was in the draft EIS that suggested consideration of an alternative approach for addressing impacts.

L.5.4 Effects of High Suspended Sediment Levels on Essential Fish Habitat

Comment L.5.4-1: PCFFA comments that the draft EIS discusses the impacts of the proposed action [dam removals] on Essential Fish Habitat (EFH) in section 3.2.3.10 [draft EIS pp. 3-230 to 3-231] and concludes that the proposed action would have only a minor, temporary adverse effect on offshore Pacific Coast groundfish EFH and coastal pelagic EFH from elevated SSCs, which are likely to become diluted and dissipate rapidly once they reach the ocean. The proposed action would also have some temporary adverse effect on instream salmon EFH from the same causes. NMFS in its review found, however, that despite short-term, adverse effects, the proposed action would enhance the quality of EFH over the long term, and that the proposed action already contains adequate measures to avoid or minimize short-term, adverse effects.

PFMC comments that the draft EIS discusses the impacts of the proposed action [dam removals] on Essential Fish Habitat (EFH) [draft EIS pp. 3-230 to 3-231] and concludes that the proposed action would have only a minor, temporary adverse effect on Pacific Coast groundfish EFH and coastal pelagic EFH from elevated SSCs, an effect which is likely to become diluted and dissipate rapidly once it reaches the ocean. Elevated SSCs and changes in other water quality parameters as noted above may also have some temporary adverse effect on instream salmon EFH. The NMFS EFH consultation for the project's BiOp found, however, that despite short-term, adverse effects, the proposed action would enhance the quality of EFH over the long term, and that the proposed action already contains adequate measures to avoid or minimize short-term, adverse effects. PFMC supports these conclusions.

Response: Comment noted.

Comment L.5.4-2: The Hoopa Indian Tribe comments that, while the impacts on EFH are likely going to be significantly beneficial in the long term, the mitigation efforts to reduce the short-term impacts on fisheries as a result of sedimentation and decreased water quality in the Lower Klamath Basin are insufficiently addressed in the EIS. It comments that other methods of sediment removal should be thoroughly considered in case of continued drought conditions.

Response: As we discuss in section 3.4.3.3 of the EIS, sediment deposited in gravel during reservoir drawdown is likely to adversely affect the incubation and emergence of salmonids (primarily fall Chinook salmon) that spawn in the mainstem of the Klamath River downstream of Iron Gate Dam during the drawdown year. We modified the text to

note that these adverse effects could extend for one or more additional years. However, we also conclude that the release of additional water from Upper Klamath Lake to assist with sediment flushing would not be justified because of adverse effects on agriculture and because: (1) only a small proportion of the Klamath River Chinook salmon population would be affected (most spawn in tributaries); (2) most of the fall Chinook salmon that spawn there are probably progeny of hatchery fish; and (3) salmon will likely continue to move upstream until they find suitable spawning habitat. We are not aware of any other methods for sediment removal that are likely to be feasible or warranted.

L.5.5 Transport of Contaminants in Reservoir Sediments

Comment L.5.5-1: Several opponents to dam removal express concern about the potential adverse effects of dam removal on sediment and toxic materials release and movement on fish, other aquatic species, and wildlife and riparian systems within and downstream of the Lower Klamath Project. One commenter suggests that dredging of sediment prior to dam removal could avoid releasing sediments and toxic materials affecting the Lower Klamath River.

Response: Drawdown of the reservoirs and dam removal, or dredging, if feasible, would suspend and mobilize fine sediments from the reservoirs, which would cause elevated SSCs in the hydroelectric reach and the Lower Klamath River and some deposition of fine sediment in and adjacent to the river channel and in the Klamath River Estuary. Increased sediment loads for a short period of time would have some adverse effects on anadromous fish below the project. However, even with additional in-river sediment loads from dam removal, Klamath River sediment loads would remain well within the normal range of variability to which salmon are adapted [draft EIS p. 3-17; Figure 3.1-3 (p. 3-28)]. Although short-term adverse effects on anadromous fish spawning habitat downstream of Iron Gate Dam are likely, the long-term effects in the river channel of this reach would be beneficial for the aquatic ecosystem as natural sediment transport processes are restored.

On March 29, 2021 (as we note in the draft EIS on p. 3-82), EPA (2021a) reconfirmed its determinations that the extensive physical, chemical, and biological evaluations conducted in 2009-2010 remain valid, and the accumulated sediments in reservoirs behind the four project dams are suitable for release. For a detailed discussion of reservoir drawdowns, sediment evacuation, sediment concentrations, contaminants, and flows, within the hydroelectric reach and downstream of Iron Gate Dam in the Klamath River to the estuary, see sections 3.1.3.2, *Effects from Mobilization of Sediments*; 3.1.3.3, *Effects of Coastal Sediment Deposition on Navigation*; 3.3.3.1, *Suspended Sediment and Contaminants*; 3.2.3.1, *Effects of Project Deconstruction Activities on Water Quantity*; and 3.4.3.3, *Effects of Changes in Suspended Sediment Concentrations on Aquatic Resources*.

L.6 WATER QUALITY

L.6.1 Water Temperature

Comment L.6.1-1: Reclamation comments that section 3.3.1 of the draft EIS states that the geographic scope for analysis of water quality includes the Klamath River extending from below Keno Dam to the Pacific Ocean. Accordingly, Reclamation suggests that the water temperature analysis beginning on page 3-65 of the draft EIS include recognition that the Oregon temperature standard above Keno Dam is 28 degrees Celsius, while below the dam, it is 20 degrees Celsius. Reclamation recommends that the draft EIS acknowledge that Keno Dam releases water generally well above 20 degrees Celsius during the summer.

Similarly, section 3.3.3.2, *Water Temperature* in the draft EIS, does not include any detailed temperature discussion on effects of facility removal for the reach from Keno Dam to J.C. Boyle Dam. Reclamation recommends that this section discuss effect(s) of temperature within the Keno Dam to J.C. Boyle reach during and after facilities removal.

Response: We revised sections 3.3.2.4 and 3.3.3.2 in the EIS to provide greater insight into existing water temperature and effects of the proposed action in the reach between the Keno and J.C. Boyle Dams. The temperature standards upstream of Keno Dam are not relevant to this project; therefore, we do not discuss them in the EIS.

Comment L.6.1-2: One commenter notes that issues previously submitted with supporting documentation were ignored in previous FERC Klamath Project decommissioning proceedings. The commenter states that FERC, depending upon its biased objectives at the moment, previously ‘modeled’ detrimental temperature ‘impacts’ to downstream Klamath to ‘justify’ recommendation of destruction that have now been empirically refuted. The individual further comments that it feels that paid-for modeling of massive temperature impacts to the ocean’ to rationalize imposing regulatory ‘listing’ impairments, completely dismissed resident testimony at the time. The commenter indicates that these statements have since been proven baseless, with actual ‘impacts’ being negligible and within the margin of error of the empirical study, although the garnered additional regulatory authority remains unabated, necessitating FERC’s inconsistency in biased application of a failed premise. Those studies not only assert minimal identifiable short-term, localized instream temperature variations, but there was no supported determination whether any possible variations were detrimental or beneficial for the fisheries, the beneficial experience of which local residents have stated from the very beginning, experience that the commenter states is still being ignored.

Response: In section 3.3.3.2 of the EIS, the discussion of the effects of the proposed action on water temperature includes: (1) identification of the primary limitations of the three numeric temperature models that serve as the primary basis for our analysis; (2) notes that these three models simulated the same general trends (i.e., the proposed action would result in a permanent shift to a more natural temperature regime with earlier warming in the spring and cooling in the late summer and early fall in the hydroelectric

reach and the Lower Klamath River down to the Trinity River confluence; and (3) patches of cool water are expected to occur near inflow from cool-water tributaries and springs. The EIS does not claim that removal of the dams would have significant effects on temperature downstream of the Trinity River confluence or in the Pacific Ocean.

We acknowledge that models do not perfectly simulate conditions that would occur; however, we note that each of the three models incorporate well-established commonly used algorithms to represent physical processes. In addition, we note that our use of model results is not based on individual simulated values, but rather on trends, which significantly reduces any errors that would be made by assuming simulated temperatures are absolutely representative of conditions that would occur. Our review of the extensive record for this proceeding did not locate any empirical evidence that contradicts our conclusions on the effect of the proposed action on water temperature.

Comment L.6.1-3: Siskiyou County comments that a primary limitation for the models used to predict water temperature in the draft EIS is that all TMDL models assume that measures have been taken to meet temperature load allocations, and notes that staff rely heavily on temperature models to support better water temperature conditions in the Klamath River post-dam removal. Siskiyou County notes that laying the burden of success of implementation of TMDL measures on entities that may not be basin participators when the dams are removed is a serious flaw in the analysis of effects of the proposed action on water temperature.

Response: Although the TMDL temperature model assumes that measures have been taken to meet temperature load allocations, the other models we used to assess the effects of the proposed action on temperature do not incorporate this assumption. Removal of the project's dams and restoration of riparian vegetation would eliminate the effects of the project on water temperatures and result in compliance with the TMDL temperature load allocations assigned to the project reservoirs. The project is not responsible for any other temperature load allocations assigned in the TMDLs.

Comment L.6.1-4: Siskiyou County notes that staff concludes (draft EIS, p. 3-93) that the proposed action would allow the river to shift to a more natural temperature regime and suggests that this conclusion ignores the fact that "natural" water temperature conditions in the Klamath River are far from ideal for salmon and not likely to improve with the threat of climate change effects. Siskiyou County further states that an error in model assumptions led staff to make a broad statement that the proposed action's effects on water temperatures suitable to support salmon and steelhead in the Klamath River Basin would be permanent, significant, and beneficial (draft EIS, p. 201) and notes that the assumption of permanence and benefit is speculative at best given the unknowns related to climate change.

Response: We are not aware of any substantive errors in the modeling assumptions that were used to assess the effects of the proposed action on water temperatures and continue to believe implementation of the proposed action would improve anadromous fish habitat

relative to existing conditions. As described in section 3.4.3.7, *Effects on Fish Habitat Access*, implementation of the proposed action would restore and maintain access to habitat within the hydroelectric reach, including at least 13.9 miles of tributary habitats and several other recognized cool-water refugia areas, including the J.C. Boyle bypassed reach and Jenny and Fall Creeks. Consequently, it would allow anadromous salmonids access to cool-water habitats available upstream of the Iron Gate Dam site, including groundwater-fed areas that are resistant to water temperature increases caused by climate change. Dam removal would also eliminate the thermal lag in the mainstem Klamath River caused by the thermal mass of the reservoirs and reestablish a water temperature regime that is more in sync with the historical timing of salmon and steelhead upstream migration, spawning, and juvenile migration to the ocean. Adult fall-run Chinook salmon migration and spawning in the mainstem would no longer be delayed due to high water temperatures, likely reducing pre-spawn mortality. Furthermore, temperature would be more reflective of natural conditions for other life stages of salmonids, such as incubation and juvenile rearing. While climate change has and will continue to affect the quality and quantity of available aquatic habitat in the Pacific Northwest, the proposed action would serve to reduce the severity of these adverse effects on aquatic resources and represents the most viable alternative to restore and maintain salmon and steelhead populations in the Klamath River Basin.

Comment L.6.1-5: Reclamation comments that, relative to temperature discussions and predications discussed in section 3.4.3.1, it would be helpful if FERC would clarify the life history stage referenced on page 3-198 of the draft EIS and the predicted spring temperatures following facilities removal discussed on page 3-201 of the draft EIS.

Response: We revised section 3.4.3.1 of the EIS to provide additional insight into the life history stages referenced. As discussed in the EIS, water temperatures under the proposed action are expected to be 2 to 10°C cooler during August through December and 2 to 5°C warmer during January through March than under the existing conditions. Draft EIS figures 3.3-5, 3.3-30, and 3.3-31 provide insight into expected temperatures at multiple locations on the mainstem.

Comment L.6.1-6: PFMC supports the recovery of the once-numerous cool-water and spring-fed thermal refugia that previously existed in the Klamath River (many of them now engulfed by warm-water reservoirs) and believes this is important to assure future salmon survival in the Klamath River. It further states that this is especially relevant in the face of accelerating climate change-driven water temperature increases, all of which have been exacerbated by the warm-water, heat-sink reservoirs that currently exist.

Response: Comment noted. We discuss the importance of these thermal refugia for salmon and steelhead in section 3.4.3.7, *Effects on Fish Habitat Access*.

Comment L.6.1-7: Wild Orca comments that temporary shade should be used to reduce warming until riparian habitats are restored. It states that this solution is used in some EU countries and has also been studied on the East Coast of the United States (Fink, 2008).

Response: The installation of shade cloth would neither be practical nor feasible across the many miles of river/tributary reaches in the hydroelectric reach. We recognize that the reservoir footprints would initially experience significant solar loading. As riparian vegetation becomes established, expands, and provides shade, solar loading would be reduced. Over the long term, the riparian community is expected to shade the Klamath River tributaries, as these streams are narrow and shading has been demonstrated to have a beneficial effect on water temperatures (e.g., Holthuijzen 2021). This effect could aid in shifting to a more natural temperature regime in the Lower Klamath River down to the Trinity River confluence with earlier warming in the spring and cooling in the late summer and early fall.

Comment L.6.1-8: Interior recommends adding the understanding that greater thermal diversity after removal of the Lower Klamath River dams and reservoirs is likely to result in greater invertebrate diversity and less favorable environmental conditions for the production and survival of a single species such as the annelid worms (please add to p. 4-10, *Proposed Action*).

Response: We have edited the text as suggested.

Comment L.6.1-9: EPA comments that KRRC include provisions to protect and restore the temperature diversity needed to meet water quality standards and provide essential habitat for salmonids at multiple life stages. Specifically, the EPA recommends that the plan identify groundwater/spring inflow or tributary sources in the project area that would provide summer maximum temperatures colder than the States' or Tribes' numeric criteria and include all measures necessary to protect cold water sources and restore potential areas of cold water refugia within and above the project area in consultation with federal and state resource agencies. Pursuant to EPA guidance, consider designating these waterbodies as ecologically significant for temperature and either establish site-specific numeric criteria equal to the current temperatures or prohibit temperature increases above a de minimis level in waters with Endangered Species Act-listed salmonids. EPA further recommends that the plan include a timeline for its implementation and the criteria used to determine whether/when it would be phased out.

Response: We added an evaluation of EPA's recommendation to the analysis in section 3.3.4.

L.6.2 Nutrients, DO, and pH

Comment L.6.2-1: Klamath Water User's Association comments that the discussion in the draft EIS (p. 3-176, section 3.4.2.1) is incomplete and dated. The Klamath Irrigation Project is a net nutrient sink, and there has been very minimal discharge from the Klamath Straits Drain in recent years. Thus, the Klamath Irrigation Project overall reduces the nutrient load in the Klamath River and currently has little or no effect on nutrient concentrations at any location in the river.

Response: Based on a description provided in Reclamation's final environmental assessment for Implementation of Klamath Project Operating Procedures 2020-2023

(Reclamation, 2020c), we revised the referenced text to clarify that water quality in Keno Reservoir is primarily affected by the high nutrient content of inflowing water from Upper Klamath Lake and contributions of high nutrient loads and contaminants from wastewater effluent from the City of Klamath Falls, Klamath Irrigation Project return water via the Klamath Straits Drain, and accumulated wood waste from lumber mill operations.

Comment L.6.2-2: One commenter notes that water quality studies empirically prove the only deep-water lakes in the Klamath system reduce historically consistent overall Upper Basin nutrient and biomass loads delivered downstream far more than any equivalent river miles are capable of. The commenter also states that, when considered in conjunction with already failed nutrient reduction alternative methods such as the Klamath wastewater treatment experiment, this leaves the project's deep-water lakes as the only currently available cost-effective method of significant downstream water quality improvement.

Response: As discussed in draft EIS section 3.3.3.3, an evaluation of long-term effects of the proposed action on seasonal nutrient loads indicates more of the nutrients flowing into the project would be passed through the hydroelectric reach to the Lower Klamath River and would increase the average concentration of total nitrogen and total phosphorus farther downstream, but these effects would be diminished to insignificant from Orleans (near RM 60) to the ocean.

Comment L.6.2-3: Siskiyou County comments that the DO model predicts reduction in DO to 0.2 mg/l, which is well below lethal conditions for most aquatic organisms (Stillwater Sciences, 2011). Page 3-218 in the draft EIS states that according to KRRC, DO concentration will “rebound to conditions where salmonids can survive with moderate impairment.” The county comments that this statement is overly optimistic and is stated without any spatial or temporal bounds.

Response: In the final EIS, we have clarified that “rebound” pertains to the increases in DO concentrations as water flows downstream (particularly downstream of RM 148.6) when low DO concentrations occur below Iron Gate Dam (refer to section 3.4.3.5, *Effects of Changes in Dissolved Oxygen on Aquatic Resources*, of the final EIS).

L.6.3 Toxic Algae

Comment L.6.3-1: Both opponents and supporters of dam removal comment on poor water quality in both the reservoirs and downstream of the Lower Klamath dams. Some opponents felt that the risk of toxic algae to people and wildlife was overstated. An overwhelming majority of proponents of dam removal expressed grave concern about the poor and declining water quality within and downstream of the reservoirs, especially concerning toxic algae and fish diseases if the dams remain in place. They noted that dam removal would improve water quality in the reaches that are currently impounded and in the Klamath River below the project based on the scientific information provided in the draft EIS.

Response: *Microcystis aeruginosa* produces a potent liver toxin, hepatotoxin (microcystin) that can affect the health of both humans and animals. Every year since 2005, public health warnings have been posted along the Klamath River's reservoirs. In our analysis we did not find documentation of microcystin-related adverse health effects in humans or animals that are specifically associated with the project reservoirs. However, the lack of such information does not diminish the risks that are associated with contact with or consumption of water and/or aquatic organisms (e.g., fish and mussels) with high microcystin concentrations.

Interior and California DFG's (2012) EIS/EIR concluded that the dams allow excessive heating of water in the reservoirs and concentrate nutrients, encouraging the widespread growth of toxic blue-green algae in the reservoirs. Our analysis of these studies and subsequent studies conducted to support the Secretary of Interior's determination (summarized in Interior and NMFS's 2013 Overview Report) and the California Water Board's 2020 EIS/EIR support these same conclusions. We conclude that these algae blooms would not occur in the colder, faster riverine environment that would result from dam removals, and dam removal would have significant beneficial effects on water quality and thereby on anadromous fish.

Comment L.6.3-2: Humboldt County expresses concern about toxic algae outbreaks and the associated human health risk associated with recreating in the Klamath River. The human health risk posed by toxic algae blooms diminishes opportunities for eco-tourism, dissuades participation in recreational fishing, and creates adverse conditions for Tribal ceremonies. The county concurs with FERC's conclusion regarding effects of project implementation on toxic algae blooms.

Response: Comment noted.

L.6.4 Monitoring and Adaptive Management

Comment L.6.4-1: Reclamation recommended that FERC state that the sites KR25444 at Link River, KR24600 at Miller Island, and KR233 in the Klamath River below Keno Dam are listed as the responsibility of Reclamation and were sampled by Reclamation through December 2020. PacifiCorp now has responsibility for sampling these sites starting January 1, 2021, through present day.

Response: Comment noted. We added a note to the referenced table (table 3.3-7) to make it clear that PacifiCorp is now responsible for sampling these sites.

Comment L.6.4-2: PCFFA noted the importance of monitoring pre-removal conditions as baseline data from which to guide as well as determine the effectiveness of later salmon reintroduction efforts. We recommend that water quality monitoring programs included in the Water Quality Management Plan (WQMP) should be managed consistent with the final State of Oregon's Implementation Plan for the Reintroduction of Anadromous Fishes into the Oregon Portion of the Upper Klamath Basin (December 2021), and with the equivalent State of California plan (still in preparation).

Response: We added an evaluation of managing the WQMP in a consistent manner with the state-specific Implementation Plans for the Reintroduction to our analysis in section 3.3.3.5.

Comment L.6.4-3: Siskiyou County comments that unlike in other sections of the Water Quality Monitoring and Management Plan, Section 5 (Appendix B, California Water Quality Monitoring Plan), which addresses sediment loading, does not include a section for adaptive management. It is recommended that an adaptive management plan for sediment deposition and transport resulting from the proposed project be completed prior to the final EIS. As the proposed project is relying on natural, free flowing hydrology to flush sediments to the Pacific Ocean, and it does not take into consideration increased drought and the effects of climate change on the hydrology, it is necessary to establish an adaptive management plan that addresses removal of long-term excess sediment within the Klamath River that results from project implementation.

Response: We acknowledge that estimating sediment export based on pre-drawdown bathymetric surveys and post-drawdown topographic surveys per the methodology proposed in the Water Quality Management Plan (WQMP), in consultation with Oregon DEQ, is expected to provide reliable estimates for sediment export from the J.C. Boyle Reservoir. However, it would not quantify the suspended sediment released during and following drawdown, as intended in Oregon DEQ WQC condition 2.e. The intention of condition 2.e is to provide insight into suspended sediment transport multiple times in this process (i.e., time-series), in contrast to a twice during the proposed action. We revised EIS section 3.3.3.5 by adding a discussion of the effects of periodic estimates of sediment export, including the benefits of using these estimates to adapt the timing and magnitude of proposed actions. In the final EIS, we recommend revising the Oregon Water Quality Management Plan and California Water Quality Monitoring Plan to include periodic estimation of suspended sediment loads pursuant to Oregon DEQ WQC condition 2.e and adaptive management measures for sediment loads.

L.7 FISH DISEASE

Comment L.7-1: Some commenters question the relationship between the reservoirs and water temperature and river flows on salmon-related fish diseases. One commenter suggests that the real culprit in the reduction of salmon production is not the Klamath dams but a complex combination of ocean conditions, predatory practices, international fishing, the flood of 1964 which revamped the hydrology of the Klamath and Salmon Rivers and significantly changed the spawning areas and the tributary systems to the mainstem Klamath, and the release of cold water early in the system by Reclamation. They state that improving the spawning areas and repairing flood damage of the river below the dams would be far more productive and result in less risk than that associated with removal of the hydroelectric facilities.

Response: We agree that the Klamath salmon runs have been and continue to be adversely affected by a number of factors as described in the cumulative effects section

provided in section 3.16 of the final EIS. This does not change our finding that the presence of the dams contributes to conditions that are causing increased disease incidence and fish kills that threaten the continued existence of salmon runs in the Klamath River and its tributaries.

Our analysis of effects of the proposed action on salmon and steelhead fisheries is provided in section 3.4, *Aquatic Resources*, and section 3.6, *Threatened and Endangered Species*. With dams in place, the salmon fishery is at risk of collapse due to the ongoing trend of increasing water temperatures and other conditions that cause regular fish disease outbreaks inflicting substantial mortality to juvenile and adult salmon in the Lower Klamath River. The proposed action would reduce fish disease in the Lower Klamath River by: (1) providing access to additional cool-water refugia for salmonids; (2) reducing the density of fish carcasses in the Lower Klamath River through access to additional suitable habitat and reduced reliance on hatchery production; (3) eliminating phytoplankton produced in the project reservoirs as a food source for the annelid host of the myxozoan parasite *C. shasta* and *P. minibicornis* that infect and cause regular substantial salmonid mortality; and (4) restoring sediment transport processes in the Lower Klamath River that would reduce algal mats that provide favorable annelid habitat that in turn would reduce myxozoan parasitic infections of salmonids. Recovery of salmon runs would improve commercial, recreational and Tribal fisheries, and result in improving rural economic conditions. The protection and restoration of anadromous fish to historically accessible habitat would benefit local Tribes by providing dietary and economic benefits and the continuance and restoration of cultural practices and traditions related to this resource.

Comment L.7-2: Humboldt County expresses support for the findings of the draft EIS, and they appreciate FERC's attention to the role of the dams in contributing to *Ceratonova shasta* infections among juvenile salmonids. Humboldt County views the increasing frequency and severity of fish disease outbreaks in recent years as one of the most important problems to solve to recover Klamath salmon stocks and restore our constituents' access to commercial, recreational, and subsistence fisheries. They believe that FERC staff thoroughly considers the impacts of project implementation on *C. shasta* infections. In addition, PFMC states that the increasing frequency and severity of fish disease outbreaks caused by the juvenile salmonid disease, *C. shasta* is one of the most urgent problems facing salmon in the Klamath. PFMC believes that mitigating the recurring *C. shasta* infections and losses of outmigrating juvenile salmon is a major benefit of dam removal.

Response: Comment noted. We agree that the increasing frequency and severity of fish disease outbreaks caused by the juvenile salmonid disease is one of the most urgent problems facing salmon in the Klamath River, as well as salmon populations in the tributaries that use the Lower Klamath River as a migration corridor.

Comment L.7-3: SCWUA comments that the redband trout has evolved over a wider range of environmental conditions than other salmonid species. They can tolerate temperatures of up to 80 degrees and primarily live on a diet of forage fish and

invertebrates and are resistant to *C. shasta* and other diseases and parasites. This important element is not considered in the EIR EIS draft by FERC and with dams removed would be free to move downstream impacting the habitat.

Response: Comment noted. While we agree with your characterization of redband trout, we do not find that they pose a serious risk to downstream fishery resources. Any losses of salmon or steelhead resulting from redband trout predation would likely be minor and far outweighed by the benefits of the proposed action.

L.8 UPSTREAM LIMIT OF ANADROMOUS FISH MIGRATION

Comment L.8-1: Many opponents to dam removal point to evidence that upstream salmon migration of salmon may have been blocked by a lava dam near the Copco No. 1 Dam site at the time that the dam was constructed. Some question whether salmon were native to the Upper Klamath Basin or evidence that there is important salmon habitat above J.C. Boyle Dam.

SCWUA comments that evidence presented regarding the existence for thousands of years of lava dikes on the Klamath especially at the location of the Copco I dam site as evidenced by J.C. Boyle engineer on the project who noted the height as 135 feet historically. Its existence kept the anadromous Salmon from intermixing upstream with the Red Band Salmon a freshwater fish. Documented in an article in 1913 by Boyle in the Journal of Electricity and Power dated February 22, 1913. This was further documented in Boyle's personal comments on the Flow Line at Copco Lake. The comments by FERC staff are disingenuous regarding the lava dikes as they are taken verbatim from statements by KRRC. No attempt is made to verify this incredibly important fact which impacts the validity of the stated goal to increase the production of salmon.

Response: All available information provided on the record was examined for any indication of a natural obstructions in the river at the location of Copco No. 1 Dam prior to its construction, as stated in section 3.1.2.1 of the draft EIS. Original documents reviewed included J.C. Boyle (1913; 1976). The region has indeed experienced volcanic flows impacting the flow of the Klamath River in its geologic history (as stated in draft EIS section 3.1.2.3). Hardened volcanic flows at one time blocked the Klamath River at the location of the Copco No. 1 Dam, forming an ancient natural lake upstream. However, the river has been cutting into the volcanic flows since, eroding a deep channel (i.e., Ward's Canyon) to its current riverbed. Boyle (1913) states "at one time the river ran over this reef, 130 ft above its present bed." In other words, the 130-foot-high reef mentioned in Boyle refers to the canyon walls remaining following erosion of the lava flows by the river (i.e., not a natural waterfall within the river around the time of dam construction). Volcanic flows could occur again in the region that would block the flow of the Klamath River. As stated in section 3.1.2.3 of the draft EIS, Mount Shasta erupts on average every 600-800 years. The frequency of volcanic flows that would also block the flow of the Klamath River is expected to be considerably longer. However, even if

temporarily blocked by a volcanic flow, running water will typically always cut through it – eventually – as it has at the Copco No. 1 Dam site. In section 3.4.2.2, we reference reports that support the historical presence of anadromous salmonids in the Upper Klamath Basin, prior to the completion of the four Lower Klamath Project dams. We also refer the commenter to Hamilton et al. (2005), *Distribution of Anadromous Fishes in the Upper Klamath River Watershed Prior to Hydropower Dams – A Synthesis of the Historical Evidence*.

We also note that access to habitat upstream of Copco No. 1 dam is not the most important benefit of the proposed action. Providing access for salmon and steelhead to cool-water refugia between Iron Gate Dam and Copco No. 1 Dam, and the expected improvement in water quality and reduction in disease incidence in the Lower Klamath River would address the most serious threats to the maintenance of Klamath River Basin salmon and steelhead runs into the future.

Comment L.8-2: The Klamath Drainage District comments that a key component of concurrence in the Amended KHSa was that dam removal would not result in new regulatory burdens on the Klamath Project. Of specific concern to the Klamath Drainage District is the prediction, in fact the objective, of expanding habitats of salmonids to upstream waters they do not currently inhabit.

Originally, the Klamath Basin Restoration Agreement protected Klamath Project irrigators against resultant new regulatory burdens. The Klamath Power and Facilities Agreement acknowledges the irrigators' conditional support and commits the parties to support protections against these burdens. The draft EIS (p. A-17) acknowledges the potential for salmonids to move upstream but dismisses the impact as one which will be delayed due to short term water quality impairment and resulting delayed migration. Delayed or not, migration is a prime objective of those supporting dam removal and it will be a long-term adverse impact that must be mitigated. In the Klamath Power and Facilities Agreement, the Department of Interior committed Reclamation to engineer, design, and construct fish screens at all Klamath Project diversions from the Klamath River. The Klamath Drainage District owns or operates three of the five largest diversion facilities: the North Canal, the Ady Canal, and the Klamath Straits Drain. As such, it has serious concerns regarding the feasibility—both practical and economic—of mitigating the impact of dam removal and resultant species migration. The Klamath Drainage District comments that the draft EIS fails to identify, evaluate, address, and/or mitigate this impact and the challenges thereof.

Response: We acknowledge that the removal of the Iron Gate, Copco No. 2, Copco No. 1, and J.C. Boyle Dams coupled with the existing fish ladders at Keno and Link River Dams would allow anadromous fish access to historical upstream habitat and expose additional federally listed species to entrainment into unscreened irrigation canals and portions of Reclamation's Klamath Irrigation Project. Although it is uncertain how rapidly this historical habitat would be colonized, we agree that the presence of anadromous fish upstream of Keno Dam would increase the level of interest in screening

any diversions that do not currently have fish screens. However, given there are two endangered suckers (Lost River and shortnose suckers) that already inhabit the Upper Klamath Basin, including Upper Klamath Lake, tributaries to Upper Klamath Lake, and the river between Link River Dam and Keno Dam, it is unclear what new regulatory measures would require screening that do not already exist. Regardless, the effort identified in the Klamath Project and Facilities Agreement, as noted in Klamath Drainage District's comment, may provide the technical expertise, broad stakeholder/entity support, and resources necessary to install fish screens at the diversions mentioned by the Klamath Drainage District.

In addition to Reclamation's screening of the A Canal for the Klamath Irrigation Project in the early 2000s, there are several programs underway that are funding the installation of fish screens at diversions in the Upper Klamath Basin. Reclamation has already screened several irrigation diversions that withdraw water from the Upper Klamath Lake and Agency Lake as part of its Upper Klamath Lake Fish Screening Program. Through the program, Reclamation provides federal grant funding to Oregon DFW. Oregon DFW then administers funds of up to 90 percent of project costs to private landowners. Oregon DFW is also responsible for planning/design of the fish screen facility, assuring that state-of-the-art fish screen criteria are successfully constructed on the ground, and it is responsible for providing long-term maintenance of fish screens in accordance with Oregon statute. Currently, Reclamation along with the National Fish and Wildlife Foundation fund restoration projects on the Klamath River as part of Reclamation's Klamath River Coho Restoration Program with the goal to meet the requirements outlined in NMFS's 2019 BiOp on Klamath Project Operations. In 2016, restoration projects on Bogus Creek and Cold Creek that each involved fish screen installation received between \$60,000 and \$116,000 in funding from the program and in 2020 a project on Upper Parks Creek that included installing fish screens received approximately \$150,000 in funding (National Fish and Wildlife Foundation, 2022). In addition, Oregon DFW's fish screening program offers cost share funding and/or a tax credit to assist with the installation of fish screening devices, by-pass devices and fish ways to water users such as: individual users, irrigation districts, state agencies, municipal suppliers, commercial industries, watershed councils, soil and water conservation districts and others (Oregon DFW, 2022). Since 1991, over 1,400 fish screens have been installed throughout Oregon as part of the fish screening program.

L.9 EFFECTS ON THREATENED AND ENDANGERED SPECIES AND SPECIES OF SPECIAL CONCERN

L.9.1 Franklin Bumble Bee

Comment L.9.1-1: FWS notes that FERC already requested its concurrence that the proposed action may affect but is not likely to adversely affect the Franklin's bumble bee (appendix B, p. B-2: Last sentence of first full paragraph). FWS's concurrence with this effects determination was provided in its December 22, 2021, letter transmitting the BiOp

and Informal Consultation on the Surrender and Decommissioning of the Lower Klamath Hydroelectric Project.

Response: The text referenced by FWS was incorporated in the draft EIS (appendix B, p. B-2): “FWS (2021e) issued its BiOp for the project that concurred with the KRRC’s (2021b) effects determination that the project may affect but is not likely to adversely affect. . . Franklin’s bumble bee . . .”

L.9.2 Suckers

Comment L.9.2-1: FWS recommends including a description or summary of the three different population modeling methods to clarify how the 300 listed suckers equate to between 8 and 22 percent of the mean population estimates the KRRC calculated for Copco No. 1 and Iron Gate Reservoirs. Notably, the Bootstrap Method is considered the most reliable statistical technique for estimating individuals/quantities from small data samples, as it has the least assumptions built in to the model and the highest probability of being the most trustworthy.

FWS also notes that, to be consistent with its BiOp, Lower Klamath Project, issued December 22, 2021, all references in the final EIS to translocation of suckers to Tule Lake Sump 1a should be replaced with ‘Tule Lake National Wildlife Refuge.’ It comments that this will provide consistency with the BiOp that reads “... relocation efforts will occur at the Klamath Falls National Fish Hatchery, the Tule Lake National Wildlife Refuge, and the Klamath Tribe’s sucker rearing facility.”

Response: Text in the EIS has been edited as suggested.

Comment L.9.2-2: FWS requests removing any text in the final EIS that discusses spawning by the Lost River or shortnose sucker in the hydroelectric reach to reflect that spawning and reproduction by listed suckers in the hydroelectric reach reservoirs or tributaries is not known to occur and there is no spawning habitat for them (FWS BO p. 94, 119) (FWS, 2012, 2013; Hamilton et al., 2011; Buettner et al., 2006). Siskiyou County, in contrary, comments that the draft EIS analysis for the Lost River sucker (*Deltistes luxatus*) and shortnose sucker (*Chasmistes brevirostris*) species concludes that dam removal would only impact “sink” populations in the reservoirs downstream of Keno Dam without adequate justification (e.g., genetics, current population structure) (p. 3-349, footnote 156, and p. 3-367, footnote 161). FWS further comments that sink populations exist in low quality habitat patches that would not be able to support a population in isolation without a source population, and without the contribution of individuals from a source population, they would become extinct.

Response: We changed the final EIS as suggested by FWS to indicate that Lost River and shortnose sucker are not known to spawn in the hydroelectric reach reservoirs or anywhere downstream of Upper Klamath Lake.

Comment L.9.2-3: Siskiyou County claims that the populations of federally endangered Lost River sucker and shortnose sucker in the reservoirs, which will be extirpated, are sink populations is conjecture and ignores the value of spatial diversity as a means to

reduce the population-level impacts of stochastic events. KRRC refused to conduct monitoring for juvenile fish and lacks a basis in science for the contention that the reservoir populations do not reproduce. The EIS analysis for the Lost River sucker (*Deltistes luxatus*) and shortnose sucker (*Chasmistes brevirostris*) species concludes that dam removal would only impact “sink” populations in the reservoirs downstream of Keno Dam. This was done without adequate justification (e.g., genetics, current population structure). For instance, the sucker populations downstream of Keno Dam should be denoted as metapopulations that have broken off from the main populations upstream to form new groups in the lower river, thus expanding the range of the endangered populations. This is a natural phenomenon in populations that are not closed, and individuals can freely immigrate or emigrate from the main population. FWS denies that metapopulation theory applies to the listed Klamath sucker populations, stating that metapopulations are subpopulations that are a specific portion or part of a larger population that may differ substantially in density and demographics thus, allowing for different contributions to the structure and persistence of the overall population (Schindler et al., 2015). Migrating fish play a critical role in maintaining genetic structure and genetic variation. By moving within connected patches, the migrating fish can contribute to reducing the probability of extinction (Schlosser and Angermeier, 1995; Hanski and Simberloff, 1997). By “rescuing” 600 suckers from J.C. Boyle and Copco No. 1 reservoirs, it seems FWS believes it has done its part to save the listed suckers in the lower reservoir, and FERC staff agrees even though the move will eliminate any benefit that currently exists with the metapopulations to protect the larger population from extinction. Furthermore, FWS states both species have low resiliency. Disregarding Lost River and shortnose suckers downstream of Upper Klamath Lake on the basis of hybridization and categorization of these as a “sink” population reduces resiliency of these species and their ability to rebound after catastrophic events. Therefore, FWS should update information on the degree of hybridization in these species downstream of Upper Klamath Lake prior to establishing them as a “sink” population. In addition, the County has reviewed the FWS BiOp that was released on December 22, 2021, and provided an appendix with its comments on the BiOp.

Response: While we agree with your description of the importance of metapopulations in maintaining genetic structure and genetic variation in fish populations, FWS is the federal agency responsible for the management of ESA-listed sucker species in the Klamath River Basin. We note that FWS filed its BiOp for this project on October 18, 2021, and it can be accessed via FERC’s eLibrary. Our analysis of effects relies on the best available information on Lost River and shortnose suckers in the reservoirs, and we believe that we do a thorough job of disclosing any effects on these species. We believe our analysis is adequate.

Comment L.9.2-4: Siskiyou County notes that KRRC offered to capture 300 listed suckers prior to drawdown in each of the J.C. Boyle and Copco No. 1 Reservoirs and transport them upstream. According to KRRC estimates, this equates to 11 to 35 percent of the listed suckers in J.C. Boyle and 8 to 22 percent of the Copco No. 1 listed suckers

(draft EIS, p. 2-16). The County further indicates that this action will result in 557 to 2,457 endangered suckers in J.C. Boyle Reservoir and 557 to 3,450 endangered suckers in Copco No. 1 Reservoir being left to perish in the dam removal process. This huge loss to the population, coupled with the periodic die-offs that occur in Upper Klamath Lake, eliminates a potential recovery population downstream that could support sustaining a population already in peril. For example, Dowling, et al. 2016, determined that the tetraploid genome that exists between Klamath small-scale, shortnose and Lost River suckers may allow for retention of unaltered copies of important, co-evolved gene complexes and facilitate existence of both of the syngameon (genetic material moving among each of the three species at various times in history) and its constituent species. Reciprocal transfer of the LUX haplotypes to shortnose and small-scale suckers is more frequent than with Lost River suckers, but it is still uncommon (4 to 14.8 percent). This argues against eliminating future potential genetic material from the population.

Response: The draft EIS acknowledges that there would be short-term, significant, unavoidable, adverse effects from dam removal and conversion of the reservoir areas to a free-flowing river, which would likely cause mortality to the suckers residing in the project reservoirs. However, the suckers in the reservoirs do not reproduce or contribute to the recovery of the Lost River sucker or shortnose sucker. FWS's analysis found that the dam removal and reservoir drawdown would cause the mortality of approximately 6 percent of the range-wide adult population of the Lost River sucker and shortnose sucker and concludes that the effects of this anticipated take are not likely to jeopardize the continued existence of the Lost River and shortnose sucker. Furthermore, KRRC would perform sucker salvage and translocation, and FWS estimates that approximately 600 suckers can be captured from J.C. Boyle, Copco No. 1, and Iron Gate Reservoirs. Salvaged suckers would then be translocated to either the Klamath National Fish Hatchery, the Klamath Tribes' sucker rearing facility east of Chiloquin, Oregon, or to the Tule Lake National Wildlife Refuge. These sites would provide FWS with management flexibility concerning Lost River and shortnose suckers and ensure that the genetic diversity of the species is maintained.

Comment L.9.2-5: Oregon Wild is concerned about hybridization between the two sucker species and urges the agencies to require genetic testing. If the fish are not unduly hybridized, then Oregon Wild recommends undertaking a more aggressive fish salvage effort and indicates that the locations for releasing these salvaged fish must be carefully considered in advance.

Response: Comment noted. It is our understanding that KRRC and FWS are currently reviewing recent genetic information collected from suckers in the project area and are carefully weighing options to maximize the number of suckers captured during the salvage effort and to inform where these salvaged fish would be released.

L.9.3 Coho Salmon

Comment L.9.3-1: FWS comments that table 3.4-2 of the draft EIS on fish species collected in the Upper and Lower Klamath River lists coho salmon as Resident (R) and

Anadromous (A) downstream of the Iron Gate Dam. This appears to be an error, as Iron Gate Dam is the lowest impassable dam on the Klamath River. FWS suggests revising table 3.4-2 to reflect coho salmon as “Anadromous (A)” only or cite the documentation of a resident coho salmon population. In addition, Appendix F—Literature Cited (p. F-26) includes a reference to March 29, 2019, as the date for issuance of FWS 2020 BiOp on Klamath Project Operations. This date is incorrect. The correct completion and transmittal date for the FWS 2020 BO is April 10, 2020.

Response: We revised table 3.4-2 in the final EIS to reflect coho salmon as anadromous “A” only. We updated the FWS (2019a) reference to FWS (2020a) to reflect the date of the revised 2020 BiOp and updated the other FWS (2019a) and FWS (2020a) references accordingly.

L.9.4 Bull Trout

Comment L.9.4-1: FWS comments that the decision statement for the proposed action effects on bull trout is incorrect in the draft EIS and should state that the proposed action is likely to adversely affect bull trout based on FWS’s BiOp. Also, FWS suggests that the draft EIS (p. 3-367, first paragraph) only describes adverse effects from the proposed action but not beneficial effects, such as marine derived nutrients.

Response: Comment noted. We have changed our ESA determination for the effects of the proposed action on bull trout in the final EIS to be consistent with the FWS BiOp. We also revised the EIS to discuss the beneficial and adverse effects of the proposed action on bull trout.

L.9.5 Freshwater Mussels

Comment L.9.5-1: California DFW, FWS, KRRC, Oregon Wild, the Yurok Tribe, and Karuk Tribe express concerns over freshwater mussel translocation with respect to unfamiliarity with success of translocation and potential disease risks. These concerns center on the risks associated with translocation, including the potential introduction and spread of disease, potential to displace or otherwise impact existing mussels, the likelihood of limited or negligible success through translocation, and that there are no anticipated significant short-term impacts on western ridged mussel and western pearlshell mussel of which a translocation effort would primarily focus on. Through implementation of the proposed action, freshwater mussels are expected to benefit in the long term from the increase in available habitat and anadromous. Based on the Technical Working Group discussions this measure does not have the support of resource agencies and request that this staff recommendation is removed from the final EIS. Comments regarding freshwater mussels by the Karuk Tribe are presented in the following.

Response: We no longer recommend the measure to translocate freshwater mussels. In its comments on the draft EIS, KRRC states it will request removal of this measure in the amended California Water Board WQC. In their comments on the draft EIS, California DFW, Interior, the Yurok Tribe and Karuk Tribe all agreed with removal of this measure.

L.9.6 Oregon Spotted Frog

Comment L.9.6-1: FWS recommends removing any mention of an adverse effect to the Oregon spotted frog in the final EIS. Both the BA and the FWS BiOp determined that there would be no effect on critical habitat for this species, and the proposed action will have insignificant and discountable effects on the Oregon spotted frog.

Response: We edited the EIS as suggested.

L.9.7 Foothill Yellow-Legged Frog

Comment L.9.7-1: FWS comments that there is suitable habitat for the foothill yellow-legged frogs in the project area (draft EIS, p. E-35). Therefore, the species needs to be included in the Amphibian and Reptile Plan.

Response: The foothill yellow-legged frog is known to inhabit the lower reaches of the Klamath River and its tributaries. Due to the absence of suitable habitats and the lack of frog observations in recent surveys in areas surrounding project dams and reservoirs, reservoir drawdown and dam removal are not likely to affect foothill yellow-legged frogs in the hydroelectric reach. The species' occurrence in the project area and potential project effects are detailed in Appendix B of the BA. This includes potential adverse impacts during the drawdown year due to SSCs in the lower Klamath River; however, in the long term, the proposed action is expected to benefit foothill yellow-legged frogs. The State of California WQC conditions specify that the Amphibian and Reptile Plan "may include" foothill yellow-legged frog but does not require its inclusion. We find that KRRC has provided adequate protections in its proposed TRMPs for all amphibians and reptiles, which provides for documenting incidental observations during visual encounter surveys for other protected species, consultation with state wildlife management agencies to identify and map suitable relocation habitat prior to the start of reservoir draining activities, proposed relocation actions, and measures to avoid amphibian entrapment within project work areas.

L.9.8 Northern Spotted Owl

Comment L.9.8-1: FWS notes that the draft EIS states (for the northern spotted owl, "...though KRRC may thus potentially adversely modify or destroy the species' critical habitat, removal of a relatively small number of trees would not influence forest conditions with respect to the species' life history." The project will not adversely modify or destroy the species' critical habitat. The analysis of effects in the BA (and the FWS BiOp/Letter of Concurrence) determined that the project may affect, but is not likely to adversely affect, critical habitat for the northern spotted owl. The statement in the draft EIS regarding adverse modification of critical habitat is not correct or in accordance with the determination. The project will affect 0.4 acres of dispersal habitat that is designated as critical habitat for the northern spotted owl. FWS also notes that there are no adverse effects that will occur to northern spotted owl, and no nesting, roosting or foraging habitat will be affected, so the statements need modification to be consistent with the BA and the BiOp/Letter of Concurrence.

FWS requests that the terminology be removed from the table regarding adverse effects to northern spotted owl (p. 4-18, draft EIS) because there will not be any adverse effects. The text should state “Insignificant effect” because of the removal of 0.4 acres of dispersal habitat. No suitable nesting, roosting, foraging habitat will be affected by the action.

FWS also recommends changes to the final EIS (p. 2-33) to clarify that additional protective measures would be necessary for nesting northern spotted owls detected during surveys, rather than any individual owl, in the event that helicopter flight paths cannot avoid the areas that support nesting, roosting, and foraging habitat; and to clarify that measures would be developed in consultation with FWS rather than California DFW and Oregon DFW.

Response: We edited the text as suggested by FWS.

L.9.9 Gray Wolf

Comment L.9.9-1: FWS comments that under separate cover, it notified FERC that the delisting rule was vacated and remanded on February 10, 2022.

Response: We revised the final EIS to address this change. On April 6, 2022, FWS notified the Commission that the January 2021 delisting of the gray wolf (*Canis lupus*) was remanded and vacated by the Northern District Court of California, and protections under the ESA, as federally endangered, were restored to this species. On May 17, 2022, we requested reinitiation of consultation with FWS, specific to the effects of the project on gray wolf. We concluded that the proposed action is not expected to have an effect on gray wolves; however, given the transient nature of the animal, it may voluntarily enter the proposed action activity areas, thus creating the opportunity for potential effects. Additionally, KRRC’s TWMP, which contains several monitoring and minimization measures, would reduce any potential effects of the proposed action on the gray wolf to an insignificant level. For these reasons, we concluded that the proposed action “may affect, but is not likely to adversely affect” the gray wolf. On June 7, 2022, FWS concurred with our determination for gray wolf and concluded our reinitiation of consultation for this species.

L.9.10 Southern Resident Killer Whales

Comment L.9.10-1: Orca Salmon Alliance requests that staff clarify in the draft EIS the importance of Chinook salmon to the diet of the Southern Resident killer whales. Although the draft EIS refers to Chinook salmon generally as the primary prey of the Southern Resident killer whale population, it should more explicitly explain the importance of Chinook salmon for the orcas and include the approximate percentage of Chinook salmon in the orcas’ diet year-round, which is available in recent publications and reports from NMFS. Chinook salmon ranges from approximately 50 percent of Southern Resident killer whale diet in the fall to 70-80 percent in the mid-winter and early spring to nearly 100 percent in the spring. Chinook salmon has been identified in over 65 percent of fecal samples collected in coastal waters. The draft EIS states that

Klamath salmon “only” contribute approximately 2.3 percent of the prey base for Southern Resident killer whales. This does not consider the extremely low current abundance of Klamath River salmon compared to historic numbers, which affects the likelihood that Klamath salmon will be collected in prey and fecal samples, or the potential increase in the contribution of Klamath salmon to Southern Resident orca diet following dam removal. According to NMFS, Area 4 of the orcas’ critical habitat, including the mouth of the Klamath River, has two of the top 10 identified priority prey stocks for the Southern Resident orcas: Klamath River and Central Valley Chinook, and NMFS estimates that Klamath River Chinook salmon may be as much as 45 percent of local salmon abundance available to Southern Residents in this area. Klamath Basin Chinook salmon currently contribute a small but essential portion of the Southern Residents’ diet, and most importantly, provide a foraging opportunity around the mouth of the Klamath River. The draft EIS should include an analysis of the increase in Klamath Chinook salmon in the orcas’ diet following dam removal and salmon recovery. Including this information emphasizes the dependence of the orcas on Chinook salmon, the importance of Klamath Basin Chinook salmon, and the urgency to increase Chinook salmon prey for the orcas.

Response: We have added text to the final EIS to provide more detail on the extent to which the Southern Resident killer whale population depends on Chinook salmon (see also final EIS section 3.6.3, *Southern Resident DPS Killer Whale*).

Comment L.9.10-2: Orca Salmon Alliance states that all three pods in the Southern Resident killer whale community use coastal waters year-round, with highest use during the winter and early spring months. Data compiled from passive acoustic monitoring, satellite tagging, opportunistic sightings, and boat-based surveys show areas of “high occurrence” include the mouth of the Columbia River and the northern California coast and indicate that the movements of Southern Resident killer whales 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. The area including the mouth of the Klamath River (“Area 4” – from the Oregon/California border to Cape Mendocino, CA) is an important foraging habitat for the orcas, with “prey resources” (quantity, quality, and availability) recognized as the area’s primary essential feature. However, the draft EIS contains conflicting information on the range and habitat of Southern Resident killer whales, between section 3.6.2.4, which directly discusses the Southern Residents, and in table 3.6-1, which summarizes information about federally listed species, as well as within the text of the table. The draft EIS first states that the Southern Resident orcas “occur primarily in the inland waters of Washington State and southern Vancouver Island,” citing the 2008 NMFS Recovery Plan, but then notes the substantial new information available from the recent expansion of coastal critical habitat, which establishes their regular, seasonal use of West Coast waters from “late fall through spring”—a significant amount of time. The draft EIS should cite the Biological Report that accompanied this critical habitat expansion and update distribution and habitat use information in section 3.6.2.4 and table 3.6-1: the Southern Residents spend

more than half the year in the coastal waters, and are regular, seasonal inhabitants of the area.

Response: We understand that the first sentence describing Southern Resident killer whale range and habitat in table 3.6-1 was misleading, and more recent research has improved understanding of their range and habitat preferences. We have revised the text in table 3.6-1 and the related text in section 3.6.2.4.

Comment L.9.10-3: Orca Salmon Alliance comments that, although the draft EIS describes general life history information about orcas, it should add specific details for the Southern Resident population, which, due to their endangered status, no longer reflect historic orca demographics. This population has shown concerning health metrics like reductions in growth rates, adult length, social cohesion, fecundity, and overall survival, as well as impaired individual body condition. Perhaps most notably, a high rate of pregnancy failure in the population has been linked to nutritional stress, with 69 percent of detected pregnancies ultimately unsuccessful, severely impacting the population's ability to recover. These issues have shown a strong correlation between coastwide Chinook abundance and the health of the Southern Residents. Orca Salmon Alliance states that the draft EIS provides a brief overview of the historic population census of the Southern Resident population and should also note historic, pre-exploitation estimates of abundance levels. In addition, the reference for the five-year ESA review should be updated from 2016 to 2022 to reflect the most current status review.

Response: We added additional information and supporting citations to provide further evidence about the importance of Chinook salmon in Southern Resident killer whales' diets. We added a footnote to explain why the Klamath River was found to provide a small percentage of Chinook salmon in Southern Resident killer whales' prey base and revised the text to clarify the importance of the Klamath River for Chinook salmon prey.

The connection between Southern Resident killer whales' health and Chinook salmon populations is more nuanced than was described. In recent years, the relationship between Chinook salmon abundance and Southern Resident killer whale demographic rates has weakened (see section V, B-2 of NMFS, 2021). We have added a reference to this in the final EIS. We also updated the citation for the latest Southern Resident killer whale five-year review.

Comment L.9.10-4: Wild Orca comments that several of the articles referenced in the draft EIS are out of date and suggests incorporating data from the following articles in the final EIS:

- The Southern Resident killer whale ESA five-year review completed in 2021 instead of 2016.
- Endangered predators and endangered prey: Seasonal diet of Southern Resident killer whales. (Hanson et al. 2021). ("Understanding diet is critical for conservation of endangered predators." "Southern Resident killer whales were

encountered on 156 days between October and May from 2004 to 2017 in three areas of the Salish Sea (Puget Sound: 108 days, Juan de Fuca Strait/ San Juan Islands (JdF/SJI, 9 days), and northern Georgia Strait (NGS, 3 days), and in outer coast waters of Washington, Oregon, and California (36 days).” “ Insufficient prey has been identified as a factor limiting their recovery, so a clear understanding of their seasonal diet is a high conservation priority.”)

- A cumulative effects model for population trajectories of resident killer whales in the Northeast Pacific (Murray et al. 2021). (A “cumulative model incorporating all threats predicted demographic rates closest to those observed for both populations.” “The cumulative effects population viability analysis model projected a mean increase in the modelled Northern Resident Killer Whale population to the carrying capacity within 25 years. In contrast, the mean modelled Southern Resident killer whale population trajectory was projected to decline under current conditions, with a 26% probability of population extinction, and in those projections, extinction was estimated to occur after 86 (\pm 11) years. Our results highlight the importance of considering the collective impact of multiple threats to imperiled species and the necessity of testing management and mitigation measures aimed at recovery using a holistic, validated model.”).

Response: We also updated the citation for the latest Southern Resident killer whales five-year review and added reference to Hanson et al. (2021) and related text regarding Southern Resident killer whale range and prey base. We have added reference to Murray et al. (2021)

L.9.11 Special Status Species

Comment L.9.11-1: Interior comments that, per Executive Order 13186, FWS Birds of Conservation Concern (BCC) should be included as special status species (pp. 3-332 through 3-337). The following BCC species will likely be identified if an IPaC species report (<https://ipac.ecosphere.fws.gov/>) is generated by staff. We recommend including all these species in table 3.5-9.

- Black Tern: Already identified as BCC in table 3.5-9
- Cassin’s Finch: Consider for addition to table 3.5-9 as BCC
- Evening Grosbeak: Consider for addition to table 3.5-9 as BCC
- Lewis’ Woodpecker: Consider for addition to table 3.5-9 as BCC
- Oak Titmouse: Consider for addition to table 3.5-9 as BCC
- Olive-sided Flycatcher: Already identified as BCC in table 3.5-9
- Rufous Hummingbird: Consider for addition to table 3.5-9 as BCC
- Willet: Consider for addition to table 3.5-9 as BCC
- Wrentit: Consider for addition to table 3.5-9 as BCC

Response: We revised table 3.5-6 in the final EIS to address this comment.

Comment L.9.11-2: SCWUA commented that the canyon environment provides significant biome habitats to over 26 unique species. These species are specific to the lakeside environment behind Iron Gate and Copco No. 1 hydro facilities. SCWUA states that the draft EIS does not consider this unique collection of biomes.

Response: The draft EIS describes numerous special status species that have been documented along the existing reservoir shorelines and within areas proposed for disturbance during dam removal activities. Thus, the effects analysis acknowledges that the proposed action may have short-term, significant, unavoidable, adverse effects on special status plants. These effects would be minimized by avoiding special status plant species sites, if feasible, and salvaging and transplanting special status plant species.

L.9.12 Wildlife Habitat and Migratory Birds

Comment L.9.12-1: Several opponents to dam removal note that the proposed action would result in adverse effects on wildlife and/or the critical habitats of species, such as the western pond turtle, bald and golden eagles, osprey, pelicans, sucker fish, mussels, and clams, that rely on warm lake water. One commenter suggests that dam removal could be considered illegal by FWS under the Migratory Bird Treaty Act (MBTA) because it could result in the incidental take of migratory birds. In contrast, proponents of dam removal note ecosystem functioning would improve because the natural flow regime in the river would be restored with many associated benefits to fish and wildlife resources.

Response: Loss of the reservoirs would have the greatest effect on species that are dependent on the existing reservoirs for breeding, shelter, or stopover habitat. Aquatic and semi-aquatic reptiles and amphibians, wading birds, and waterfowl would be most affected. Depending on the timing of reservoir drawdown, these species would experience short-term, significant, and unavoidable adverse effects associated with habitat loss and the need to relocate to suitable habitat. With the presence of similar lentic habitat in the region, many affected species would be able to relocate to suitable habitat near the project area. Over the long term, restoration of a free-flowing Klamath River would continue to provide habitat for many of these species. Furthermore, restoration of the reservoir footprints to upland habitat would also provide additional habitat for upland species including terrestrial reptiles, small mammals, big game species, and upland nesting birds (see sections 3.5.3.6, 3.5.3.7, and 3.5.3.8). The TWMP proposes multiple measures to reduce the potential for adverse effects on nesting birds, including bald eagles and ospreys; reptiles and amphibians, including western pond turtles; and bats. FWS was consulted during preparation of the TWMP and has not commented on additional measures needed to protect migratory birds.

Although loss of lentic habitat for some migratory birds would have significant, long-term, adverse effects, migratory species would be able to relocate and are not adversely “taken” resulting in the injury or death because of the proposed action. Incidental take under the MBTA is not prohibited, although incidental take can violate the MBTA to the

extent consistent with the statute and judicial precedent. KRRC's TRMPs include measures to survey for active migratory bird nests and avoid activities near active nests. These measures would reduce potential effects on migratory birds.

L.10 RECREATION

L.10.1 Loss of Flatwater Recreation and Camping Opportunities

Comment L.10.1-1: Several opponents to dam removal are concerned that dam removal would eliminate reservoir-based recreation activities. SCWUA notes that the lake system behind the dams provides significant recreation and fishing opportunities and a beautiful setting for those who enjoy the scenery and the variety of flora and fauna that the reservoirs support. Siskiyou County comments that the staff preparing the EIS seem committed to kayaks and shooting rapids as a substitute for the tranquility of the current environment, and that the permanent loss of reservoir-based recreation activities caused by dam removal should be considered a significant impact requiring mitigation.

Response: In the draft EIS, we note that several lakes and reservoirs in the region provide similar opportunities for recreation in an uncrowded setting. Many of these lakes and reservoirs have low to moderate recreation use and would be able to accommodate additional recreation users within the capacity of their facilities. As a result, while the loss of the project reservoirs for lake-based recreational activities would affect accessibility for these activities to local users, the effect on regional recreation would be minor. We identified the removal of the reservoirs as a permanent, significant, unavoidable, adverse effect on flatwater recreation in table 4-1.

Comment L.10.1-2: Siskiyou County comments that 13 existing recreation sites, including day use, boat launches, and campgrounds will be removed and one relocated. It notes that five areas will be constructed along the new river's edge, but none of these are designed for camping, which eliminates an important recreational use in the area and will subsequently reduce cash flow in the local economy. The County also notes that this will cause a loss of low-cost outdoor recreation for communities in proximity to the existing reservoirs. The County needs to be assured that the Recreation Facilities Plan is implemented and notes that the project documentation does not address how proposed new recreational facilities will be maintained. Further, it is not clear that the potential new opportunities will properly compensate for the lost opportunities and confirm the plan serves the needs of Siskiyou County residents (and environmental justice communities in particular).

Response: Any decision to create new camping opportunities would be made by whomever receives title to the land post-surrender. Forty-four developed and informal campsites at five locations adjacent to Iron Gate Reservoir would be eliminated. Within 25 miles of the project reservoirs, there are 1,044 developed campsites at other recreation sites. There are an additional 206 developed campsites within 26 to 50 miles of the project reservoirs, for a total of 1,250 developed campsites within 50 miles of the project reservoirs (see table 3.7-5). As noted above, KRRC has agreed to specify an

approach to secure funding for the construction of the access sites described in the Recreation Facilities Plan.

L.10.2 Riverine Recreation and Access Improvements

Comment L.10.2-1: American Whitewater comments that the restoration of whitewater runs presently inundated is inadequately referenced as a benefit and not included in table 3.7-6. American Whitewater notes that there will be substantial water quality benefits for recreational river users who enjoy sections of the Klamath River downstream from Iron Gate Dam, and states that this recreational benefit should be recognized in this section of the final EIS. In addition, American Whitewater states that it remains committed to support efforts to further refine the Recreation Facilities Plan.

Response: In the draft EIS, we conclude that river recreation opportunities are expected to increase substantially in the reservoir and bypassed reaches, benefiting regional outfitters and recreation boaters, and that this would result in a permanent, beneficial effect for whitewater boating in these reaches. We also conclude that algae blooms would not occur in the colder, faster riverine environment that would result from dam removals. We modified section 3.7.3.2 in the final EIS to note the recreational benefit of the proposed action from improved water quality downstream of Iron Gate Dam.

Comment L.10.2-2: NPS states that the proposed action will change existing recreation opportunities, including affecting whitewater boating recreation in the Hell's Corner/Upper Klamath due to the change in flow regime post dam removal. The preferred alternative calls for removing recreational barriers in the J.C. Boyle and Ward's Canyon bypass reaches and funding strategically placed river access sites in the former hydroelectric reaches. Providing access to the existing and new whitewater boating reach will help mitigate impacts on the boating community and will benefit recreationists and the recreation-based economy of the surrounding communities. Providing well-designed sites will also reduce environmental impacts by directing visitors to appropriate places and discouraging user-created sites. NPS understands that KRRC has agreed to an approach to tree removal that will support boating but also consider potential impacts on fish habitat and cultural resources and supports this approach.

Response: Comment noted.

Comment L.10.2-3: California DFW supports FERC staff's recommendation to develop a plan for funding the construction and maintenance of the potential access sites described in the Recreation Facilities Plan. KRRC is working with the California DFW, Oregon DFW, Tribes, other resource agencies, and recreation groups to secure funding for construction and maintenance of these access sites. Additionally, grants may be available to KRRC, Tribes, and other stakeholders once the surrender order is approved.

Response: Thank you for the update on consultation that is underway to secure funding for construction and maintenance of river access sites. We updated the final EIS to reflect these updates.

Comment L.10.2-4: Upper Klamath Outfitters Association and American Whitewater support the recommended staff measure to modify the Recreation Facilities Plan to include developing a plan for funding the construction and maintenance of the potential access sites to include, at a minimum, development of the planned access points that are within the existing reservoir footprints.

Response: KRRC has agreed to modify the plan to include these recommendations and we note this update in the final EIS.

Comment L.10.2-5: KRRC states that, while the draft EIS acknowledges that KRRC's Recreation Facilities Plan provides for future recreation benefits, it does not appear to acknowledge the recreational benefit conferred by KRRC's in-kind contribution of recreational lands. These lands are currently under private ownership and will become available for public recreational purposes as a direct consequence of the proposed action. The transferred lands will be subject to restrictive covenants that ensure that these lands will be available for fish and wildlife, public education, and public recreational access in perpetuity. The analysis of recreational impacts in the draft EIS should recognize and account for this contribution to potential recreation sites, amenities, and river access locations.

Response: Determining the amount of recreational benefit of this land is uncertain. The future landowner and the restrictive covenants that may be placed on this land upon ownership transfer are not currently known. Because future use of these lands is unknown, we cannot provide an analysis of recreation impacts to these lands in the EIS.

Comment L.10.2-6: Shasta Indian Nation notes that KRRC's Recreation Facilities Plan would be developed with the applicable State parties (p. 3-401, draft EIS). It is the understanding of the Shasta Indian Nation that KRRC is also committed to developing the Recreation Facilities Plan with affected Tribes, especially the Shasta Indian Nation within the project's California Area of Potential Effect (APE). The Shasta Indian Nation indicates that the language of the draft EIS should clarify these commitments.

Response: We agree that consultation between KRRC and applicable parties, including Native American Tribes should be ongoing regarding recreational developments. We recommend that KRRC revises its Recreation Facilities Plan in consultation with agencies, Tribes, and other stakeholders. We have modified the final EIS accordingly.

Comment L.10.2-7: Upper Klamath Outfitters Association has the following comments and additions to the staff recommendations regarding post-dam recreation access:

Upper Klamath Outfitters Association and other stakeholders have identified the following sites for river access post dam removal:

- Keno: Existing and needs modest improvements
- Highway 66 - Pioneer Park West: Existing and needs modest improvements
- Moonshine Falls Below J C Boyle Dam: Existing but undeveloped - needs improvements.

- Spring Island: Existing (The adjacent J.C. Boyle Powerhouse site would also be an excellent location for river access.)
- Stateline: Existing
- Access 6: Existing
- Access 1: Existing
- Copco Valley: Proposed - this access will be critical for whitewater rafting outfitters and boaters.
- Fall Creek (or Copco 2 Powerhouse Site): Fall Creek is existing and needs modest improvement. Copco 2 Powerhouse Site would be new. Access in this area is also critical for whitewater rafting outfitters and boaters.
- Iron Gate: Existing

In addition, with regard to Ward's Canyon, there is some confusion about what stakeholders have recommended. Stakeholders recommend above Copco No. 1 Dam as the access, with Copco No. 2 Dam as an alternative depending on the character of the river following dam removal. Stakeholders also recommend retaining Fall Creek access instead of KRRC's initial proposal to construct a new access at Copco No. 1 Powerhouse. Table 3.7-7 should be modified to reflect these stakeholder recommendations.

Response: Comment noted. We revised table 3.7-7 to identify that the recommended access for Ward's Canyon is above Copco No. 1 Dam, with an alternate site at Copco No. 2 Dam depending on river characteristics following dam removal. We also added the Fall Creek access site to table 3.7-7 for the Iron Gate reach rather than constructing a new access site at the Copco Powerhouse.

Comment L.10.2-8: Upper Klamath Outfitters Association suggests a two-phased approach to develop the Copco Valley Access to address uncertainty regarding where the river channel will be established. The Association suggests building the planned access road partway during the summer of deconstruction with a temporary gravel road close enough to the channel that boats can be carried in and out, and then leaving that temporary road for two winters while the channel becomes established before permanently finishing the access. The Association indicates that this process could allow the river to find its natural channel while getting people on the water and providing a huge value to the public seeing the early stages of post dam restoration. The Association notes that it still has guests talking about what they saw on the stretch of the Rogue River above the Gold Ray Dam site right after removal. It is critical that the new river access points (or temporary ones) be built during the year of deconstruction and be usable in the spring after deconstruction. A similar approach was taken with the removal of Condit Dam (P-2342) on the White Salmon River where temporary access and then permanent access was provided as decommissioning and restoration work proceeded to avoid interruption of outfitting and guiding businesses operating on the river. Upper Klamath Outfitters Association strongly believes that the plan for construction and maintenance of

facilities should include a schedule for implementation and coordination with other removal restoration activities and that contingencies should be included to assure access at the new access sites, even if facilities are temporary in nature by May 1 after dam removal. This would allow outfitters to survive the transition and help outfitters show the general public the benefits of dam removal and the process of post-dam restoration and of the river healing itself. Allowing the public to see this process is critical to future projects like this one. Upper Klamath Outfitters Association believes that it will be cheaper and more efficient to coordinate the construction of access sites with the removal of dams and hydropower infrastructure.

Response: In its comments on the draft EIS, KRRC agreed to modify the Recreation Facilities Plan to include the construction of river access within the existing reservoir footprints of J.C. Boyle and Copco No. 1 Reservoirs and to consult with Upper Klamath Outfitters Association regarding the schedule for construction activities. Upper Klamath Outfitters Association's recommendations regarding the timing of the construction of the access points should be considered during this consultation.

Comment L.10.2-9: The Shasta Indian Nation notes that the names given to the recreational sites in figure 3.7-7 (p. 3-422, draft EIS) in the vicinity of Copco No. 1 Reservoir must be the subject of additional consultation with the Shasta Indian Nation. While Kitty Ward was a Tribal member, Shasta Indian Nation seeks to use the original names for this land in subsequent land signage and identification.

Response: We have reviewed the Recreation Facilities Plan and find that it is unclear whether the KRRC proposes to include the Shasta Indian Nation in consultations regarding the naming of future recreation sites. Therefore, we modified the staff recommendation to include the Shasta Indian Nation in this consultation. This recommendation is addressed in section 3.7.4 of the EIS.

Comment L.10.2-10: American Whitewater notes that staff recommendations include modifying the FMP to address the "lack of any proposed river access boat ramps within the Copco No. 1 Reservoir area." American Whitewater suggests that this need could be addressed with the development of the Copco Valley River Access Site and urges KRRC and FERC staff to identify opportunities for river access sites to provide access for recreational river users as well as for fire management. American Whitewater believes this strategy would address numerous public comments regarding the importance of adequately addressing fire management needs.

Response: We modified the EIS to reflect KRRC's agreement to develop river access within the existing reservoir footprints of J.C. Boyle and Copco No. 1 Reservoirs, which includes the Copco Valley River Access Site. Furthermore, KRRC has agreed to modify the FMP to include development of river access points that act as dual purpose for water access for firefighting and recreational users within the current Copco No. 1 Reservoir footprint at the Copco Valley site.

Comment L.10.2-11: American Whitewater states that while it agrees that “developing [new river recreation] sites during deconstruction and restoration activities would avoid additional ground disturbance and associated adverse effects that would occur if their development was deferred until after license surrender,” it is also important to note the significant cost savings and project efficiency that could be realized if deconstruction of the hydroelectric project and site preparation for future recreation sites is coordinated. This benefit should be recognized in the final EIS.

Response: We have added text in sections 2.1.2.13 and 3.7.3.2 of the EIS to address the timing of when site development should occur. We concur that development of the sites in conjunction with deconstruction and restoration activities would likely provide significant cost savings as well as avoid additional ground disturbance and associated adverse effects.

Comment L.10.2-12: American Whitewater strongly supports the recommended staff measure to modify the Recreation Facilities Plan to include consulting with Upper Klamath Outfitters Association to schedule construction activities and access restrictions to minimize adverse effects on whitewater boaters; and to include signage related to recreation site closures in Spanish and Hmong. American Whitewater also supports this measure and asks to be included as a consulting party to represent river runners and the general public.

Response: We have modified the staff recommendation to include American Whitewater in this consultation.

Comment L.10.2-13: Upper Klamath Outfitters Association comments that it strongly supports the recommended staff measure to consult with the Association to determine how construction activities prior to reservoir drawdown and dam removal can be planned and scheduled to maintain reasonable access to the established boat launch and take-out sites to reduce adverse effects on whitewater boaters and outfitters and document how limitations to public access during the whitewater boating season would be minimized. The Association also requests that American Whitewater be included in this consultation because it represents the general boating public and their access to the river.

The Association notes that it did not see a critical component to access during construction work. Outfitters and the boating public will need to be able to access and have peaking flows of 1,500 cfs or above on the Hells Corner stretch of the Upper Klamath throughout the entire boating season in the year before dam removal—specifically between 11 am to 5:30 pm, May 1 through September 30. As FERC has noted, the loss of peaking flows on the Hells Corner stretch would have a negative effect on recreation. Without those flows, access during construction would be useless, and outfitters would have more than a year without the ability to show the public the upper Klamath and without business.

Response: KRRC agreed to modify the Recreation Facilities Plan to include consultation with Upper Klamath Outfitters Association and American Whitewater regarding the

schedule for construction activities. The Associations recommendations regarding the provision of boatable flows should be considered during this consultation.

Comment L.10.2-14: Upper Klamath Outfitters Association agrees that the number of boatable days in the Hells Corner reach will decrease and would “result in a permanent, significant, and unavoidable adverse effect on whitewater river users of the Hell’s Corner reach.” FERC notes that “The greatest demand for recreation boating occurs during the months of July, August, and September.” However, the percentage reduction in that section and in table 3.7-6 do not reflect the effect of reduced flows in those months. The reduction in [whitewater boatable days] in July, August, and September would be far more than 57 percent, and the bulk of acceptable flows post dam removal would occur during times when demand for recreational boating is much lower.

Response: As indicated in the draft EIS, the number of boatable days for whitewater boaters in the Hell’s Corner reach would decrease under the proposed action (table 3.7-6). Under current conditions, hydropower peaking flows provide whitewater boating from April through October. High demand for recreation whitewater boating occurs during July, August, and September, which coincides with the driest period of the year with low natural stream flows. The proposed action would reduce the number of annual boatable days overall (table 3.7-6) and would have a much higher reduction during July, August, and September (36, 88, and 76 percent, respectively). Thus, there would be a permanent, significant, and unavoidable adverse effect on whitewater river users of the Hell’s Corner reach.

L.10.3 Safety

Comment L.10.3-1: KRRC comments that it will remove selected trees in the active channel of the Copco No. 2 bypassed reach to restore the river to a more natural condition.

KRRC proposes to modify the Recreation Facilities Plan to specify that it will remove the selected trees identified in a tree removal plan to be provided to FERC; use such means and methods so as to avoid disturbing the banks (including TCRs) or cause any material sediment discharge in the water column; and post signs and conduct public outreach, in consultation with the State of California, to inform the public of hazardous conditions for boaters in Ward’s Canyon.

NPS comments that it understands that KRRC has agreed to an approach to tree removal that will support boating and considers potential effects on fish habitat and cultural resources; NPS supports this approach.

Response: We modified the EIS to reflect KRRC’s proposal to remove selected trees in the active channel of the Copco No. 2 bypassed reach and to indicate that this measure will be incorporated in a revised Recreation Facilities Plan.

Comment L.10.3-2: American Whitewater strongly supports the recommended staff measure to modify the Recreation Facilities Plan to include removal of remaining construction-related debris in the river at the Sidecast Slide location and encroaching

vegetation overgrowth within the river channel in the Copco No. 2 bypassed reach that create hazardous boating conditions. American Whitewater notes that following publication of the draft EIS, it participated in a site visit (March 29) and engaged in several discussions with Tribes, resource agencies, outfitters, and KRRC to discuss approaches to address the hazardous boating conditions at the Sidecast Slide locations and from encroaching vegetation in the river channel. From these discussions, American Whitewater understands the plan is to fracture selected boulders at Sidecast Slide and remove in-channel hazard trees in Ward's Canyon in a manner that avoids ground disturbance and prevents impacts on cultural resources. American Whitewater also fully supports the retention of Ponderosa pine (*Pinus ponderosa*). These conifers, which are of high habitat value and cultural importance to Tribes, are not present in the active channel but located on the riparian terrace; they do not represent a safety hazard and are not the subject of concern for river runners. Focusing on the in-channel hazard trees (hardwood species) that will die following dam removal will avoid impacts on fisheries and riparian habitat as well as cultural resources. American Whitewater appreciates the collaborative approach KRRC has taken to bring parties together for discussions on site and looks forward to continued opportunities to provide input on the restoration plan for Ward's Canyon as it proceeds to implementation. American Whitewater believes the plans for restoration are adequately developed for environmental review to proceed without delay.

Response: Comment noted.

Comment L.10.3-3: KRRC comments with regard to the Sidecast Slide, it will modify the Recreation Facilities Plan to fragment certain boulders in the active channel. These boulders, identified in consultation with interested whitewater organizations, are shown in a technical memorandum included with their comments. KRRC will use appropriate means and methods to break apart these boulders in the pre-drawdown year. KRRC will not disturb or move any boulders outside the active channel, or that might result in slope instability.

Response: We modified the EIS to reflect KRRC's proposal to break apart certain boulders at Sidecast Slide and to indicate that this measure will be incorporated in a revised Recreation Facilities Plan.

Comment L.10.3-4: California DFW agrees with the staff recommendation to remove encroaching vegetation within the river channel in the Copco No. 2 bypassed reach that contributes to hazardous boating conditions for recreational boaters and understands that any tree removal from the Copco No. 2 bypassed reach would occur under the following conditions:

- Only trees within the active river channel would be removed and are already expected to perish after dam removal either by (1) being washed away due to the increase in water volume and return to a more normal flow condition; (2) dying in place due to inundation; or (3) a combination of (1) and (2).

- Trees would be removed by hand crews with trees cut as close to ground level as possible and stump/root structures left intact. Larger trees would be removed by helicopter and used for restoration, where feasible, while smaller trees would be cut into smaller segments for downstream wood recruitment or lopped and scattered and placed in uplands.
- Tree removal is expected to occur prior to the removal of Copco 1 and Iron Gate Dams; therefore, anadromous fish would not be present.
- No listed plant species are expected to occur within the river channel.
- California DFW would confer with KRRC and other interested entities on further measures (e.g., posting signs and conducting public outreach, including signage and outreach to environmental justice communities) to inform the public of hazardous conditions for boaters in the Copco No. 2 bypassed reach.

Response: California DFW’s comment is consistent with the approach and methods outlined in KRRC’s comments. We updated section 3.7.3.2, *River Recreation*, to reflect the new information filed by KRRC.

Comment L.10.3-5: Oregon Wild suggests that removal of wood from the river to benefit recreational boaters be limited and balanced with the need to maintain and restore instream wood. If wood does need to be removed it should be used for ecological purposes, such as adding dead wood habitat in adjacent riparian areas or nearby tributary streams.

Response: We agree that removed instream wood could be used in adjacent riparian areas or nearby tributary streams for habitat improvements as outlined in KRRC’s Reservoir Management Plan, and we expect that KRRC will use this approach.

Comment L.10.3-6: American Whitewater notes that while it agrees that “deferring the removal of encroaching vegetation from the Copco No. 2 bypassed reach would result in additional ground disturbance and have adverse effects on wildlife and recreation users if it were deferred to a later date,” it is additionally important to note that removal once drawdown begins will be extremely difficult. The final EIS should make clear the need to complete this work prior to reservoir drawdown so it can be safely and effectively completed prior to restoration of flows to the river channel.

Response: In its comments on the draft EIS, KRRC agrees to implement the staff-recommended measure to remove selected trees in the active channel of the Copco No. 2 bypassed reach to restore the river to a more natural condition. We anticipate (and recommend) that the tree removal plan specify that removal of the selected trees be completed prior to reservoir drawdown. We have modified the EIS to reflect that KRRC has agreed to implement this measure.

Comment L.10.3-7: Upper Klamath Outfitters Association strongly agrees that “the hazardous boating conditions at the Sidecast Slide location resulted from construction of the project and it would be appropriate to address them during project deconstruction.” It

also agrees that “encroaching vegetation in the river channel is hazardous to whitewater boating and is a direct result of hydroelectric operations of the project and low flows through the bypassed reach.” Upper Klamath Outfitters Association adds that not only are the trees that will be in the active channel post-dam removal (their bases and portions of their trunks underwater most of the year once flows return) dangerous to recreationalists, but they are also completely unnatural and a result of the construction and operation of the dam. These trees will die soon after dam removal, and Upper Klamath Outfitters Association notes that it is not natural for a section of the Klamath River channel to look like an Alder ‘Mangrove swamp’ with rapids for one year post removal and then choked with vertical dead trees for many, many years after that. The Association agrees that “deferring the removal of encroaching vegetation from the Copco No. 2 bypassed reach would “result in additional ground disturbance and have adverse effects on wildlife and recreation users if it were deferred to a later date,” and adds that removal once drawdown begins will be extremely difficult. Upper Klamath Outfitters Association believes that the final EIS should make clear the need to complete this restoration work prior to reservoir drawdown so it can be done safely and effectively prior to restoration of flows to the river channel.

Response: See response to comment L.10.3-6. In its comments, KRRC states that it has agreed to revise the Recreation Facilities Plan to specify an approach.

Comment L.10.3-8: NMFS comments that it has participated in coordination meetings with KRRC, Tribes, and the Upper Klamath Outfitters Association to determine the potential impact of fragmenting selected boulders at the Sidecast Slide site and removing selected trees from the Copco No. 2 bypassed reach. In these conversations, KRRC has agreed to minimize the number of trees removed from the reach and consider re-purposing them in other instream restoration projects. ESA-listed species considered in the NMFS BiOp will not be present during implementation of this action because it is expected to occur prior to dam removal. Additionally, the impacted reach is not designated as critical habitat for listed species considered in the BiOp. Therefore, the implementation of this staff-recommended modification is not expected to modify FERC’s proposed action in a manner that causes an effect on the listed species or critical habitat that was not considered in the BiOp, nor is it expected to meet any of the other criteria that would require reinitiating consultation under 50 C.F.R. 402.16.

Response: Comment noted. We revised section 3.5.3 of the final EIS to reflect NMFS’s finding that implementation of this measure is not expected to modify the proposed action in a manner that causes an effect on the listed species or critical habitat that was not already considered in the BiOp.

Comment L.10.3-9: The BLM Redding Field Office agrees with the inclusion in the proposed action with staff modifications of the removal of trees to protect public safety in the Copco No. 2 bypassed reach (Ward’s Canyon). It is the Redding Field Office’s understanding that KRRC has agreed to a minimalistic approach to tree removal to avoid

significant impacts on fisheries habitat and cultural resources, and the field office is supportive of that approach.

- As discussed in Exhibit B, Construction Management Plan, and Appendix D, Use and Occupancy Plan for BLM Lands, KRRC may remove a limited number of trees located in the river channel to protect the public when navigating the reach. The BLM Redding Field Office agrees with FERC's analysis in section 3.7.3.2 that the removal of in-channel vegetation could minimize hazards to boaters and deferring the removal of hazardous trees until after the completion of the proposed action could result in ground disturbance and safety risk.
- The actions proposed are consistent with the objectives and decisions of the 1993 Redding Resource Management Plan and Record of Decision, which states, that in the Upper Klamath River portion of the BLM Klamath Management Area, the BLM should "improve the condition of riparian vegetation to Class II or better (p. 34)" and "enhance non-motorized recreation" (p. 34). The trees in Ward's Canyon pose a significant impediment to river-based non-motorized recreation. With inundation, the trees will die after dam removal, so removing them before the inundation will improve recreation opportunities while not drastically changing the riparian condition of the area. The impacts for vegetation removal within the project area are adequately analyzed in the draft EIS to allow BLM to understand the impacts caused by removing the trees in Ward's Canyon, and the draft EIS identifies the necessary minimization measures to reduce those impacts

Response: Your concurrence with the proposed action with staff modifications is noted.

L.10.4 Editorial Corrections

Comment L.10.4-1: KRRC notes that tables 2.1-9 and 2.1-10 reference the February 2021 version of management plans. These references should be updated to the December 2021 versions of the plans. The tables contain inaccuracies in terms of the timing of when facilities would be removed and new facility information. This updated information will not alter the effects analysis.

Response: We updated references to KRRC's December management plans and any information contained therein in the final EIS.

Comment L.10.4-2: American Whitewater comments that Pioneer Park West is listed among the facilities that would be "completely removed," but the subsequent paragraph describes potential construction of a site "tailored to riverine-based recreational use activities." The text should be revised to clarify that this site is proposed for modification and is distinct from the other sites identified for complete removal.

Response: The KRRC Recreation Facilities Plan identifies the removal of the Pioneer Park West site because the site would no longer provide shoreline access after drawdown. The plan also describes the potential development of a new recreation site in an area currently inundated by J.C. Boyle Reservoir. The new site is identified as a potential site because it is on Parcel B land that would be transferred to a new owner and would require

an agreement with the new owner. The Recreation Facilities Plan states that KRRC would develop the site if an implementing agreement is reached with the new owner. In the draft EIS, staff recommend that KRRC develop a plan for funding the construction and maintenance of the potential access sites described in the Recreation Facilities Plan to include, at a minimum, development of the planned access points that are within the existing reservoir footprints. In its comments on the draft EIS, KRRC agreed to implement this recommendation.

Comment L.10.4-3: American Whitewater comments that table 3.7-7 has a number of minor errors that should be corrected as detailed in the following:

- Keno Reach: An existing put-in is available for the Keno Reach at the base of Keno Dam on both river right and river left as correctly referenced in section 2.1.1.3 of the draft EIS. The access is undeveloped but is usable from Keno Camp, a recreation site managed by PacifiCorp on river left, although it is typically not open during the boating season. The Old Wagon Road can be used to access the put-in on river right but requires a high-clearance vehicle. The put-in description should be revised from “None Existing” to “Undeveloped Site at Keno Dam.” A take-out for the Keno Reach is available at Pioneer Park East but requires a paddle across the reservoir. The take-out description should be revised to read “Pioneer Park East.” The recommendation should be revised to read, “Stakeholders recommended improving access at Keno Dam and Pioneer Park and making it available year-round.”
- Big Bend: This reach is currently run during rare spill events, and the put-in does exist and is at the bridge immediately downstream of J.C. Boyle Dam. Stakeholders did recommend improving this access site. The put-in description should be revised from “None Existing” to “Undeveloped Site at Bridge below J.C. Boyle Dam.” The take-out description should be revised to read “Spring Island” and not “Springer Island.”
- Upper Hell’s Corner: The put-in description should be revised to read “Spring Island” and not “Springer Island.”
- Stateline: The recommendation should be revised to state “Stakeholders recommend retaining access at Fishing Access 1-6,” and not just Fishing Access 2-6.
- Ward’s Canyon: Stakeholders recommended the access above Copco 1 Dam, that American Whitewater refers to as Copco Valley Access, as the put-in for this run although American Whitewater acknowledges uncertainty over the future condition of the river; in this case an access at Copco 2 Dam may be desirable. A take-out currently exists at Fall Creek. The take-out description should be revised to read “Fall Creek.” Stakeholders recommended retaining this site and improving it in a manner that restores certain portions of the site and focuses access on the already disturbed portions of the site to avoid cultural impacts as noted in the

footnote. Stakeholders did not recommend Copco 2 Powerhouse as an access point although KRRRC did propose it at one time. The recommendation should be revised to read, “Stakeholders recommend above Copco No.1 Dam, with consideration of a Copco No. 2 Dam dependent on channel profile and character of the river following dam removal, and retaining Fall Creek.” American Whitewater supports the text of the footnote to take into account cultural considerations.

- Iron Gate: The put-in description should be revised from “None Existing” to “Fall Creek.” The recommendation should be revised to read, “Stakeholders recommend improving Fall Creek and Iron Gate Day Use Area.”

Response: Comment noted. We have incorporated these corrections in the final EIS.

L.11 EFFECTS ON FIRE SUPPRESSION

Comment L.11-1: Many opponents to dam removal are concerned that the loss of the Lower Klamath reservoirs would increase the risk of damage by wildfires due to reduced access to water for firefighting and the loss of fire breaks that the reservoirs provide. Several commenters state that the town of Ashland was saved from wildfire by water provided from the reservoirs.

The Jackson County Board of Commissioners comments that the region is under constant threat from catastrophic wildfire, and this project has saved one or more cities from devastating impacts and unparalleled destruction. The water allowed firefighting responders to use helicopters to dip 500 times in one day to bring a major fire threat under control.

The Board also comments that it is imperative to note, on March 23, 2022, the Jackson County Board of Commissioners declared a local disaster due to drought (Board Order No. 27-22), consistent neighboring counties in the region, due to the significant low-water levels in waterways, higher than-normal temperatures, and below-average precipitation in the County and the region.

Response: KRRRC’s FMP would provide improvements for early detection of wildfires, measures to assist property owners with improving defensible space around home sites, and measures to provide additional water source locations for ground-based and aerial fire suppression efforts. Access to open waterbodies for water scooping planes would be reduced, but other bodies of water remain available in the vicinity, and other types of tanker planes and helicopters are also used for aerial firefighting. Access to water for ground-based water trucks would be improved with the construction of new river and stream access sites, and early detection of new fires would be improved with the installation of additional monitored detection system sites (see section 3.8.3.2).

The Forest Service concurred with CAL FIRE’s assessment that the FMP is more than adequate. The Forest Service also noted that while the plan would affect some water dipping sites that have been used during prior fire suppression efforts, it does not

anticipate the FMP would adversely affect the ability to respond to fires quickly and effectively.

Comment L.11-2: An individual comments that, on April 20, two days after recognized public input was to cease and before FERC extended the comment period, KRRC-CAL FIRE submitted its MOU revised Fire Plan. The commenter suggests this is collusion and manipulation and that it is a preview of the intended outcome FERC staff has intentionally set in place, further stating that FERC is knowingly allowing a funding-limited and liability protected single objective biased special interest transitory entity to achieve its objective of destruction at any cost or consequence to the region.

The individual notes that the June 14, 2021, “Supplemental information regarding Fire Management Measures” includes countless physical and logistical conclusions riddled with factual and conjectural errors, as submitted by the River Design (RD) consultant group. The individual states that in trying to marginalize the regional impacts and maximize proposed benefits of destruction, River Design uses ludicrous ‘estimates’ of CAL FIRE response times never realized to the majority of the region’s fire related history. Their own report lists the minimum travel time to the area from I-5 as 45 minutes to an hour, the same I-5 point exactly where the CAL FIRE response team is located.

Response: We analyzed the amended FMP and concluded that it would provide improvements for early detection of wildfires, measures to assist property owners with improving defensible space around home sites, and measures to provide additional water source locations for ground-based and aerial fire suppression efforts. Access to water for ground-based water trucks would be improved with the construction of new river and stream access sites, and early detection of new fires would be improved with the installation of additional monitored detection system sites (see section 3.8.3.2).

The Forest Service concurred with CAL FIRE’s assessment that the FMP is more than adequate. The Forest Service also noted that while the plan would affect some water dipping sites that have been used during prior fire suppression efforts, it does not anticipate the FMP would adversely affect the ability to respond to fires quickly and effectively.

Travel time for fire crews from their base location to locations near the project are not expected to change. However, the time interval between fire initiation and detection/crew dispatch is expected to be reduced with the monitored fire detection camera technology. This reduced time could lead to a significant improvement with initial attack and suppression of fires while they are still relatively small.

KRRC made its amended FMP and MOU with the Oregon Department of Forestry and CAL FIRE available to the public after an agreement was reached among the parties regarding KRRC’s commitments to fire protection.

Comment L.11-3: An individual is concerned that FERC is resting its mitigation premise on a “network of cameras” by claiming “5 to 10 minutes” saved in response time,

dependent upon a 30-minute response which could not normally occur, potentially resulting in a 34% increased suppression of fire. Both River Design and FERC claim the camera network would significantly offset and would likely improve upon protections currently provided by the massive fire barrier and water accessibility of the lakes. The commenter notes that this is easy to say from those with no risk to loss of home or life, with FERC staff claiming “adequate water access” available “within minutes” from Hyatt or Howard Prairie, both of which are currently functionally dry or alternately from shallow Upper Klamath Lake located nearly double the stated “20 miles” from the primary areas at risk.

Response: KRRC has proposed to install additional camera sites that would increase monitoring coverage by 26 percent (from 66 to 92 percent). Furthermore, the ability to triangulate ignition locations by using two or more camera observers, would increase by 40 percent (from 10 to 50 percent). This increase in camera coverage and ability to accurately locate ignition detection times would significantly reduce response time to deploy firefighting resources and increase initial attack effectiveness within the aerial suppression extent despite the loss of the reservoirs. Quick fire ignition detection and reduced resource deployment time would greatly outweigh the small increases in water drafting turnaround time by firefighting equipment, particularly in the early stages of fire suppression. State and federal fire agencies have reviewed the FMP and found it to be sufficient to mitigate for the removal of the project reservoirs. CAL FIRE states that the measures described in the FMP would “not adversely affect CAL FIRE’s ability to provide an adequate and effective firefighting capability in Siskiyou County.” Oregon Department of Forestry concludes that the FMP “analysis of the incremental risks associated with dam removal project is accurate.” The Forest Service concurs with CAL FIRE’s assessment “that the FMP is more than adequate” and “do not anticipate this adversely affecting our ability to quickly and effectively respond to fires.”

Comment L.11-4: An individual commenter notes that the network of cameras has now been reduced to a single triangulation-limited camera placed at the existing Paradise Craggy lookout, placing the majority of intended area well beyond the camera’s effective range of 12.5 miles, a significant portion of which area is also blocked by the intermediate Black Mountain. KRRC has no priority, incentive, or even concern regarding legitimate mitigation for KRRC caused regional private/public loss and suffering beyond their sole objective of ‘approved’ destruction, KRRC’s own liability protection, and their ability to control the narrative relative to signatories’ special interest supporting public perception. The individual states that FERC is ignoring the NEPA requirements for in-depth assessment of detrimental impacts on the human environment, and not only fails to mention the previously publicly redacted ‘allocated’ Local Impact Mitigation Fund and Facilities Defense Fund amounts intrinsic to reasonable assessment in the draft EIS, but does not even mention the Facilities Defense Fund.

Response: We analyzed the amended FMP and concluded that it would provide improvements for early detection of wildfires, measures to assist property owners with improving defensible space around home sites, and measures to provide additional water source locations

for ground-based and aerial fire suppression efforts. Access to water for ground-based water trucks would be improved with the construction of new river and stream access sites, and early detection of new fires would be improved with the installation of additional monitored detection system sites (see section 3.8.3.2).

Throughout the project decommissioning planning process, KRRC has increased its commitment to support federal, state, and local wildfire management agencies, and to provide equipment for wildfire prevention, detection, and suppression. Wildfire monitoring and detection system cameras are proposed that would increase the viewshed or total observer coverage within the 570-square-mile Aerial Suppression Extent from 66 to 92 percent and would increase the ability to triangulate ignition locations (i.e., two or more camera locations) from 10 to 50 percent. The location of dry hydrant sites now includes new sites that have reliable water availability throughout the year, and provide increased accessibility for firefighting vehicles while reducing conflicts with existing vehicle use. KRRC would develop a new river access point for fire trucks at the Copco Valley site. In addition, KRRC has increased the number of dip tanks provided to CAL FIRE from four to eight. KRRC would procure a drum chipper and dump trailer for the Fire Safe Council of Siskiyou County to work with the local communities to improve defensible space around homes and other built structures.

Comment L.11-5: One individual comments that the river will be so low during typical fire season months that dipping from the river for helicopters will not be an option.

Response: An analysis of water availability following removal of the project reservoirs conducted by Reax Engineering for KRRC's FMP (KRRC, 2021i) identifies 137 potential helicopter bucket sites available for dipping, based on an estimated minimum 900 cfs river flow. Reax Engineering concludes that this should be sufficient for aerial wildland firefighting to suppress fires.

Comment L.11-6: Siskiyou County comments that the FMP that is central to the analysis must be further amended to address previously raised stakeholder concerns. As the County has mentioned in past comments, wildfire suppression is critically important for the health and safety of the community and environment. The County asks that prior to the final EIS, the FMP be updated to address questions/concerns related to dry hydrant locations. The draft EIS notes that a previous concern from the County regarding the strategic placement of permanent water resources along the Klamath corridor to support aircraft firefighting activities should be satisfied by KRRC's proposal to identify and maintain two aerial river access points in the reach currently inundated by the reservoirs. However, because these access points are currently underwater, they are likely to be filled (even temporarily) with sediments that may hinder access. In addition, helicopters may not be able to fill their water tanks in the vicinity of the post drawdown-reservoirs because of the canyons that will develop around the rim of the existing reservoirs and downstream. Helicopters require a relatively wide, flat topography in order to draft water safely. As part of the FMP or the EIS, additional adaptive management strategies or mitigation measures should be outlined to provide alternative dipping sites, or alternative

water access (i.e., permanently placed dip tanks) if these identified underwater sites are not sufficient.

Response: We analyzed the amended FMP and concluded that it would provide improvements for early detection of wildfires, measures to assist property owners with improving defensible space around home sites, and measures to provide additional water source locations for ground-based and aerial fire suppression efforts. Access to water for ground-based water trucks would be improved with the construction of new river and stream access sites, and early detection of new fires would be improved with the installation of additional monitored detection system sites (see section 3.8.3.2).

An analysis of water availability following removal of the project reservoirs conducted by Reax Engineering (included as appendix A of the December 2021 FMP) identifies a potential 137 helicopter bucket sites available, based on an estimated minimum 900 cfs river flow. Reax concludes that this should be sufficient to maintain an adequate number of usable dip sites available for suppression forces. Although the depth of some pool areas downstream of Iron Gate Dam may be affected by aggradation caused by the downstream transport of bedload sediments, the extent of aggradation is not expected to extend more than 8 miles downstream from the Iron Gate Dam site.

These existing and new locations for in-river helicopter drafting, coupled with remaining reservoirs in the region and additional measures such as dip tanks, will provide ample water supply for aerial fire suppression. Evaluation of sizes of helicopters used for dipping and firefighting, rotor safety clearance performance criteria for large (Type 1 snorkel) helicopters and smaller, bucket dipping helicopters, and suitable dipping sites, concluded that both large and small helicopters will have safe dip locations in the Klamath River beginning in year 1 of dam removal.

Comment L.11-7: SCWUA comments that, as noted in the EIS, the lakes are important to fire suppression, but according to one observer replaceable. The EIS takes for granted without any substantive investigation that the lakes, which are easily accessed by aircraft, can be supplanted by “dip” holes in the Klamath. The Association further notes that helicopter pilots will attest to the fact that it is extremely unsafe to be dropping in a narrow river channel to pick up water.

Response: KRRC’s proposal to identify and maintain two aerial river access points in the reaches currently inundated by the J.C. Boyle, Copco No. 1, and Iron Gate Reservoirs should be sufficient to minimize travel time for helicopters that use water from the river in this reach for firefighting efforts. Although the depth of some pool areas downstream of Iron Gate Dam may be affected by aggradation caused by the downstream transport of bedload sediments, the extent of aggradation is not expected to extend more than 8 miles downstream from the Iron Gate Dam site. The elimination of Copco No. 1 Reservoir and Iron Gate Reservoir would remove two locations where a specific type of firefighting plane can skim the reservoir surface and refill for aerial wildfire suppression. Removal of the reservoirs would not preclude the use of all planes for wildfire suppression in the area because other types of tanker planes (refilled at air bases) could be used. Water

scooping planes could use other lakes and reservoirs in the region (small water scooping planes require a minimum of 0.75-mile of straight water with a minimum depth of 6 feet, with surrounding terrain compatible with aerial decent and ascent trajectory requirements). Other reservoirs approximately 15 to 20 miles from the project area that may meet these requirements include Upper Klamath Lake, Hyatt Reservoir, and Howard Prairie Lake.

Comment L.11-8: Oregon Wild notes that wildfire is a certainty in this area and is a natural part of the ecosystem. Fire suppression efforts should be moderated by the recognition that fire needs to be reintroduced here, not excluded. Oregon Wild notes that natural water features should be modified as little as possible to accommodate water supply for fire suppression.

Response: The future management of this land would be guided by a land and resource management plan. Land management activities would be the responsibility of the new landowner and may include a range of resource management or conservation actions. KRRC may place conservation easements on the land before it is transferred to a new landowner, if desired, or agreed to with the new landowner. However, FERC would have no jurisdiction regarding management of the land once it is transferred to a new owner and is no longer within the FERC project boundary of the decommissioned project.

Comment L.11-9: Shasta Indian Nation notes that the draft EIS proposes that the construction of new water access sites, including those for fire suppression, would mitigate for the loss of existing reservoir boat ramps and that consultation regarding new access locations should be undertaken.

Response: We have added a staff recommendation that any ground-disturbing activity necessary for the implementation of activities for the FMP would be done with consultation of affected stakeholders. Furthermore, any ground-disturbing activities and consultation regarding such activities are covered under KRRC's HPMP (see section 3.10.3).

L.12 EFFECTS ON AESTHETICS, WILD AND SCENIC RIVER ACT

American Whitewater, NPS, and the Forest Service provided extensive comments on the Wild and Scenic River Act and its applicability to the Klamath Project.

Comment L.12-1: The Forest Service, NPS, BLM, and American Whitewater disagree with the conclusion in the draft EIS that section 7 of the Wild and Scenic Rivers Act does not apply here because the proposal is to surrender, not relicense, the project. They state dam removal is still considered a type of water resource project per the Interagency Wild and Scenic Rivers Coordinating Council guidance paper (2004) and therefore a section 7 determination is needed. Moreover, other permits such as the Corps' 404 permit (needed for the dam removal project) would qualify as "federal assistance" and a "water resources project," thereby requiring a Wild and Scenic Rivers Act section 7 determination.

The Forest Service, NPS, and BLM developed a preliminary section 7 determination in response to Reclamation's 2012 draft EIS that found the dam removal proposal consistent with the Wild and Scenic Rivers Act. The agencies are updating this section 7 determination based on the FERC's draft EIS preferred alternative and will submit it under separate cover. The Forest Service states that the Forest Service, NPS, and BLM will also review FERC's final EIS and amend the preliminary determination if the effects disclosed are different than those analyzed for the preferred alternative in the draft EIS. The agencies plan to provide the section 7 determination in a timely manner, so the dam removal process moves ahead as scheduled.

Response: Comment noted. While these agencies disagree with our conclusions presented in the draft EIS that section 7 of the Wild and Scenic Rivers Act does not apply, they are continuing to work on their section 7 determination because it may be applicable in other permitting matters. Any surrender order will further discuss the applicability of the Wild and Scenic Rivers Act in this surrender proceeding.

L.13 LAND MANAGEMENT

L.13.1 Exhibit G

Comment L.13.1-1: KRRC comments that dam removal pursuant to the license surrender order will be "project purposes," and all lands needed for project purposes should be included within the project boundary. KRRC will update exhibit K, as instructed, to include all lands needed for implementation of the license surrender order.

Response: In section 2.1.2 of the draft EIS, staff notes some locations where work associated with the dam removal project would take place outside of the current project boundary. It was not staff's intention to imply that the exhibit K maps would need to be revised to include those work locations. Staff considers that work to be off-site mitigation to reduce the potential for adverse effects resulting from the demolition work (e.g., roadway and road culvert enhancements, modifications, or replacements) and/or conditions once the project has been removed (e.g., Fall Creek hatchery modifications, dry hydrants, fire detection cameras). The Road Management Plan already includes descriptions and maps showing the roadway segments and culverts that would be modified. The Fish Hatchery Plan describes the modifications proposed at the hatchery facilities. The FMP included as an appendix to the Water Supply Management Plan identifies six general locations where dry hydrants would be installed, and the locations where fire detections cameras and monitoring systems would be located. We expect that the final version of these plans would include any required details regarding these locations. It is not necessary for those details to be included on revised exhibit drawings.

L.13.2 Ownership and Management of Parcel B Lands

Comment L.13.2-1: For the final EIS, EPA recommends committing to all eight TCR mitigation measures from the MMRP in the final HPMP. If the final EIS/HPMP does not include all conditions, EPA suggest explaining why any measures are excluded and

indicating if the California Water Board intends to revise its conditions. Discuss any other Tribal management, endowment, or land transfer opportunities developed during section 106 consultations. Identify those entities having jurisdiction, authority, or responsibility to implement these measures in the Programmatic Agreement (PA) between the SHPO and FERC and append appropriate, non-confidential information to the final EIS. EPA comments that presently, FERC has jurisdiction over historic hydroelectric facilities, archaeological sites, and traditional cultural properties (TCPs) located within the APE that are afforded federal protection under the National Historic Preservation Act (p. lxiii). The draft EIS describes that for Parcel B lands that would be transferred out of federal ownership and lose protection under the National Historic Preservation Act, implementation of an HPMP is expected to minimize or mitigate adverse effects on cultural resources listed or eligible for inclusion in the National Register of Historic Places (National Register) (p. 3-460).

Comment Response: The draft HPMP filed with KRRC’s Definite Plan—and as included in the FERC application—includes four of eight mitigation measures developed for the 2020 California Water Board EIR to support the issuance of a WQC for this project (p. 3-462). Although the EIR’s HPMP was not publicly available, the eight TCR mitigation measures included in California Water Board’s Mitigation, Monitoring and Reporting Program (MMRP) as part of its final WQC were listed as “actions required to be implemented by EIR mitigation measures or water quality certification conditions” (MMRP, pp. 3-6, 36-40). The MMRP mitigation measures TCR 1–8 memorialize required AB 52 consultation and the consensus reached to extend management protections to the Yurok Reservation and to address the disposition of Parcel B lands and other Tribal claims to aboriginal homelands taken by eminent domain for construction of the dams.

Section 3.10.4.2 of the EIS provides the status of the revised HPMP and PA prepared for the Lower Klamath River Project and consultation that continues to finalize these documents.

Comment L.13.2-2: The Shasta Indian Nation asks that the EIS more fully address the already agreed upon mitigation measures involving the transfer of certain Parcel B lands. California Water Board Mitigation Measure TCR-6 envisions the land transfer of certain Parcel B lands to the Shasta Indian Nation as a form of mitigation consistent with the process required by section 7.6.4 of the amended KHSA. The Shasta Indian Nation has been in consultation with the California Natural Resources Agency to realize this mitigation measure. American Whitewater and the Upper Klamath Outfitters Association support the interest of Shasta Indian Nation in its efforts to acquire Parcel B lands of historic and cultural importance.

The Shasta Indian Nation also comments that the draft EIS (p. 3-423) states that it is the intent of the amended KHSA that Parcel B lands “be managed for public interest purposes such as fish and wildlife habitat restoration and enhancement, public education, and public recreational access.” The draft EIS should reflect California Water Board

mitigation measure TCR-6, as well as decision-making by the California Natural Resources Agency regarding ultimate disposition of Parcel B lands.

The Shasta Indian Nation notes that in describing the disposition of Parcel B lands, the draft EIS (p. 3-424) describes the State of California as following the goals of a strategic plan, which provides for the stewardship of land, waterways, and resources entrusted to it based on the principles of equality, sustainability, and resiliency, through preservation, restoration, enhancement, responsible economic development, and the promotion of public access. Additionally, the draft EIS should reflect Governor Gavin Newsom's Statement of Administration Policy on Tribal Ancestral Lands (2020), which pledges "to work cooperatively with California Tribes that are interested in acquiring natural lands [as defined in California Public Resources Code § 9001.5(d)(2)] in excess of State needs." As outlined in the draft EIS, the amended KHSA envisions the restoration of the Parcel B lands back to a natural state through a landscape restoration program following the removal of the Iron Gate Dam, Copco No. 1 Dam, and Copco No. 2 Dam. Governor Newsom's Statement of Policy on Tribal Ancestral Lands declares that when California Native American Tribes have ancestral territory within natural lands in excess of State needs and are interested in acquiring such lands, the State will work cooperatively to prioritize the transfer of these lands.

The Shasta Indian Nation takes the position (with regard to p. 3-428) that the mitigation measures developed by the California Water Board, as well as the advanced status of consultations with the California Natural Resources Agency, require additional specificity be defined with regard to the ultimate disposition of Parcel B lands in the text of this section.

Response: We acknowledge the Shasta Indian Nation's interest in selected Parcel B lands and American Whitewater and the Upper Klamath Outfitters Association's support for the Tribe's interest in acquiring these lands.

Section 7.6.4 of the amended KHSA, which includes the California Natural Resources Agency as a signatory, states that following completion of facility removal and all surrender conditions, Parcel B lands will be transferred to the respective States, as applicable, or to a designated third-party transferee. The final EIS acknowledges the California Water Board's three TCR measures (TCR-6, 7, 8) that pertain to land transfers. TCR-6 acknowledges the Shasta Indian Nation's interest in selected Parcel B lands. After issuance of any surrender order and completion of surrender and decommissioning activities, FERC's jurisdiction over the project lands will cease. Therefore, it would not be appropriate for FERC to restrict or dictate the disposition of project lands, such as Parcel B lands, after our jurisdiction has ended.

Comment L.13.2-3: The Shasta Indian Nation concurs with FERC that additional funding mechanisms for recreational activities be identified, including those recreational activities envisioned for transferred Parcel B lands. The Shasta Indian Nation looks forward to continuing consultation with the California Natural Resources Agency and continued positive engagement with KRRC and American Whitewater about public

recreation on Parcel B lands that is consistent with the definition of “recreational activity” in California Civil Code § 846(b).

The Shasta Indian Nation notes that in the draft EIS (p. 3-405), FERC recommends that KRRC consult with the States to develop a plan for funding the construction and maintenance of the potential recreational sites, which would, at a minimum, include a funding commitment to develop identified access sites within the hydroelectric reach. These would support new potential river access sites identified by KRRC with the support of American Whitewater. The Shasta Indian Nation notes that this recommendation is difficult to implement absent resolving the question of future ownership of the Parcel B lands consistent with section 7.6.4 of the amended KHSA and California State Water Resources Control Board Mitigation Measure TCR-6. The Shasta Indian Nation is committed to working in collaborative partnership to develop an appropriate financial strategy for supporting public recreation consistent with the definition of “recreational activity” in California Civil Code § 846(b).

Response: KRRC has agreed to revise the Recreation Facilities Plan to specify an approach to secure funding for the construction of additional access sites. However, KRRC does not indicate in its Recreation Facilities Plan whether any party has committed to construct or operate these access sites. The ultimate Parcel B landowners would be responsible for management, operation, and maintenance of the potential recreation enhancement sites identified in the EIS and may provide additional input into their design and location in the future.

L.13.3 Upland Restoration

Comment L.13.3-1: BLM notes that throughout the document (e.g., at pp. i, 1-1, and 3-423), there is often some confusion about which BLM field office has jurisdiction and which land use plan is applicable. Because most BLM-administered lands are within the jurisdiction of the Klamath Falls Field Office, it would be useful for the EIS to state how many acres fall under the Klamath Falls Field Office’s jurisdiction and how many are within the Redding Field Office’s jurisdiction. The Redding Resource Management Plan (1993), as amended, is the land use plan for the Redding Field Office and should be referred to in conjunction with any Klamath Falls Field Office land use plan when land use plans are discussed.

Response: We updated the EIS to refer to the proper field office jurisdictions and applicable land use plans in discussion of the project land. The boundaries of the project lands are shown in figure 3.8-1.

Comment L.13.3-2: BLM notes that over the last several years the BLM Klamath Falls Field Office has engaged in extensive technical discussions and negotiations with KRRC. BLM has been pleased with the evolution of the proposed restoration plans and supports the preferred alternative as detailed in the draft EIS. BLM supports the site-level specifications and general approach that have been integrated into the Use & Occupancy Plan. This document specifically addresses the ultimate condition of BLM lands within

the FERC project boundary prior to returning them to BLM's jurisdiction and management.

While the draft EIS contains some minor errors, except for the items listed below, the Klamath Falls Field Office supports the analysis presented in this document.

However, BLM notes three areas of substantive concern:

- **Restoration Metrics BLM Lands:** As currently written, the Use & Occupancy Plan does not clearly specify the quantitative metrics that will be used to determine acceptable levels of vegetative cover within restored BLM lands. BLM strongly recommends that locally degraded plant communities (ecosystems heavily influenced by invasive plant infestations resulting from prior anthropogenic site disruption) not be used as a target reference for emulation. BLM does support the use of healthy native plant communities as a reference and has proposed a reasonable goal for restoration sites of a minimum of 80 percent native plant cover and a maximum of 10 percent invasive plant cover. Based on extensive professional staff experience in restoration ecology, this objective is both reasonable and obtainable.
- **Restoration Metrics Parcel B Staging/Fill Sites:** As currently proposed, vegetative restoration of Parcel B lands that will be used for staging and/or extensive fill placement does not adequately address the ultimate condition of the plant community. Given the location of these sites (such as the approximately 15-acre site immediately adjacent to the J.C. Boyle Dam), BLM anticipates that they will become potential vectoring sources for subsequent invasive plant infestation of BLM lands downstream. BLM recommends the restoration metrics of a minimum of 80 percent native plant cover and a maximum of 10 percent invasive plant cover.
- **Cultural Resource Site Security:** BLM continues to have concerns over the protection of cultural resources that will be exposed following the drawdown of the J.C. Boyle Reservoir. This area is readily accessible as it is bisected by Route 66 and has an historic pattern of resource-degrading, illegal activities. The BLM recommends full time monitoring be implemented in the form of either electronic surveillance or the presence of an on-site host until such time as the vegetative community becomes established enough to serve as a deterrent.

Response: In its comments on the draft EIS, KRRC notes that it has consulted with BLM and agreed to incorporate BLM's proposed success criteria into the Use and Occupancy Plan. We modified text in sections 2.1.2.2 and 3.5.3.2 to describe and analyze the revised proposal.

Comment L.13.3-3 Oregon Wild comments that the project area should be managed for ecological conservation, not logging and grazing, which would undermine the primary purpose of dam removal, which is to protect fish and the people and wildlife that depend on them. Oregon Wild indicates that the dams should not be removed if the surrounding

lands will be mismanaged to the detriment of the ecosystems we are trying to protect. Oregon Wild notes that logging and grazing will adversely affect tributaries that serve as important fish habitat or flow into important fish habitat and indicates that the EIS needs to do a much better job describing the significant adverse effects of logging and grazing.

Response: Parcel B lands would be managed for public interest purposes such as fish and wildlife habitat restoration and enhancement, public education, and public recreational access. Land management activities would be the responsibility of the new landowner and may include a range of resource management or conservation actions. These activities would have to follow guidelines set by the States of Oregon and California and provide stewardship of land, waterways, and resources entrusted to it based on the principles of equality, sustainability, and resiliency, through preservation, restoration, enhancement, responsible economic development, and the promotion of public access for the stewardship of natural resources, recreation, and other values (State of Oregon, 2017; State of California, 2021b). Furthermore, management of these lands would follow guidelines of the local county comprehensive plan, land development codes, and zoning ordinances that regulate allowable uses, construction, conservation, and preservation of recreational and scenic areas. Resource goals and objectives guidelines that likely future landowners (States of Oregon and California) would indicate that ecological principles in land management would be implemented for public interest purposes as stated above. KRRC may place conservation easements on the land before it is transferred to a new landowner, if desired, or agreed to with the new landowner. However, FERC would have no jurisdiction regarding management of the land once it is transferred to a new owner and is no longer within the FERC project boundary of the decommissioned project.

L.14 PROPERTY VALUES, DAMAGES, AND TAX REVENUES

L.14.1 Property Values and Damages to Local Residents

Comment L.14.1-1: Many opponents to dam removal express concern about effects on property values related to the loss of reservoir attributes (e.g., open water views, reservoir-dependent wildlife, and access to flatwater recreation), and damage to properties near the reservoir from increased vulnerability to wildfire, effects on groundwater wells, and slope instability. Several opponents indicate that dam removal would necessitate some residents needing to move from their homes. Proponents comment that revegetated reservoir reaches would provide a similar aesthetic compared to reservoirs (i.e., open space), and that proximity to restored lands and a river that support runs of salmon and steelhead would have a long-term, positive effect on property values.

SCWUA comments that the citizens of the village communities (Copco, Hornbrook, KRCE, and R Ranch) surrounding the lakes have been there for more than 60 years, some with life savings invested in their homes. Their property values have been decimated by the uncertainty that they have had to suffer. Now with potential impending draining of the serene lakes they will be deprived of substantial life savings. In a state-sponsored project, which this removal now portends to be, there should be substantial damages paid

to homeowners as well as relocation payments if they choose to relocate. The landowners have not been properly treated in this process. The [draft EIS] is devoid of appropriate investigation regarding this behavior, and no solution is offered. FERC bears a large share of responsibility along with the states for subjecting this population to this continuing stressful condition.

Response: In the draft EIS, we acknowledge that uncertainty regarding the future of the reservoirs likely had an adverse effect on property values. However, we also conclude that in the long term, the restoration of a more natural landscape, the development of trails within the restored areas, and the reestablishment of salmon and steelhead runs through the hydroelectric reach would at least partially compensate for the loss of positive reservoir attributes and lake frontage on property values. FERC is ultimately responsible for ensuring that its decisions serve the broader public interest. However, FERC has no authority to direct the payment of compensation for damages or relocation expenses.

Regarding effects on wells and slope instability, KRRRC proposes several measures that address these effects. Regarding effects on wells and slope instability, KRRRC proposes several measures that address these effects. Effects on groundwater wells, slope stability, and vulnerability to wildfires are addressed in sections L.4.6, L.5.1, and L.12 of this appendix, respectively.

Comment L.14.1-2: One individual comments that, given the evident intent of the ‘timely’ MOU submission obviously believed to be after the actionable comment period, it is clear that the only chance of resident protection and/or fully compensatory mitigations for damages entirely depends upon FERC and its obligation to ensure the public interest. The individual further comments that it is incumbent on FERC to revise the draft EIS to assure a definitive outcome and full compensatory mitigation for public/private damages, and non-discretionary certainties of outcome, for it is ‘abundantly and robustly’ clear that it will not come from the licensees.

Response: Please see our response to comment L.14.1-1.

Comment L.14.1-3: One commenter states that a federal regulatory action that “goes too far” will amount to a taking of private property without compensation. Under a traditional regulatory takings analysis, the determination of whether a government action can be considered a taking generally is made by balancing the government’s interest in the government action against the property owner’s economic interest in the property at issue, and analyzing whether the action has infringed on the owner’s property rights to such an extent that compensation is required. The commenter also cites a case where the court held that when the government action denies the property owner “all economically beneficial or productive use” of the property interest, the activity is a taking per se, and just compensation is required.

Response: This comment is outside the scope of FERC’s NEPA analysis. As a general matter, however, we note that the comment fails to explain how the proposed surrender of

the license and decommissioning of project facilities, if approved, would amount to a taking.

L.14.2 Tax Revenues

Comment L.14.2-1: Siskiyou County comments that the EIS includes a very brief discussion of tax revenues in section 3.12 and in table 3.12-7 but does not include an estimate of tax revenue reduction (in particular related to PacifiCorp activities). However, Siskiyou County notes that this topic is discussed in the environmental justice section.

Response: We added additional analysis of effects on tax revenues to section 3.12.3 of the final EIS.

Comment L.14.2-2: PCFFA states that many of the family and retirement homes around Copco No. 1 and Iron Gate Reservoirs have been in the same ownership for many years and are likely to be in the same ownership for many more. This means their current property taxes are based on what market values were, as far back as 1978, not current market values. Until there is a sale, the owner's property tax rates will remain based on the same presumed market value, subject only to annual increases (if any) up to or below the mandated maximum "cap" of 2 percent. The end result is that homeowners who remain homeowners along Copco No. 1 and Iron Gate Reservoirs will not, as a result of dam removals, see their property taxes go up or down except in accordance with Proposition 13 mandates.³ Thus, Siskiyou County will not see any appreciable diminution of property tax income from these sources based merely on any fluctuating changes of "true fair market" values. Only a sale would trigger a re-evaluation. And for landowners who do sell out, but who have owned their property for many years, the property taxes billed to the new owner would jump from the 1978 Proposition 13 baseline (or from the last sale baseline) and would almost certainly be at a market price greater than what it was worth as far back as 1978—in which case the County would get more in property taxes after the selling of that lakeside property, not less.

Response: We incorporated the effects of Proposition 13 on tax revenues into our analysis in section 13.12.3 of the final EIS.

Comment L.14.2-3: KRRC filed a 2022 appraisal of Parcel B lands prepared by Bender Rosenthal with its comments, which estimated that the fair market value of lands owned by PacifiCorp in Siskiyou County to be transferred to KRRC (Parcel B lands) is \$2,800,000. KRRC notes that the assessed value is entirely based on the lands, as PacifiCorp has now depreciated (to zero) the value of the infrastructure in the Lower Klamath Project, as authorized by the Public Utility Commissions. If it is assumed that

³ Proposition 13 in 1978 mandated a maximum 1 percent property tax rate based on market values in 1978 and allows assessments to rise from that 1978 baseline by no more than 2 percent per year, until the next sale.

all Parcel B lands located in Siskiyou County are transferred to the State of California and that these lands are assessed at fair market value, KRRC states that this will reduce tax revenues to Siskiyou County by approximately \$30,000 per year.

With regard to lands owned by third parties in the project vicinity, KRRC states that Bender Rosenthal conducted a property value analysis in 2012 of 668 affected parcels that align or are influenced by the Iron Gate, Copco No. 1, and Copco No. 2 Dams and their corresponding reservoirs and concluded that the “before and after” difference in value of the affected parcels was \$2,666,094 (2008 valuation). The hypothetical condition applied to assess the effect of dam removal on property values in 2012 considered dam removal as the sole factor influencing property values. This assumption does not consider other factors influencing market conditions, nor does it consider the potential increase in property tax revenues associated with improved water quality, restoration of fisheries, and a more natural landscape recognized by the draft EIS.

Since 2012, KRRC states that real estate values in the Iron Gate/Copco region have not appreciated significantly. Applying the same hypothetical condition (dam removal is the sole factor influencing property values) and if the 668 affected parcels have appreciated at a rate equivalent to the increase in the median price of existing single-family homes over the ensuing 14-year period, then the “before and after” difference in value of the 668 impacted parcels is approximately \$3,955,000. KRRC estimates that the corresponding impact on tax revenues is approximately \$45,500 per year in the short term and is expected to diminish over time.

Response: We incorporated this information into our discussion of effects on tax revenue to Siskiyou and Klamath Counties in section 13.2.3 of the final EIS.

Comment L.14.2-4: Siskiyou County comments on the following text from the draft EIS (p. 3-512): “As indicated in the comments of the County of Siskiyou, counties use tax revenue to fund programs such as public health, welfare, education, and a variety of other services. Tax revenue declines, estimated to be between \$600,000 and \$800,000 per year in Siskiyou County.”

“If reductions in tax revenues affect programs that benefit low-income individuals, adverse effects on environmental justice populations may be disproportionate.”

Siskiyou County notes that the EIS does not directly address the potential loss in revenue and the relationship between the County’s tax revenue and its ability to fund programs. The EIS notes that there could be an increase in property values near the river after the dams are removed. In general, the conclusions made in the EIS are vague and generally assume a positive outcome. Overall, Siskiyou County notes that it needs protection from “bad” outcomes. The EIS does not identify the potential bad outcomes, so no (or minimal) mitigation is included.

Response: We revised and expanded our discussion of effects on tax revenue to Siskiyou County in section 13.2.3. Based on the 2022 Bender Rosenthal evaluation provided by KRRC in its comments, property tax revenues to Siskiyou County from PacifiCorp would

be reduced by approximately \$30,000 due to transfer of project lands to the state, and we conclude that effects on tax revenue from other parcels in Siskiyou County should be negligible due to Proposition 13.

Comment L.14.2-5: One commenter states that the valuation studies completed to date at the federal level have been woefully inadequate because the Department of Interior has carefully crafted the scope of work to arrive at a predetermined outcome of minimal value impact in the event of dam removal (\$2 million to \$2.5 million total value loss). Appraisals to date have been based on the hypothetical assumption that the land underlying the lakes has been restored to its native condition with full access to a free-flowing river; structural and site improvements have been intentionally excluded from the analysis; and an estimate of nearly 1,500 “potentially impacted parcels” has been grossly understated at just under 700 “impacted parcels.” The commenter requests disregarding any valuation study relating to Klamath Dam removal as commissioned by the Department of Interior and that the EIS provide an objective analysis of the loss in property values and tax revenues to all affected parcels in the event of dam removal, with consideration of the mudflats and denuded landscape that will remain for years after dam removal.

Response: We recognize that property values have likely been adversely affected by the uncertainty that has existed for many years regarding the fate of the reservoirs. While we appreciate the hardship that this has caused to many residents, FERC is responsible for ensuring that its decisions serve the broader public interest, and the economic benefits of the proposed action greatly outweigh those of the no-action alternative. As discussed in section 3.12.5 of the EIS, the benefits to the commercial fishery alone are estimated to exceed \$12 million annually. In addition to the economic return, the preservation of the salmon runs is essential for the federal government to honor the treaty rights guaranteed to the Tribes that rely on the fishery for economic, subsistence, and cultural practices.

L.15 ENVIRONMENTAL JUSTICE

L.15.1 Food Security

Comment L.15.1-1: PCFFA notes that the draft EIS contains a curious observation and comment raised by a member of the public about the use of reservoirs for subsistence fishing: “one individual raised concerns about the potential effects of dam removal on the existing reservoir fisheries and the communities that rely on those fisheries for sustenance. Specifically, the commenter describes that the project’s reservoirs experience heavy use for the purpose of fish gathering as a reliable source of food by the Hmong community and other potentially economically disadvantaged groups within Siskiyou County.”

PCFFA notes that since at least 2005, the Klamath River and Lower Klamath Project and their reservoirs have experienced massive blue-green toxic algae blooms of *Microcystis aeruginosa*, a species that produces a potent liver toxin, hepatotoxin (microcystin) that can affect the health of humans and animals, including especially through consumption of

resident fish in the reservoir who are constantly exposed to this toxin, and which is bio-accumulative.

Every summer now there are public health toxic algae warning signs posted along these reservoirs instructing the public not to have contact with these then-toxic waters. It is highly likely that any resident fish caught for human consumption living in these reservoirs, particularly during the summer months of maximum blue-green algae impacts, are themselves highly contaminated.

PCFFA further comments that it is thus doing environmental justice communities no favor in keeping these reservoirs intact (and full of toxins) when some members of these communities might be catching and eating these toxic fish. It states that these serious water quality problems will not recede under any dams-in scenario with reservoirs intact, and if some people may be eating these toxic fish, it is not an argument for maintaining reservoirs full of powerful toxins and allowing these neurotoxins to get into the fish or the human food chain. The environmental justice community would be benefited by taking these dams down and improving the water quality for the fish that members of that community may catch and consume. PCFFA agrees with the staff analysis and conclusion that the “no action alternative” would have disproportionately high and adverse effects for environmental justice communities.

Response: We added text to sections 3.13.4.11 in the final EIS to include this information and incorporated it into our analysis of effects of the proposed action and no action alternatives on environmental justice communities.

Comment L.15.1-2: EPA notes that the draft EIS indicates that local communities rely on existing reservoir fisheries for sustenance and that reservoir drawdown could remove “a reliable source of food by the Hmong community and other potentially economically disadvantaged groups within Siskiyou County” (p. 3-512). Although the draft EIS states that impacts may be significant, long-term, and adverse (p. 5-13), it is unclear if mitigation measures were considered to assist adversely affected communities’ ability to adapt to anticipated changes.

EPA recommends that the final EIS consider community outreach to affected communities to explain that dam removal and reservoir drawdown will change fish availability as species shift from lake-dwelling panfish to riverine species, result in changes in gear required to catch riverine fish, and alter the seasonality of anadromous fish. EPA recommends provision of outreach materials or public engagement in Hmong, Spanish and other relevant languages.

Response: We modified text in section 3.13.5.2 to recommend including information in multiple languages on signs placed at recreation facilities about how the project would change recreational fishing opportunities.

L.15.2 Emergency Planning

Comment L.15.2-1: EPA comments that those who are already vulnerable due to a range of social, economic, historical, and political factors have a lower capacity to prepare for,

cope with, and recover from climate change impacts. The draft EIS acknowledges that projected changes in climate and hydrology will alter the frequency and intensity of natural disasters and wildland fires in the area (p. 3-31). Understanding the risks to vulnerable populations is critical for developing effective and equitable strategies in emergency preparedness planning as well as improving capabilities to overcome the effects of disasters or emergencies. It is unclear in the draft EIS whether FERC or KRRC engaged vulnerable populations, including low-income and minority populations, in developing the proposed project's emergency preparedness planning, including the FMP.

EPA recommends that vulnerable communities be consulted or included in all emergency preparedness planning, including the FMP, to educate and affect a better understanding of the cornerstones of emergency management: preparedness, response, recovery, and mitigation. EPA recommends that the final EIS include any additional resiliency measures, adaptive management proposals or mitigation that could arise from, or be proposed within, a collaborative management forum.

Response: We added a staff recommendation to require that KRRC modify the Oregon Traffic Management Plan, California Traffic Management Plan, and Emergency Response Plan (subplans of the Construction Management Plan) and the FMP to include a public outreach component that specifically addresses communication related to emergency planning with environmental justice communities.

L.15.3 Native American Populations

Comment L.15.3-1: EPA indicates that the environmental justice impacts on Native American populations need to be evaluated and asks why impacts downstream from the Iron Gate Dam to the river mouth at the Pacific Ocean and Tribal reservations are not included in the analysis. EPA recommends that impacts on Native American populations be included in the environmental justice section or that the section specifically reference page numbers in sections 3.10 and 3.11 where this information is found. This information should include impacts from Iron Gate Dam to the river mouth at the Pacific Ocean, or it should describe why these impacts are not included in the analysis.

Response: We provide our rationale for the identification of the geographic scope of analysis for environmental justice in section 3.13.2 of the final EIS. We modified this section to specifically state why we did not include the full length of the Klamath River from Iron Gate Dam to the mouth of the Pacific Ocean. We note that while indirect effects of the project, including expected increases in salmon abundance, would affect communities downstream, these effects are expected to be beneficial and would be dependent on non-project related factors like ocean conditions and ocean harvesting that would influence salmon returns. As such we appropriately limited our analysis to the direct effects of the project and defined the geographic scope accordingly.

Regarding the need to discuss effects to Native American Tribes in the Environmental Justice section, as shown in table 3.13-1, FERC follows the guidance and methodology provided by CEQ's Environmental Justice Guidance and Environmental Justice Guidance

and Environmental Justice Interagency Working Group's *Promising Practices* to identify environmental justice communities. In accordance with CEQ's Environmental Justice Guidance, *Promising Practices*, and current FERC process, environmental justice block groups are currently identified using the most updated U.S. Census Bureau data for minority and low-income populations within a project's area of impact (*Promising Practices*, pp. 21-28). Current guidance directs FERC to identify an appropriate geographic scope to identify impacts on environmental justice communities, which FERC has identified as 5-mile radius of the project boundary and a 1-mile radius buffer along the Klamath River from J.C. Boyle Dam to the confluence of the Klamath River and Humbug Creek. In regard to specific instruction to include potential environmental justice communities outside the provided scope, we recognize that EPA and CEQ are in the process of updating their guidance regarding environmental justice, and we will review and incorporate that anticipated guidance in our future analysis, as appropriate.

L.15.4 Sediment Deposit Remediation

Comment L.15.4-1: Siskiyou County notes that the Sediment Deposit Remediation Plan will require public outreach to ensure residents reach out to KRRC if reservoir sediment impacts their land. Given the potential for environmental justice communities to be impacted by arsenic on their lands, it may be necessary for KRRC to go further and monitor downstream properties during drawdown operations. Although the potential exists in all communities, residents in environmental justice communities may not be informed about the project nor what to do if their property is affected.

Response: As noted on page 3-520, the draft EIS acknowledges that dam removal activities would result in temporary, adverse effects on environmental justice communities, such as sediment deposition. The draft EIS further explains that “[i]mplementation of mitigation measures during project deconstruction could reduce the temporary effects on environmental justice communities, but these measures rely on the quality of communication between KRRC and the environmental justice communities to be effective. Thus, we strongly recommend that KRRC communicate with the identified communities.” The draft EIS also notes (p. 3-523) that “in addition to implementation of KRRC’s mitigation plans, plans would be required to include specific measures for conducting outreach to environmental justice communities regarding mitigation of effects related to slope stabilization, sediment releases from the reservoirs, and groundwater well monitoring.” We continue to find quality communication between KRRC and affected environmental justice communities is paramount to ensuring effective mitigation strategies are implemented.

L.15.5 Groundwater Wells

Comment L.15.5-1: Siskiyou County comments on the following quote in the draft EIS (p. 3-512): “KRRC proposes payments to mitigate effects on groundwater wells that are affected by the drawdown of J.C. Boyle Reservoir or that are within 1,000 feet of Copco No. 1 Reservoir, if residents agree to KRRC’s well monitoring program.” Siskiyou County comments that the EIS suggests that KRRC needs to be more proactive about

reaching out to environmental justice communities with this program. Siskiyou County asks if these the only areas impacted by declining groundwater (due to reservoir drawdown and decommissioning)? A preferred mitigation would compensate all users of groundwater that are impacted by the drawdown (particularly those in the identified environmental justice communities).

Response: Staff analysis presented in the final EIS highlights the number of groundwater wells potentially affected at each dam location. Based on analysis conducted by Reclamation and the California Water Board, most impacts on groundwater wells would be at wells located within 1,000 feet of each reservoir. KRRC includes well mitigation in both its Oregon Groundwater Well Management Plan and California Water Supply Management Plan and is committed to aligning final mitigation actions with the WQCs outlined by both the Oregon Water Resources Control Board and the California Water Board.

L.15.6 Construction Noise

Comment L.15.6-1: Siskiyou County notes that the mitigation for construction noise (in the form of the noise and vibration control plan) is not enough to lower impacts to less than significant on environmental justice communities.

Response: Siskiyou County is correct that we expect the effects of outdoor noise on local receptors would be short term and significant, even with implementation of the proposed mitigation. We note that NEPA does not require all effects be mitigated to less than significant levels.

L.15.7 Outreach

Comment L.15.7-1: Siskiyou County strongly recommends that KRRC communicate with the identified environmental justice communities. When not mitigated, the temporary effects referenced in the draft EIS on page 3-520 would disproportionately affect environmental justice communities because of their localized nature and because most project facilities (especially those associated with Copco No. 1 Reservoir) are located in environmental justice communities.” Siskiyou County notes that it is critical that project proponents reach out to both environmental justice communities and the County at large. Much of the social data that is presented is either dated (recreation use data is nearly 20 years old) or not applicable to the project (general census data).

Response: FERC follows the guidance and methodology provided by CEQ’s Environmental Justice Guidance and Environmental Justice Interagency Working Group’s *Promising Practices* to identify environmental justice communities. The draft and final EIS include specific measures recommended by FERC staff to increase community outreach and specifically target outreach programs to address challenges with reaching out to environmental justice communities.

Comment L.15.7-2: Siskiyou County comments on the following quotes (draft EIS, p. 3-514 and 3-517): “...with the greatest adverse effects on individuals with shoreline access and those who primarily rely on the reservoirs for recreation, including members

of environmental justice communities” and “Although it is unclear the extent to which local community members desire or engage in whitewater boating as a primary form of recreation.” Siskiyou County comments that the EIS implies that FERC does not know enough about the environmental justice communities’ recreational preferences to understand how the project may affect their use of the area. Additional outreach to these communities is needed to understand how these changes may affect them. Further, outreach is needed in connection to the recreation facilities plan to ensure that a local point of view is considered.

Response: In section 3.7.3.2, *Recreation; River Recreation*, the draft EIS acknowledges that whitewater boating and other forms of recreation occur near the project site and downstream. In drafting the draft EIS, FERC staff thoroughly reviewed submitted comments made by local community members and organizations regarding potential impacts to recreational activities. Recreational preferences vary by individual, and the draft EIS (p. 3-514) acknowledges that “[i]ndividuals from environmental justice communities may benefit or be adversely affected by these changes in whitewater boating opportunities, although it is unclear the extent to which local community members desire or engage in whitewater boating as a primary form of recreation.” Using information gathered from conducted engagement and submitted comments, and varying individual recreational preference, FERC continues to encourage communication and outreach between KRRC and communities experiencing recreational impacts.

Comment L.15.7-3: SCWUA comments that environmental justice, as defined by (the draft EIS) refers to communities and peoples who are low income and/or people of color, who will be adversely affected by the proposed project, in this case the removal of the dams nearby where they live. Environmental justice specifically speaks to community concerns, hardships, and health concerns of said communities, who will be adversely affected and their right to be heard and part of the decision-making process. Copco Lake residents and several other communities/citizens along the Klamath River including R Ranch and KRCE are within the dam removal reach and qualify as “environmental justice communities.” Residents have been speaking out for years and feel that their voices have not been heard and that KRRC and its contractors have not addressed their concerns. The EIS states unequivocally that these communities would experience “disproportionately high and adverse effects by the proposed action;” however, the writers of the EIS feel that these adverse effects can be appropriately mitigated for long-term gain. SCWUA strongly disagrees and notes that the stated effects of dam removal on geology and soils (slope stability), aquatic habitat and fisheries (in and around the reservoirs), recreation, fire management, aesthetics, and air quality cause irreparable damage. In addition, should this dam removal project proceed as proposed, not nearly enough money and resources have been set aside to repair the damage caused.

Response: Through the environmental justice analysis, FERC has worked to identify and accurately describe future losses to environmental justice communities from this project’s activities. To the extent feasible, FERC has identified various mitigation measures to help alleviate potential losses on impacted communities. Specific mitigation measures

supported by FERC can be found in section 3.13.5. Regarding the adequacy of funding that has been allocated to implement the proposed action (including mitigation), please see our response to comment **L.21-3**.

L.15.8 Mitigation

Comment L.15.8-1: Siskiyou County comments on the following quotes from the draft EIS (p. 3-521): “Long-term, potential adverse effects on environmental justice communities would be related to groundwater wells, fire management, reservoir angling, changes in access to and type of recreation opportunities, and changes in county tax revenues.”

“Removal of the reservoirs would also result in adverse effects associated with state and local fire management. These effects would be borne by both environmental justice communities and the surrounding project area and would be mitigated through the proposed FMP.”

“Changes in fishing opportunities as the aquatic species in the project area move from lake-dwelling panfish to riverine species, like salmon and steelhead, would affect environmental justice communities that use the reservoirs for subsistence, including the Hmong community in Siskiyou County, California. Environmental justice communities may not have the same ability to easily switch to alternative fishing locations as reference populations.”

Siskiyou County comments that EIS acknowledges multiple potential adverse effects on Siskiyou County communities however there are limited mitigation measures to address these as the EIS generally assumes improved economic conditions after dam removal. This is in spite of a lack of strong evidence for this conclusion. As such, the County should seek assurances (presumably in the form of mitigation) that they will be made whole if the dam removal does result in worsened conditions. Further, the EIS makes a strong point about the possibility that environmental justice communities (including the Hmong residents) may not have the ability to easily switch from flat water conditions to a river environment. This supports the case for more local outreach.

Response: To the extent the county seeks financial compensation, we note that FERC does not have the authority to direct the payment of compensation for worsened economic conditions. As stated in the draft EIS (p. 3-522) “the effects associated with the proposed action would mostly be mitigated, and beneficial effects associated with dam removal would outweigh the long-term, adverse effects associated with the proposed action.” Additionally, the draft EIS (p. 523), recommends that signage placed at existing recreational sites should include languages other than English, noting that “[i]ncluding signs in Spanish and Hmong would increase potential for non-English speakers to access the information and improve communication with environmental justice communities.”

L.16 EFFECTS ON NOISE AND AIR QUALITY

Comment L.16-1: Several opponents to dam removal are concerned about the effects of construction activity on noise levels and air quality during dam deconstruction and restoration work and the potential for fugitive dust storms. Proponents of dam removal generally consider that actions proposed by KRRRC would adequately address issues associated with dam removal.

Response: The proposed action includes measures proposed in the Noise and Vibration Control Plan that would minimize short-term outdoor noise impacts (mitigation measures to control fugitive dust and exhaust emissions are found in appendix J.3.1, J.5, chapter 2.1.3, 3.15.1). KRRRC proposes several mitigation measures to control fugitive dust and exhaust emissions. Additionally, the proposed action includes revegetation measures in the reservoir footprint that would eliminate the potential for dust storms.

KRRRC's Oregon and California Traffic Management Plans, subplans of its proposed Construction Management Plan, identify measures to minimize the effects of short-term, construction-related impacts; prevent incidents; ensure preparedness; and maintain consistency with all applicable traffic, highway, and roadway regulations in Siskiyou County, California, and Klamath County, Oregon. The road and traffic measures described in KRRRC's Traffic Management Plans for Oregon and California address increased traffic levels on existing public roads. Existing road deficiencies for heavy truck traffic and weights have been identified with improvements proposed to minimize the effect on local roads and community traffic (see section 3.8.3.4, *Road Management and Traffic*).

Comment L.16-2: EPA comments that although Siskiyou County and Oregon project areas conform to the State Implementation Plans for the attainment of all six criteria pollutants monitored under National Ambient Air Quality Standards (p. 3-533, draft EIS), removal of the dams would increase emissions of particulate matter (PM₁₀ - particle size less than 10 microns) and nitrogen oxides in excess of the Siskiyou County Air Pollution Control District's thresholds of significance, even with mitigation (p. 3-539, draft EIS).

EPA states that because the draft EIS notes the existence of sensitive receptors (communities with environmental justice concerns, proximity to wilderness areas) and that localized air quality conditions can deteriorate substantially (e.g., during wildfires), the EIS should evaluate the potential need for air quality monitoring and preparing plans that identify protective actions to respond to exceedance events (both of NAAQS and SCAPCD's thresholds of significance).

Response: Implementation of mitigation measures AQ-1 (with added incentives for contactors to use equipment that meets or exceeds EPA's exhaust emission standards for model year 2010 and newer heavy-duty highway compression-ignition engines) through AQ-5 would reduce construction emissions. However, even with implementation of these state-of-the-art air quality mitigation measures, the conservative analyses cannot preclude, under certain climatic conditions, possible short-term exceedances of air quality

standards at the few sensitive receptors located near to the dam sites. The duration of any potential exceedances is such that it is likely that by the time any exceedances are detected and processed, the phase of construction generating the exceedances would be finished. We feel that implementation of AQ-1 through AQ-5 is a reasonable and effective approach to reduce or eliminate air quality impacts due to construction activities associated with the project, and further mitigation would not achieve better outcomes.

We modified sections 2.3 and 3.15.3 to discuss the need for air quality monitoring.

Comment L.16-3: EPA states that the agency appreciates the additional air quality measures AQ-1–AQ-6 recommended as part of the proposed action with staff modifications (p. 3-549, draft EIS). However, it is not clear whether actual reductions in emissions or air quality improvements would be realized given that AQ-1, which requires the use of Tier-4 equipment, is subject to local availability and economic feasibility.

EPA suggests modifying AQ-1 to give preference to contractors using prescribed equipment that meets or exceeds EPA’s exhaust emission standards for model year 2010 and newer heavy-duty, on-highway compression-ignition engines.

Response: We modified sections 2.3 and 3.15.3 to reflect that we adopt this recommendation.

L.17 EFFECTS ON ELECTRICITY SUPPLY, CAPACITY, AND GREENHOUSE GAS EMISSIONS

L.17.1 Renewable Hydro Power

Comment L.17.1-1: Opponents to dam removal state that removal of the hydropower facilities, which are a clean source of energy, does not make sense and note that their region wants the hydropower generated by the Klamath River dams, which provide 70,000 homes with green renewable power. Several proponents in favor of dam removal, note that the four Lower Klamath Dams produce a limited amount of renewable energy that could be replaced by new (green) technologies. They also note that the hydropower production of these hydroelectric facilities does not compare to the environmental impact dams have caused. Other proponents comment that it would cost PacifiCorp ratepayers far more to retrofit and relicense these aging and now economically obsolete dams than to replace their small amount of power from other, newer and much more cost-efficient resources.

Response: PacifiCorp plans to increase the percentage of renewable energy sources in its power mix to comply with the California Renewable Portfolio Standard at a rate that would replace the loss of renewable energy generated by the Lower Klamath Project (see section 3.15.3.3, subsection *Decommissioning of Renewable Power Generation*). The removal of the four facilities would not affect the capacity of the electrical grid operated by PacifiCorp.

Comment L.17.1-2: The Klamath Irrigation District comments that the description of the project, its components, the “alternatives” analyzed in the draft EIS, and the “Affected Environment” components of each resource or type of impact reviewed all focus on the

Klamath watershed and contiguous lands. However, the draft EIS (p. 3-547) recognizes that the project would result in the loss of 2 percent of PacifiCorp's power generation capacity, all of which is renewable. The draft EIS further recognizes the likelihood that renewable power would be replaced by non-renewables. However, the draft EIS only addresses the potential for a net-increase in greenhouse gas (GHG) emissions and does not consider the potential for increased production at existing infrastructure or the construction of new facilities to recoup those losses.

Thus, even if PacifiCorp develops new energy generation facilities in compliance with its obligations to increase the relative proportion of renewables in its portfolio, it does not mean that the construction of those facilities will not affect the human environment. It also does not mean that the construction of those facilities will have no growth-inducing impacts due to job creation or that those new facilities' effects will fall below the "collectively significant" standard requiring review in the draft EIS. Because the draft EIS fails to provide data on the impacts of past and ongoing agency actions, such as the flushing flows and BiOps for the project's area, and because the construction of replacement energy generating infrastructure is a reasonably foreseeable consequence of the project and may cause cumulatively considerable impacts outside the project boundaries, the draft EIS must be revised to include an analysis of the same or be subject to invalidation.

Response: As a result of a revision of the NEPA regulations, effective May 20, 2022, we added section 3.16 to address cumulative effects. We also expanded our analysis of effects that the proposed action could have on flow releases required by NMFS's 2019 BiOp on Reclamation's operations of the Klamath Irrigation Project. Regarding the effects of new renewable energy facilities to be brought on line to replace the power that would be lost due to decommissioning the Lower Klamath Project, it would be highly speculative to surmise which new facilities would be used to replace the lost power. We therefore did not modify the EIS to evaluate the effect of developing those new facilities.

L.17.2 Greenhouse Gas Emissions

Comment L.17.2-1: EPA comments that the draft EIS notes that 20,128 metric tons of carbon dioxide equivalent (MTCO₂e) emissions would be released during (de)construction-related activities (p. 3-546) and an additional 19,350 MTCO₂e would be released due to biological processes during reservoir drawdown and the conversion of inundated lands to river, wetland, and terrestrial habitats (p. 3-546). The draft EIS suggests that these temporary, adverse effects could be made less than significant by the purchase and retirement of carbon credits before deconstruction activities commence (table ES-2).

EPA appreciates that FERC recommends, and KRRC agrees, to purchase carbon offsets pursuant to mitigation measure ENR-1, prior to the start of pre-dam removal activities (p. 2-49). ENR-1 states that carbon offsets must: represent reductions actually achieved (not based on maximum permit levels), not already be planned or required by regulations or policy; be readily accounted for through process information and other reliable data; be

acquired through legally binding agreements; and remain as GHG reductions in perpetuity (p. 2-49). However, it is not clear whether carbon credits are available to offset these sources of emissions. EPA notes that although the draft EIS acknowledges that these GHG emissions exceed the California Air Resources Board's (CARB) no net increase threshold and do not conflict with any applicable plan, policy, or regulation (table ES-2), CARB's Scoping Plan does not contain guidance on assessing or mitigating the potential GHG emissions impacts from dam removal and habitat restoration activities (p. 3-546, draft EIS).

EPA supports ENR-1 that revises the Construction Management Plan to require the purchase of carbon offsets and recommends that current estimates of project emissions (pp. 3-545–3-548, draft EIS) be verified by a reliable third party (p. 2-49). In the absence of guidance from CARB, EPA recommends that FERC use the 2006 Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Gas Inventories and its 2019 refinements to calculate carbon dioxide and methane emissions on converted lands and estimate anthropogenic emissions by sources and removals by sinks of greenhouse gases. EPA also recommends disclosing the availability of carbon offsets in the project area and indicating from whom they would be purchased.

Response: A detailed derivation of the project's GHG emissions (including carbon dioxide, methane, and nitrous oxide) was analyzed in appendix O of the 2020 California Water Board EIR and summarized in the draft EIS. The assessment includes estimates of GHG emissions from two years of construction, replacement of hydroelectric power, temporary emissions from the reservoir sediment, and long-term annual emissions from the conversion of the reservoir areas to riverine, wetland, and terrestrial habitat types.

As described in the draft EIS, carbon offsets would be issued and certified by one of the following: CARB, Climate Action Reserve, California Air Pollution Control Officers Association, the Air Pollution Control District, or any other equivalent or verifiable registry.

Comment L17.2-2: EPA comments that even though the four dams slated for removal produce less than 2 percent of PacifiCorp's power portfolio, they presumably serve local or regional needs and supply power for pumping water to area irrigators. The permanent loss of 686,000 megawatt hours of annual renewable electricity generation is considered adverse and unavoidable (p. 3-547, draft EIS), but PacifiCorp's 2021 Integrated Resource Plan is expected to meet California's Renewable Portfolio Standard (table ES-2) with the eventual additions of new sources (p. 3-548, draft EIS). The draft EIS concludes that the loss of renewable hydropower would be less than significant and offset by increasing renewables in the power mix; it does not identify whether this loss of renewable energy in local and regional service areas would be significant or consider whether existing hydropower energy sources would be replaced with carbon-based alternatives. We note that carbon-based alternatives may have disproportionate health or economic burdens on identified communities with environmental justice concerns.

EPA recommends describing which energy sources are anticipated to make up for the loss of energy in the short term and defining the impact that these losses would have at the local and regional level, including any disproportionate health or economic impacts to communities with environmental justice concerns. EPA also suggests including Oregon's Climate Action Plan goals in section 3.15.3.3 to ensure consistency with that state's targets or trajectory and estimating when replacement renewables are expected to be brought on-line to meet these goals.

Response: We have modified our analysis in section 3.15.3.3 to describe which energy sources are anticipated to replace the loss of hydroelectric energy in the short term, and the location of those sources when such information is available. In the same section, we revised the text to describe Oregon's Climate Action Plan goals and the target dates for implementing these goals. CEQ regulations require agencies to consider indirect effects or impacts that "are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable" (40 C.F.R. § 1508.8(b)). However, agencies are not required to engage in speculative analysis (*N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1078 (9th Cir. 2011)) or "to do the impractical, if not enough information is available to permit meaningful consideration." (*Id.* (quoting *Env'tl. Prot. Info. Ctr. v. U.S. Forest Serv.*, 451 F.3d 1005, 1014 (9th Cir. 2006))). Here, the impacts of constructing new facilities to make up for the loss of energy production is too speculative to be considered because it is unknown whether any new facilities would be constructed, and if so, what type of facilities. It is similarly speculative to consider the impacts of increasing production at existing infrastructure, for it is uncertain which, if any, existing infrastructure would be used. Therefore, because these impacts are not reasonably foreseeable, FERC staff does not consider them further.

L.18 EFFECTS ON SOCIOECONOMICS

Comment L.18-1: Opponents to dam removal note that the potential costs and benefits to local communities, including agricultural and ranching interests, have not been addressed. These individuals are concerned that any reduction in water supply would have severe effects on the people of southern Oregon who have invested their lives (and generations) building homes, businesses, ranches, and farms. One commenter states that any further action would result in liability of damages and harm to his property and his rights. Numerous commenters, in favor of dam removal, based on their review of the draft EIS, note that dam removal would provide long-term economic benefits to the area through increased recreational, commercial, and Tribal fisheries, and whitewater recreational use.

Response: We determined that under the proposed action, construction activities associated with dam removal and restoration actions would affect the regional economy in the short term, and effects on property values, tax revenue, electric rates, commercial fishing, subsistence fishing, ocean and in-river sport fishing, reservoir and riverine recreation, and tourism would affect the regional economy in the long term. Dam removal would help to ensure that the Klamath River fall-run Chinook salmon fishery is

sustained into the future, and the restoration of salmon and steelhead runs to historical habitats upstream of Iron Gate Dam would yield substantial economic benefits to coastal fishing-dependent communities, Tribal fisheries, and recreational fishing. Overall, the proposed action would provide a net economic benefit that would have a long-term, significant, beneficial effect on a county, state, and national level (see section 3.12).

Property owners near the reservoirs could be affected economically by adverse effects on wells, slope instability, and susceptibility to damage from wildfires. Effects on private property would be mitigated or minimized by measures proposed by KRRC to address these potential effects.

Comment L.18-2: PCFFA comments that the impacts of the dams on the Klamath’s once-abundant salmon runs, which once supported vital coastal port fishing economies throughout the Klamath Management Zone, have been particularly devastating since the last dam (Iron Gate) was completed in 1964. After that, salmon returns (and consequently salmon landings in major Klamath Management Zone ports) began a steady decline compared to average annual landings during the time frame of 1976–1980 as a baseline. Those coastal fishing-based port economies have suffered enormous economic losses since then, as summarized below:

Salmon Fishery Landings Losses by KMZ Port Area

(Average of years 1976–1980 as compared to average of 2010–2020 landings)	
Port Area	Decline (%) of Fishery
Eureka (CA)	96% LOSS
Crescent City (CA)	97% LOSS
Brookings (OR)	88% LOSS

PCFFA provided detailed year-by-year official salmon landings data from which these loss numbers were derived in an attachment to its comments.

PFMC comments that under “weak stock management” constraints currently imposed because of years of very weak Klamath-origin Chinook stocks, and also SONCC coho bycatch-imposed limitations on harvesting otherwise available Chinook stocks, ocean fisheries have for many years been severely constrained throughout the West Coast from nearly San Francisco to central Oregon, to avoid even accidentally taking too many weak stock Klamath-origin fish to assure generational sustainability.

Nearly doubling the returning runs of fall-run Chinook, as is predicted after dam removals, and simultaneously also likely loosening current constraints on fall-run Chinook harvests imposed by very low SONCC Coho runs, would yield enormous economic benefits to beleaguered coastal fishing-dependent communities through greater harvest access to multiple other, non-Klamath based, ocean salmon fisheries. Because of the multiplier effect that lifting the current constraints on all intermingling northern

California-southern Oregon ocean fisheries would have, the draft EIS estimates of economic benefits from improved fisheries access are probably understated.

Response: We added text to section 3.12.3 to address potential economic benefits of lifting weak stock management constraints if Chinook stock in the Klamath River increases as expected.

Comment L.18-3: Siskiyou County comments that the analysis of socioeconomic effects, including environmental justice concerns, relies on outdated information to such an extent that it is unreliable and not a reasonable basis for impact analysis.

The county notes that, in general, the socioeconomic section of the EIS lacks detail and presents data that is superfluous (e.g., statewide unemployment and median housing data) to the proposed project. The environmental justice section has more detail but inadequately mitigates the identified impacts. Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, and associated mitigation measures for impacts on socioeconomic and environmental justice communities should have been considered during the authoring of the EIS. Mitigation measures that may be relevant to environmental justice impacts include the recruitment of local labor, fair financial compensation for impacts on property values, training and development, and school funding, among others. In both sections, the analyses paint a rosy picture of the dam removal scenario without providing strong evidence for the case. Both sections assume generally improved conditions after dam removal. However, the county needs assurances that any economic and fiscal impacts due to dam removal would be mitigated.

Economic analysis is primarily from a 2013 Interior and NMFS report (Klamath Dam Removal Overview Report for the Secretary of the Interior: An Assessment of Science and Technical Information). The analysis is comprehensive but now dated. Numerous assumptions acknowledged in the report create a great deal of uncertainty, and clearly the level of uncertainty increases over time. Related to this point, the sections rely on data that are not always appropriate to the scale of analysis. This is a particular concern as the EIS correctly notes "...nearly all the adverse (socioeconomic) effects associated with the proposed action are local" (pp. 3-485–3-486). Given the local nature of the impacts, there appears to be a lack of data collected at this scale (aside from the census tract data, which is adequate but not necessarily applicable to the project). Overall, additional local data would better identify impacts and provide clarity on appropriate mitigations. Additionally, FERC should ensure the preferred projects from the Recreation Facilities Plan are implemented.

Response: We recognize that the analysis provided in the socioeconomics section is largely derived from the Interior and NMFS 2013 report, but we disagree with the notion that this information is too outdated to be reliable or suitable for our analysis. We find the report to provide an in-depth analysis of the potential effects of project decommissioning on the regional economy. While the analysis correctly identifies assumptions and uncertainty, we find the same assumptions would apply to a similar

analysis conducted with current data and do not expect the results would be substantively different to warrant the additional modeling.

Regarding mitigation of potential effects to environmental justice communities, we have recommended KRRC develop and implement additional community outreach measures targeted at environmental justice communities to ensure all local residents are aware of the mitigation programs that KRRC is proposing to mitigate for potential effects on public land. We also recommend specific outreach to inform environmental justice communities about changes in recreational opportunities associated with the proposed project. We find these measures to be commensurate with the potential effects of the proposed project on environmental justice communities.

Comment L.18-4: Siskiyou County notes that the EIS indicates that there would be 49 job losses (related to hydroelectric operation and maintenance) but does not include complete estimates of job losses related to the loss of recreation. There are data presented in the draft EIS (p. 3-502) that estimate recreational jobs related to salmon and steelhead fishing under current conditions but with no prediction of future conditions. The EIS generally assumes that overall recreation economic activity would increase after the dams are removed, but the evidence provided is weak and/or unclear. Further, the assumed benefits of dam removal appear to be regional, while the costs appear to be concentrated in Klamath County, Oregon, and Siskiyou County, California.

Response: We agree that the expected benefits of the proposed action extend over a wider region than the adverse effects. Given that a self-sustaining anadromous fishery is a scarce and diminishing resource, it is reasonable to expect that anglers and tourists would be drawn to the areas where runs of steelhead and salmon are established, and that revenue to local businesses are likely to exceed those that are lost due to reduced flatwater recreation opportunities. However, given the many factors that can affect the abundance of salmon and steelhead returns, it would be highly speculative to estimate the magnitude of those benefits.

L.19 CULTURAL AND TRIBAL RESOURCES

L.19.1 General Comments

Comment L.19.1-1: Many proponents of dam removal note that restoring the salmon runs and improving water quality are of great cultural importance to the Tribal communities that reside along the Lower Klamath River (38 percent). Opponents to dam removal do not specifically comment on cultural and Tribal resources.

Response: The protection and restoration of anadromous fish to historically accessible habitat would benefit local Tribes by providing dietary and economic benefits and the continuance and restoration of cultural practices and traditions related to this resource (see sections 3.11 and 3.13). Consulted Tribes included the Hoopa Valley Tribe, Karuk Tribe, Yurok Tribe, Klamath Tribes, Modoc Tribe, Quartz Valley Indian Community of the Quartz Valley Reservation of California, Resighini Rancheria, Confederated Tribes of

Siletz Indians of Oregon, Trinidad Rancheria, Confederated Tribes of the Warm Springs Reservation of Oregon, Confederated Tribes of the Grand Ronde Community of Oregon, Cow Creek Tribes of the Warm Springs Reservation of Oregon, Elk Valley Rancheria (California), Pit River Tribe (California), and the Tolowa Dee-Ni Nation (see section 1.5). Perspectives of Tribes on the proposed action are summarized in appendix K of the EIS. In general, consultation with the participating Tribes indicates strong support from most Tribes in the project area for the removal of the project dams with the consensus being that removal is necessary to ensure the survival of salmon and steelhead and restore anadromous fish habitat and improve water quality in the Lower Klamath River. FERC staff considered this Tribal consultation history as well as other comments received from the Tribes in developing this EIS.

Comment L.19.1-2: The Shasta Indian Nation comments that the draft EIS (p. 3-449) mischaracterizes the Wairuhikwaiiruka/Kammatwa. This group lived in the stretch of the Klamath River from Seiad Valley to approximately Hamburg. When considering Shasta territory, it is important to recall that Shasta is a language, and Shasta-speaking rancherias represent different political bands each under different Tribal leaders. In 1864, the Northern California Indian Superintendent described the disposition of the Shasta-speaking rancherias across Siskiyou County as follows: The Hamburg Indians are known in their language as the T-ka [E·x], [and] inhabit immediately at the mouth of Scott's river[.] ... The Scott's Valley Indians known in their language as the Id-do-a [Irú·ʔay], inhabit Scott's valley above the canon[.] ... The Yreka (a misnomer for Yeka [A·yí·ka]—Shasta Butte) Indians ... inhabit that part of the country lying south of Klamath river, and west of Shasta river. The Shasta Indians, known in their language as the We-o-how [Wita·ha·wá]—meaning stone house, from the large cave in their country—occupy the land east of Shasta river, and south of the Siskiyou mountains, and west of the lower Klamath lake.

The Shasta Indian Nation is the contemporary organizational form of the Shasta Indians—those associated with Wita·ha·wá—the large cave located in the hills encircling the north side of Copco Lake on property contiguous to Parcel B lands (APN 004-050-401-000) and within the project APE. The Tribal community has also been referred to as the “Eastern Shasta” or “Jenny Creek Shasta” in anthropological and linguistic literature. In the early twentieth century, the Special Indian Agent for California described the Shasta Indian community as the “Indian rancheria near Beswick,” “Bogus Rancheria,” and “Beswick Rancheria.”

Comment L.19.1-3: The Shasta Indian Nation requests that additional information about “Bogus Tom's Rancheria” be added to section 3.10.2.2 (p. 3-352, draft EIS). As noted above, the Special Indian Agent for California described the Shasta Indian community displaced in the construction of Copco No. 1 Dam as the “Indian rancheria near Beswick,” “Bogus Rancheria,” and “Beswick Rancheria.” The group and their property also came to be called “Bogus Tom's Rancheria,” after the eponymous chief. The U.S. Indian Service leased this land from the Central Pacific Railway Company for the Tribal community, who are the direct ancestors of the Shasta Indian Nation. Authority for the lease was granted by the Department of the Interior on August 4, 1913, using congressional funds appropriated by the Act of June 13, 1913 (38 Stat. 77). As such, the Beswick Rancheria would have been considered “reserved Tribal lands” as

discussed in section 3.11.1.1. Moreover, the historic Beswick Rancheria was located less than 0.5 miles from the high water of Copco Lake, which places it within the boundaries of the project APE.

Response: Section 3.10.2.2 of the EIS has been corrected to reflect this information.

Comment L.19.1-4: The Shasta Indian Nation notes that appendix K (p. K-5), accurately characterizes the position of the Shasta Indian Nation on dam removal. The Tribe's aboriginal homelands were inundated by Copco No. 1, Copco No. 2, and Iron Gate Reservoirs, and the ancestors of the present-day membership had their lands taken by eminent domain during the construction of the Copco dams. The construction of the dams had negative and irreversible impacts on the Tribal community. Because of this historical experience, and the trauma caused by the Lower Klamath Project and its legacy, the Shasta Indian Nation focuses its engagement to, specifically, the safeguarding and mitigation of impacts on TCRs and the submerged cultural, ceremonial, and burial sites that are located beneath the Lower Klamath Project's reservoirs.

Response: Comment noted.

L.19.2 Area of Potential Effect, Area of Direct Impact, Identification of Historic Properties and Cultural Districts

Comment L.19.2-1: The Shasta Indian Nation comments that figure 3.3-40 identifies an area of "high priority tributary restoration areas" around the "Beaver Creek High Priority Tributary" junction with the Klamath River at present-day Copco Lake. Because sensitive TCRs are located in this specific area, additional consultation and coordination is required to develop an appropriate restoration plan.

Response: The proposed restoration work could affect at least three documented archaeological sites. These sites are located in the APE and Area of Direct Impact (ADI) and have been recommended as eligible for listing on the National Register. Treatment and/or mitigation measures to address project effects at these sites are provided in KRRC's updated HPMP filed on May 2, 2022.

Comment L.19.2-2: The Shasta Indian Nation agrees (p. 3-446, draft EIS) with an APE that extends for at least an additional 0.5 miles from the midpoint of the Klamath River to create a minimum 1-mile-wide APE to address potential indirect effects because of altered viewsheds. However, the area around the Parcel B lands at Copco Lake is an area of intense settlement activity and cultural significance. The Shasta Indian Nation recommends that FERC rely on the ADI defined in section 3.11 of the draft EIS for cultural resources assessment for the specific area around Copco Lake because TCPs may extend beyond the defined APE. Additionally, a portion of the historic Beswick Rancheria property is within the project's APE and should be noted.

Response: We updated the EIS to address the potential effects of the proposed project on archaeological resources and TCPs that have been identified within the ADI, including at Copco Lake and on Parcel B lands. See our response to comment L.19.2-8 regarding the Beswick Rancheria.

Comment L.19.2-3: The Shasta Indian Nation notes that the draft EIS (p. 3-467) seeks additional clarity around the Phase II Archaeological Research Design and Testing Plan of 57 potentially affected sites within the ADI or on Parcel B lands. It further notes that seven sites are identified as requiring National Register evaluation but are not included in the Phase II plan (CA-SIS-3917, CA-SIS-3935, CA-SIS-3936, CA-SIS- 3943, CA-SIS-3944, LKP-2019-04, LKP-2019-05); and four sites do not require evaluation but are included in the Phase II testing plan (35KL1044, 35KL2397, CA-SIS-1670, CA-SIS-3928). The Shasta Indian Nation also seeks additional clarification on the proposed Fall Creek District at Iron Gate Reservoir (containing three archaeological sites), which may or may not overlap with the proposed TCP proposed by the Tribe. The Shasta Indian Nation participated as monitors for the Phase II testing and looks forward to ongoing consultation regarding proposed archaeological districts as an interested party with FERC.

Response: The sites associated with the Fall Creek District are included within the Kikaceki District TCP proposed by the Shasta Indian Nation and are addressed in the updated HPMP. Text has been added to the EIS to address these sites.

Comment L.19.2-4: Siskiyou County notes that in section 3.10.4.1 (pp. 3-467 and 3-468, draft EIS), FERC identifies several inconsistencies in the identification of resources within the APE and ADI in the technical documents, information provided to FERC for the draft EIS, and the HPMP. The County notes that all inconsistencies must be clearly resolved and documented in the updated EIS and HPMP prior to finalizing the EIS.

Response: Comment noted.

Comment L.19.2-5: Siskiyou County notes the statement on page 3-456 of the draft EIS regarding the eligibility of the Klamath River Bridge for listing on the National Register pending completion of construction activities seems to imply that construction activities would change the eligibility status of the bridge. This statement should clarify what construction activities are occurring and in what context (i.e., is it a separate project or is it part of the proposed action) and the results of the evaluation in order to adequately address effects to the resource as part of the proposed action. Modifications to an eligible property that make it no longer eligible are an adverse effect.

Siskiyou County comments that the research and evaluation to fully evaluate the cable suspension Pedestrian Bridge 1, the Central Oregon and Pacific Railroad Bridge, and Pedestrian Bridge 2 should be completed prior to finalizing the EIS and results included in the EIS and HPMP.

With regard to the statement in the draft EIS on page 3-457 regarding the ineligibility of the Fall Creek Bridge for listing on the National Register because it does not meet the significance criteria, comments that a bridge constructed in 1969 is over 50 years old; the age is therefore not a reason to consider a property ineligible. The County requests that this comment be clarified.

Siskiyou County comments that there should be a statement regarding the remaining five bridges that are recommended as ineligible for listing on the National Register that indicates whether they will meet the threshold during project implementation and if so, the HPMP should include information on how and when they will be evaluated.

Response: KRRC evaluated all bridges in the ADI and presented its results in an updated Historic Built Environment Report (AECOM, 2022b) and in the updated HPMP (KRRC, 2022). The 1913 Klamath River Bridge was replaced in 2021 and the older 1931 bridge was removed. The Pedestrian Bridge 1, the Central Oregon and Pacific Railroad Bridge, and Pedestrian Bridge 2 were evaluated and were recommended as ineligible for listing on the National Register. In its updated Built Environment Report, KRRC refers to a recent Caltrans Bridge Inventory that found that the Fall Creek Bridge is not eligible for listing on the National Register because it lacks significance under the National Register Criteria and because it was built after Fall Creek Hatchery's period of significance. The remaining five bridges do not yet meet the 50-year threshold for National Register eligibility. One bridge, the Brush Creek Bridge, will meet that threshold in 2026. No impacts to this bridge are anticipated. This new information has been added to the EIS.

Comment L.19.2-6: With regard to the following quote in the draft EIS (p. 3-45): "KRRC states that it would conduct further survey and research to evaluate the National Register eligibility of these private property resources within the California part of the ADI, specifically commercial, residential, and recreational properties in Hornbrook, Yreka, and Montague (KRRC, 2021n)," Siskiyou County comments that there is no indication when this will happen or how KRRC will be held accountable for ensuring this occurs. The County comments that the studies need to be conducted prior to finalizing the EIS and the results should be included in the EIS and HPMP.

Siskiyou County notes that in regard to the privately held structures in the ADI, the draft EIS (p. 2-16) states that, "as private properties, KRRC does not have control over these resources. Should it be determined that the proposed project would adversely affect any of these resources, KRRC would propose appropriate mitigation measures". The County comments that mitigation measures must be included in the EIS if they cannot be included in the HPMP due to jurisdictional issues. A consideration for the County regarding the mitigation measures is what is the County's stake/influence on eligibility determinations for private property? Would the County enforce them and how? Are there already measures in place at the local level (e.g., preservation ordinances) that would be appropriate?

Response: The results of additional study of private architectural properties are presented in KRRC's updated Historic Built Environment Technical Report (AECOM, 2022b) and are addressed in the updated HPMP and in the EIS. No properties that are eligible for listing on the National Register were identified; therefore, no treatment measures were proposed.

Comment L.19.2-7: Siskiyou County notes that the draft EIS (p. 3-484) states that measures are “pending completion of the Phase II studies, National Register evaluations, and determination of effects.” The County comments that typically, HABS/HAER is not considered sufficient mitigation for demolition of a historic structure and notes that is the bare minimum. The draft EIS states that KRRC also proposes a marketing plan and an interpretive plan as mitigation. These should be robust documents to account for the complete removal of eligible historic properties. Additional mitigation measures should be considered (e.g., historic context statements, digital story maps, education modules).

Response: In its updated HPMP, KRRC proposes to consult with the regional HABS/HAER/HAL coordinator at the NPS Interior Regions 8, 9, 10, and 12 to request NPS concurrence on the appropriate level and procedures for documentation. This consultation would occur prior to implementation of decommissioning activities.

Comment L.19.2-8: The Shasta Indian Nation comments (p. 3-473, draft EIS) that while there are no reserved Tribal lands at present within the project’s ADI, there were formally reserved Tribal lands specifically for the ancestors of the Shasta Indian Nation’s present-day members. For purposes of this section, the ADI is “a 5-mile radius around the project boundary[.]” As previously noted, following the construction of the Copco Dams, the Special Indian Agent for California leased land for the members of the displaced historic Beswick Rancheria. That land is within the boundaries of the project’s ADI (and the cultural resources APE). Additionally, two of the members of the Beswick Rancheria identified by the Special Indian Agent for California held individual trust allotments within the ADI. The Shasta Indian Nation takes the view that the text of this section should reflect the historic trust responsibility that existed within the project’s ADI.

SCWUA comments that the Ward’s Canyon area is a unique area of the Klamath River and has been the subject of a number of archeological and cultural studies of Native American sites. The Association notes that no mention is made in the EIS of the Upper Klamath River Stateline Archaeological District or the Beswick District of Siskiyou County.

Response: SCWUA’s comment regarding the Ward’s Canyon area is noted. We added information about the rancheria near the community of Beswick and the Upper Klamath River Stateline Archaeological District to section 3.10.2.4 of the final EIS. KRRC does not identify any potential effects of the proposed project on cultural resources in these areas; therefore, it does not include these lands in the ADI.

L.19.3 Consultation and Traditional Cultural Properties/Resources

Comment L.19.3-1: Shasta Indian Nation comments that the draft EIS observes that salmon do not constitute a TCP (p. 3-463, draft EIS). While salmon are vitally important to the religious practice, cultural life, and food security of all Tribes living along the Klamath River Basin, the Shasta Indian Nation concurs with FERC and maintains that salmon are best understood as a critical “aquatic resource” for purposes of the draft EIS.

Treatment of salmon as a cultural resource conflates and confuses the fish with other TCRs, such as villages, burials, and ceremonial sites, which are addressed by a specific body of cultural resources law and policy.

Response: Comment noted.

Comment L.19.3-2: Shasta Indian Nation comments that as noted in the draft EIS (p. 3-464), the TCP reports for the Lower Klamath Project have not yet been completed, and specific project-related effects on TCPs within the APE and ADI have not yet been identified. The Shasta Indian Nation has identified a potential TCP within the project's APE and ADI and looks forward to consultation as an interested party with FERC.

Response: Summary information regarding Traditional Cultural Resources (TCRs) of importance to the Shasta Indian Nation have been added to section 3.10.2.6 of the EIS.

Comment L.19.3-3: Siskiyou County notes that the draft EIS states in several places that consultation and TCP reports are not yet complete, and that project-related effects on TCPs within the APE and ADI have not been identified or analyzed (pp. 3-464, 3-465, 3-469). The document further states that measures for mitigating impacts on TCPs will be developed in consultation with the California and Oregon SHPOs and participating Tribes and that, "In its comments filed on August 19, 2021, Interior states that a Tribal perspective on resource effects should also be addressed" (p. 3-465). The County comments that more detail needs to be included regarding when and how these results will be documented and incorporated into the final decision and management documents.

Siskiyou County also notes that section 3.10.4.2 is basically a placeholder for the results of the TCP studies and Tribal consultation and is currently insufficient. Dates, status, and results of these studies/consultations should be updated and incorporated into the narrative prior to finalizing the EIS.

Response: Additional information has recently been filed with FERC regarding potential TCPs located within the project APE and ADI. Further information is included in the revised HPMP filed on May 2, 2022, and is also addressed in the EIS.

Comment L.19.3-4: Siskiyou County notes that FERC states in its proposed action with staff modifications that the project would have a "permanent, significant, beneficial effect" on TCPs due to restoring the river for salmon runs, traditional foods, Tribal cultural practices, and fluvial landscapes (tables 4-1, 4-2). The County comments that while beneficial to these aspects of Tribal cultural heritage, there may also be specific TCPs with physical or archaeological manifestations (e.g., campsites, burials) that may be adversely affected (pending identification of TCPs in studies). For example, many Tribal and community members have expressed concern over the potential effects on known historic-era Native American burials near the Copco facilities. Thoughtful and specific treatments for such resources must be considered and incorporated into the HPMP and EIS. The EIS should account for those effects in the final findings for the proposed action (e.g., add possible short-term, significant, adverse effects in addition to long-term, beneficial effects).

Response: The updated HPMP filed on May 2, 2022, provides correlations between identified TCPs and documented archaeological sites. Project-related effects on TCPs (both beneficial and adverse) and on the sites that contribute to their potential eligibility are provided. Additionally, section 8.2 of the updated HPMP contains a protocol for the post-review discovery of human remains.

Comment L.19.3-5: Siskiyou County notes that under “Commission Staff Recommendations” the draft EIS states that Tribes generally are in favor of the project, but some Tribes have expressed concerns regarding sediment passage and exposure of significant cultural resources. The County comments that even though Tribes support the project overall, these concerns should be captured and detailed in the Traditional Cultural Resources and Tribal Trust discussions, not just mentioned in passing here.

Response: We address this comment in section 3.10.3.3 of the EIS.

L.19.4 Effects on Cultural and Tribal Resources

Comment L.19.4-1: The Shasta Indian Nation notes that the draft EIS (p. 3-11) proposes that pre-drawdown reservoir releases would bring the reservoirs to or near the minimum allowable operating levels. The Shasta Indian Nation notes that such a drawdown would provide an opportunity for a pre-drawdown, baseline survey and mitigation of currently submerged TCRs in a manner contemplated by the HPMP.

Response: A footnote has been added to section 3.10.3.4 that addresses this comment. The HPMP calls for complete archaeological field surveys of previously inundated areas as soon as field conditions are safe and stabilized.

Comment L.19.4-2: The Shasta Indian Nation comments that activities involving the placement of fire suppression infrastructure, especially the construction of water ramps, will require ground-disturbing activity. The EIS should reflect that the placement of this infrastructure will occur in consultation with affected Tribes and with active Tribal monitoring.

Response: We added a staff recommendation that any ground-disturbing activity necessary for the implementation of activities for the FMP would be done in consultation of affected stakeholders. Furthermore, any ground-disturbing activities and consultation regarding such activities are covered under KRRC’s HPMP (see section 3.10.3).

Comment L.19.4-3: With regard to cultural resource site security, BLM continues to have concerns about the protection of cultural resources that will be exposed following the drawdown of the Topsy Reservoir. This area is readily accessible because it is bisected by Route 66 and has an historic pattern of resource-degrading, illegal activities. BLM recommends full-time monitoring be implemented in the form of either electronic surveillance or the presence of an on-site host until such time as the vegetative community becomes established enough to serve as a deterrent.

Response: Interior requests implementation of additional monitoring protocols. Chapters 4 and 5 of KRRC’s HPMP describe monitoring protocols during and post-construction.

These protocols include daily inspections of at-risk historic properties during drawdowns, use of drones, and continued monitoring for three years during and post-restoration activities. We find these protocols appropriate.

Comment L.19.4-4: Siskiyou County comments that section 2.1.2 of the EIS discusses work occurring outside the project boundary, including road work, modifications to Fall Creek Hatchery, installation of dry hydrants along several rounds (outlined in the FMP), and installation of fire monitoring detection systems (outlined in the FMP) (p. 2-4, draft EIS). The County recommends that FERC ensure that these work areas are included in the HPMP analysis and treatment recommendations.

Response: All areas where ground-disturbance may occur are located within the cultural resources ADI and/or Limits of Work, which are not limited to the project boundary. Potential impacts as a result of road work, work at the Fall Creek Hatchery, and work associated with fire management are addressed in the HPMP.

L.19.5 Programmatic Agreement and Updated Reports and HPMP

Comment L.19.5-1: The Shasta Indian Nation notes that there are many areas of future programmatic activity for the Lower Klamath Project related to monitoring and the long-term stewardship of lands affected by the Lower Klamath Project outlined in the draft EIS. Any long-term agreements involving the project's APE or ADI should have the Shasta Indian Nation as a party.

Siskiyou County comments that it endorses FERC's proposal to enter into a PA with the California and Oregon SHPOs, participating Tribes, and project proponents to ensure that all section 106 requirements are met over the life of the project if they cannot be met prior to project implementation under a traditional MOA (e.g., some activities must take place post-drawdown and thus need ongoing planning and support). However, Siskiyou County notes that the EIS only states "The terms of the agreement would ensure that KRRC addresses and treats all historic properties identified within each project APE by implementing a revised HPMP for the project" (p. 4-69) and notes that additional details regarding enforcement, accountability, and schedule should be included in this discussion.

Response: On May 6, 2022, FERC transmitted a draft PA to the California and Oregon SHPOs and Advisory Council on Historic Preservation for a 30-day review and comment. The terms of the PA call for the licensees to implement a final HPMP for the license surrender and outline the roles and responsibilities for ensuring compliance with the PA. Signatories to the PA include FERC, California SHPO, Oregon SHPO, and the Advisory Council. The licensees, governors of both California and Oregon, BLM, Forest Service, other agencies, and participating Tribes (including the Shasta Indian Nation) are invited to sign the PA as concurring parties.

Comment L.19.5-2: KRRC comments that it will file an updated HPMP on May 2, 2022, including the Final Phase II Report, the Final Built Environment Report, and updated consultation record.

The HPMP update will provide (1) an assessment of effects and any additional mitigation required based on results of Phase II studies; (2) an assessment of effects and any additional mitigation required based on the Final Built Environment Report; (3) an update on input received from Tribes on ethnographic reports (4) more specificity with respect to impacts and mitigations; (5) clarification regarding the rationale for the selection of sites and the location of districts; (6) final eligibility determinations for the Klamath River Hydroelectric Project District, the four Lower Klamath Project hydroelectric system districts, and the Fall Creek Hatchery district; and (7) KRRC's response to SHPO comments.

Shasta Indian Nation supports the strong work completed to date on the HPMP by KRRC and its contractor, AECOM. The most current version of the HPMP, dated February 26, 2021, satisfies the commitments to mitigation developed under California's Assembly Bill 52. An update to this report is pending with regard to archaeological districts and TCRs, including TCPs. The Shasta Indian Nation notes that an updated HPMP is needed for the Tribe to comment fully.

Shasta Indian Nation concurs with FERC's recommendation (p. 2-57, draft EIS) to prepare a supplemental HPMP to address: (1) the results of Phase II archaeological studies, (2) the results of additional surveys and evaluations of historic structures; (3) the results of the pending TCP studies and Tribal consultation; and (4) identification of specific effects on all historic properties, and resource-specific measures to resolve effects determined to be adverse. Technical comments on these specific aspects of the HPMP will be feasible following the completion of the supplemental HPMP. Following the comments in the record by the California SHPO, and the California SHPO's request for the consultation with the Advisory Council on Historic Preservation, the Shasta Indian Nation anticipates that there will be additional revisions to the HPMP.

Shasta Indian Nation comments as noted by the draft EIS (p. 3-466), additional revisions to the HPMP would include the results of the Phase II archaeological studies, TCP studies and Tribal consultation, and specific effects on all historic properties. The Shasta Indian Nation looks forward to future consultation as an interested party with FERC on the revised HPMP.

Siskiyou County recommends that KRRC prepare a revised HPMP, not a supplemental HPMP. The County notes that important details inevitably get lost when practitioners must sort through multiple documents. Because the HPMP has not yet been finalized, it should be a cohesive document containing all relevant information collected by the date of the final EIS.

With regard to the following quote in the draft EIS (p. 3-455): "KRRC anticipated that Phase II fieldwork would begin in June 2021 and that a final report containing the results of the work, recommendations of National Register eligibility, and assessment of effects would be filed in February 2022," Siskiyou County comments that the results of this study are not included in the draft EIS, and it is unclear if this study is complete. Dates,

status and results of this study should be updated and incorporated into the narrative prior to finalizing the EIS.

Siskiyou County also notes that the draft EIS states that measures are “pending completion of the Phase II studies, National Register evaluations, and determination of effects.” (p. 3-463). The County comments that as noted for the other outstanding assessments, the studies need to be conducted prior to finalizing the EIS and the results included in the EIS and HPMP.

Response: On May 2, 2022, KRRC filed its updated HPMP, Phase II Report, and Final Built Environment Report. The Oregon and California SHPO’s comments on the draft HPMP were addressed in the updated HPMP. On May 6, 2022, FERC provided all three documents to both SHPOs for a 30-day review.

L.20 PUBLIC OUTREACH AND LOCAL STAKEHOLDERS

Comment L.20-1: Some opponents to dam removal are concerned that local people were ignored as stakeholders and that public outreach to residents was insufficient. Several note that the residents of Siskiyou and Klamath Counties both voted overwhelmingly against dam removal, and that the will of the people was not considered in the draft EIS. Some also stated that out-of-area comments submitted to FERC should not be considered.

One individual comments that it is clear that KRRC/KHSA are not interested in protecting the public against damages from forcibly imposed devastation and have gone to extreme lengths to evade it. With FERC’s consent they have managed to effectively place all loss and burdens upon those most harmed and unrepresented within the so-called ‘Agreement.’

Response: Extensive public consultation took place during the development of this EIS as well as during the development of several documents that preceded it, including FERC’s 2007 EIS, Interior and California DFG’s 2012 EIS/EIR, and the California Water Board’s EIR, each of which evaluated the effects of dam removal. This final EIS considers the issues identified and analysis provided in these preceding documents, including all comments received in response to the following FERC-issued:

- October 5, 2017: notice soliciting comments, motions to intervene and protests on the original transfer application filed on September 23, 2016.
- December 16, 2020: notice of application for surrender of license, soliciting comments, motions to intervene, and protests.
- June 17, 2021: notice of intent to prepare an EIS for the proposed Lower Klamath Project surrender and removal, request for comments on environmental issues, schedule for environmental review, and notice of public virtual scoping sessions. The notice was published in the *Klamath Falls Herald and News* on July 2, 2021, and the *Siskiyou Daily News* on July 7, 2021.

In addition, four virtual scoping meetings were held on July 20 (two meetings), July 21, and July 22, 2021, where oral comments on the project were sought. A court reporter recorded all comments and statements made at the scoping meetings, and these comments and statements are part of FERC's public record for the project.

In addition to comments from government agencies, Tribes, and NGOs, 100 individuals with no agency or NGO affiliation filed comments on the application or scoping comments about potential adverse effects of the proposed action. This input was used to identify any issues that were not identified in the scoping document; the draft EIS analyzes all of these issues. Responses to these concerns are provided in appendix A of the draft EIS.

The draft EIS was issued on February 11, 2022, and made available to the public on February 25, 2022, and comments on the draft EIS were due April 18, 2022, and extended through April 25, 2022. This appendix (appendix L) of the final EIS summarizes the substantive comments that were provided, includes staff responses to those comments, and indicates where we made modifications to this final EIS, as appropriate.

We note that the 2010 Siskiyou County and 2016 Klamath County votes against dam removal were advisory (i.e., not legally binding). We note that many of the individuals who provided comments on the draft EIS against dam removal expressed concerns about a loss of water storage, which is not a substantive feature of the four Lower Klamath Project dams. While we recognize that many of the local residents are opposed to the proposed action for more than the perceived loss of water storage, we conclude that KRRC has worked diligently to address their concerns as much as possible and note that FERC is ultimately responsible for ensuring that its decisions serve the broader public interest.

L.21 OWNERSHIP OF DAMS, DECOMMISSIONING COSTS, AND LOCAL PERMITTING REQUIREMENTS

Comment L.21-1: Several opponents of dam removal state that ratepayers and taxpayers should not be obligated to pay for dam removal.

Response: In its comments on the draft EIS, KRRC provides the following summary of the findings of the Oregon Public Utility Commission and the California Public Utilities Commission, who found that funding the costs of the proposed action through surcharges would be in the best interest of PacifiCorp's customers.

In approving customer surcharges to partially fund dam removal (as opposed to relicensing) it notes that the Oregon Public Utilities Commission concludes "Ratepayers will be responsible for significant future costs for the Klamath Project (regardless of the disposition of the dams). . . . We are persuaded that continued pursuit of the relicensing option would pose significant risks to ratepayers. . . . The KHSA in contrast, offers a more certain path for the Project's future, providing a

timeline for continued operation until December 31, 2010, followed by transfer of the facilities to a third party responsible for removing the dams. . . . Due to significant tangible and intangible benefits associated with the KHSA, we conclude it is in the best interest of customers and find the KHSA surcharges to be fair, just and reasonable” (Oregon Public Utilities Commission Order No. 10-364, 2010). In approving customer surcharges in California, KRRC notes that the California Public Utilities Commission concludes: “We find that authorization of the proposed surcharge pursuant to the terms of the KHSA provides the most cost-effective method of collecting the funds necessary to resolve conflicts over resources in the Klamath Basin. Through the use of the KHSA cost cap, ratepayers are protected from the uncertain costs of relicensing, litigation, and decommissioning than customers may be responsible for [without] the KHSA” (California Public Utilities Commission Decision 11-05-002, 2011).

Comment L.21-2: Some opponents to dam removal question who paid for the Lower Klamath dams and who owns the dams.

Response: The four Lower Klamath dams, constructed between 1918 and 1962 were built by the California-Oregon Power Company (Copco), predecessor of the Pacific Power and Light Company, reorganized in 1984 as a holding company, PacifiCorp. PacifiCorp continues to own the dams.

Comment L.21-3: SCWUA comments that the dam removal cost estimates have been unchanged for more than 10 years and notes that given the current substantial inflation, these estimates should be increased significantly in the final EIS.

Response: In the amended application for surrender of license for major project and removal of project works filed with FERC on November 17, 2020, KRRC provided an updated Exhibit D that included an updated cost estimate as of July 2019. The updated estimate was prepared after the FERC Independent Board of Consultants reviewed and provided comments on the Definite Plan (2018). KRRC incorporated changes requested by the Board in the revised Exhibit D. The revised Exhibit D included updated cost estimates based on the 60 percent design specifications and approved risk analyses. The cost of \$452 million as presented in the revised Exhibit D was taken from the Definite Plan for the Lower Klamath Project, Appendix P, Amended Estimate of Project Costs, section 4.0. This cost reflects the “Pessimistic” (most expensive) risk assessment at the 99 percent confidence level (table 4-2). The \$452 million estimate includes \$370,891,000 in project implementation costs, \$24.0 million of pre-guaranteed maximum price (GMP) contingency, \$10.3 million of estimate uncertainty, and \$47.1 million in post-GMP risk contingency. The qualitative risk assessment results show that the total project cost for full removal may range from \$401 million to \$452 million (see table 4-2 in the final EIS). At an 80 percent confidence level, the total project cost for full removal is approximately \$434 million, leaving approximately \$16 million in cash reserves (up to funding limit). These estimates will be reviewed as the design specifications reach 100

percent. As the design reaches 100 percent, uncertainties and risk should diminish, and the need for large contingencies should also diminish.

Comment L.21-4: Siskiyou County comments that there are a range of impacts that are properly addressed through state and local environmental and land use controls with respect to waste (including demolition) disposal, temporary housing, dust abatement, hazardous materials management, and wastewater management and disposal. FERC should be clear that the applicants must comply with state and local regulatory requirements that address these and other public health and safety issues prior to taking any action to implement the proposed action.

Response: By law, KRRC must comply with all federal, state, and local regulations.

L.22 EDITORIAL COMMENTS

We modified the final EIS based on editorial comments recommended by American Whitewater, Interior, Klamath Drainage District, Klamath Irrigation District, KRRC, Klamath Water User's Association, Shasta Indian Nation, and NMFS.

L.23 REFERENCES

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**APPENDIX M—CORRECTIONS TO THE NMFS BIOLOGICAL OPINION ON
THE PROPOSED ACTION**



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

April 15, 2022

Refer to NMFS No: WCRO-2021-01946

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE, Room 1A
Washington, D.C. 20426

RE: National Marine Fisheries Service's Comments on Draft Environmental Impact Statement for Hydropower License Surrender and Decommissioning, Lower Klamath Project, FERC Project No. 14803-001, Klamath Hydroelectric Project, FERC Project No. 2082-063, Oregon and California; and Correction of Non-substantive Errors in the Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Surrender and Decommissioning of the Lower Klamath Hydroelectric Project, FERC Project No. 14803-001, Klamath County, Oregon, and Siskiyou County, California

Dear Secretary Bose:

On February 25, 2022, the Commission issued a Notice of Availability for its *Draft Environmental Impact Statement for Hydropower License Surrender and Decommissioning, Lower Klamath Project—FERC Project No. 14803-001, Klamath Hydroelectric Project—FERC Project No. 2082-063, Oregon and California* (DEIS). On December 17, 2021, NOAA's National Marine Fisheries Service (NMFS) issued its Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Surrender and Decommissioning of the Lower Klamath Hydroelectric Project No. 14803-001, Klamath County, Oregon, and Siskiyou County, California (Biological Opinion; filed on December 21, 2021). In the DEIS, Commission staff made recommendations that were not available when NMFS issued its Biological Opinion. Two specific Commission staff recommendations in the DEIS have the potential to raise questions regarding whether the recommendations would require reinitiation of consultation under 50 CFR 402.16 for NMFS' Biological Opinion. Therefore, NMFS files these comments in response to these recommendations:

1. FERC staff recommendation: "Modify the Recreation Facilities Plan to include: (1) removal or fragmentation of remaining construction-related debris in the river at the Sidecast Slide location and encroaching vegetation growth within the river channel in the Copco No. 2 bypassed reach that create hazardous boating conditions;..." (pages xxxvii, 2-57, and 4-32).

In response to this recommended modification of the Commission's proposed action, NMFS has participated in coordination meetings with the Klamath River Renewal Corporation (KRRC), Tribes, and the Upper Klamath Outfitters Association (UKOA) to determine the



potential impact of implementing this recommended modification. In these conversations, KRRC has agreed to minimize the number of trees removed from the reach and consider re-purposing them in other instream restoration projects. ESA-listed species considered in our Biological Opinion will not be present during implementation of this action as it is expected to occur prior to dam removal. Additionally, the impacted reach is not designated as critical habitat for listed species considered in our Biological Opinion. Therefore, the implementation of this staff recommended modification is not expected to modify the Commission's proposed action in a manner that causes an effect to the listed species or critical habitat that was not considered in the Biological Opinion, nor is it expected to meet any of the other criteria that would require reinitiation of consultation under 50 CFR 402.16.

2. FERC staff recommends: "KRRC and the resource managers consider the City of Yreka's recommendation to imprint coho salmon to return to other tributaries, and also to allocate a portion of the juvenile salmon produced at Fall Creek Hatchery to accelerate the recolonization process (as needed for at least 5 years). These fish could be differentially marked and then released directly into tributaries or placed in temporary holding pens for imprinting and acclimation" (page 3-226).

The City of Yreka's recommendation relates to Fall Creek Hatchery operations as a result of the planned relocation of hatchery operations from Iron Gate Hatchery to Fall Creek Hatchery. In our Biological Opinion, we described the analysis of that planned relocation, in relevant part:

"Although the Renewal Corporation is responsible for construction of the hatchery and PacifiCorp is primarily responsible for the funding for eight years after dam removal, [the California Department of Fish and Wildlife (CDFW)] will manage and operate the hatchery in a manner consistent with what already occurs at the Iron Gate Hatchery. The impacts to coho salmon as a result of these hatchery operations have been analyzed during the ESA Section 7 consultation relating to issuance to issuance of ESA Section 10(a)(1)(A) Permit 15755 to CDFW for enhancement and scientific purposes for implementation of [a Hatchery and Genetic Management Plan (HGMP)] for the coho salmon program at the Iron Gate Hatchery. Operations already analyzed include broodstock collection, hatchery releases, water quality impacted by hatchery operations, and monitoring and evaluation of the program. NMFS, in coordination with CDFW, is evaluating the current HGMP to determine the extent of modifications necessary to update the HGMP and permit as a result of the planned relocation of hatchery operations to Fall Creek. The revised HGMP would evaluate operations over the planned eight-year term of the Fall Creek hatchery. Therefore, in this opinion, NMFS describes aspects of the proposed action, such as the initial construction actions at Fall Creek, that may impact listed species that have not already been considered in the existing HGMP and associated ESA Section 7 consultation." (page 29).

In response to this Commission staff recommendation, NMFS has agreed with KRRC that the topic can be brought to an Aquatic Technical Working Group (ATWG) meeting to discuss further. NMFS will participate in the ATWG meeting and, in coordination with CDFW, NMFS will consider the recommendation as part of evaluating the current HGMP to

determine the extent of modifications necessary to update the HGMP and permit as a result of the planned relocation of hatchery operations to Fall Creek.

In addition, in an internal review of the Biological Opinion, NMFS found non-substantive errors, such that correction of these errors does not require reinitiation of consultation, and determined that these errors should be corrected to avoid confusion. Therefore, NMFS is documenting these corrections by enclosing a table identifying the page number and paragraph or location of each error, a description of the correction, and a brief explanation of the reason for the correction. Please attach the enclosed table to the Biological Opinion and incorporate any applicable corrections in the DEIS.

NMFS determined that correction of these errors in the Biological Opinion does not meet the criteria for reinitiation of consultation in 50 CFR 402.16(a). The proposed action has not commenced; thus, the amount or extent of taking specified in the incidental take statement has not been exceeded. The corrections are not based on new information and NMFS has not found any information that revealed effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered. The corrections are not based on any modification to the identified action and NMFS has no information indicating that the identified action has been subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the Biological Opinion. Finally, no new species has been listed or critical habitat has been designated that may be affected by the identified action. Therefore, NMFS has not requested reinitiation of consultation.

We appreciate the opportunity to provide these comments on the DEIS, as well as corrections of errors in the Biological Opinion. Please contact Jim Simondet at (707) 825-5171, or via email at jim.simondet@noaa.gov, should you have any questions or require additional information.

Sincerely,



Alecia Van Atta
Assistant Regional Administrator
California Coastal Office

Enclosure: Table identifying errors and corrections in the Biological Opinion

cc: Diana Shannon, Ecologist, Federal Energy Regulatory Commission, OEP-Division of
Hydropower Administration and Compliance, diana.shannon@ferc.gov
Mark Bransom, Chief Executive Officer, Klamath River Renewal Corporation,
mark@klamathrenewal.org
e-file ARN 151422WCR2021AR00150

Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Surrender and Decommissioning of the Lower Klamath Hydroelectric Project No. 14803-001, Klamath County, Oregon and Siskiyou County, California (issued December 17, 2021). Table identifying the page number and paragraph or location of errors, a description of the correction, and a brief explanation of the reason for the correction. April 15, 2022.

Page	Paragraph or Location	Correction	Reason for Correction
1	7	add a space between No. and 2 after "Copco"	grammatical
4	3	add a period at the end of the sentence that ends with "February 2010"	grammatical
11	11	add "," after "December 15, 2021"	grammatical
11	13	add "see" before "50 CFR 402.02"	editorial clarification
12	1	uncapitalize "Proposed"	incorrect capitalization
12	2	change "," to ":" after "dewatered"	grammatical
17	1	change "." to ":" after "activities"	grammatical
23	1	change "Section 1.4.1.2" to "Section 1.3.2.1"	incorrect cross-reference numbering
28	4	delete "," and capitalize "c" in "conservation" after "6.0."	grammatical
28	4	delete "," after "sites"	grammatical
43	footnote 6	delete "operation"	editorial clarification (inadvertent repeated word)
51	3	change "smelting" to "smolting"	typographic error
52	5	insert "of" between "sum" and "the"	editorial clarification
53	4	uncapitalize "The" after "with"	incorrect capitalization
57	3	change "estimated morality" to "estimated mortality"	typographic error
59	4	add one space between "2021" and "conditions"	grammatical
70	1	change "B.C." to "British Columbia"	unintroduced acronym
70	3	add ":" after "including"	grammatical
86	1	change "three to five years" to "two to five years"	incorrect and inconsistent language
90	1	change "footnote 13" to "footnote 14"	incorrect cross-reference numbering
96	1	delete "at RM 43" after "mouth"	incorrect river mile reference

Page	Paragraph or Location	Correction	Reason for Correction
113	1	change "typically release" to "typically released"	grammatical
117	5	change "TNC" to "the Nature Conservancy"	unintroduced acronym
128	4	delete "NMFS" before “2019a” in parentheses	editorial clarification (inadvertent repeated word)
128	4	remove strikethrough from a period	grammatical
130	5	change "," to "." after “de-watered”	grammatical
132	4	delete "in" before "mainstem Salmon River"	grammatical
149	2	change "analyses in" to "analyses on"	typographic error
163	1	add "For listed fish species," before “Long-impacts,” and change “Long-impacts” to “long-term impacts”	editorial clarification
163	1	add "." after “impacts” at the end of the paragraph	grammatical
165	2	change "increase" to "increases"	grammatical
165	4	change "2 to 50 years following dam removal" to "≥2 years following dam removal"	editorial clarification
175	1	add "stage" after "analyses for each life"	editorial clarification
178	Figure 21 caption	add "." at the end of the caption	grammatical
188	2	add "elevated" before "SSC" after “exposure to”	editorial clarification
190	2	change "is" to "are" after “restoration work”	grammatical
199	2	move "." from after “quality” to after “above”	grammatical
200	2	change "190 miles" to "~193 miles"	incorrect length
201	3	change "Table 24" to "Table 23"	incorrect cross-reference numbering
222	1	add "of FERC 2021a" after “Appendix J-30”	editorial clarification
226	1	change "fishes" to "fish"	editorial clarification
229	1	move "FERC" from after “Hatchery” to after “Appendix F of”	editorial clarification
230	1	add "spawners" after “40,341”	editorial clarification
231	second bullet	add quotation marks before “using” and after “in place.”	editorial clarification
234	2	delete "." after "2.5.2.2"	grammatical

Page	Paragraph or Location	Correction	Reason for Correction
245	Figure 29 caption	“sDPS” changed to "southern DPS"	unintroduced acronym
247	Table 25 caption	delete "SEV (severity) Score,"	editorial clarification
249	Section heading beginning with “2.5.3.2.1”	change Section "2.5.3.2.1" to "2.5.3.4.1"	incorrect section numbering
249	Section heading beginning with “2.5.3.2.2”	change Section "2.5.3.2.2" to "2.5.3.4.2"	incorrect section numbering
249	Section heading beginning with “2.5.3.2.3”	change Section "2.5.3.2.3" to "2.5.3.4.3"	incorrect section numbering
250	Section heading beginning with “2.5.3.2.4”	change Section "2.5.3.2.4" to "2.5.3.4.4"	incorrect section numbering
250	4	add one space between "below" and "7"	grammatical
250	4	delete “t” at the end of the paragraph and add to the end of the paragraph “of Iron Gate Dam. Therefore, NMFS expects a temporary (< two weeks) reduction in quality of mainstem rearing habitat.”	editorial clarification (incomplete text)
250	5	Delete this paragraph, which reads: "The proposed action is not expected to change the dissolved oxygen concentration downstream of Clear Creek (RM 100) (DOI and CDFG 2012). Because Clear Creek is the upstream extent of designated eulachon critical habitat, the proposed action will not affect the dissolved oxygen concentration for adults and larvae in the lower river, or freshwater and estuarine migration corridors for eulachon critical habitat in the short- or long-term. This relationship between DO and increased sediment deposition are discussed further in <i>Section 2.5.1.1.8 Integration and Synthesis.</i> "	incorrect and inconsistent language

Page	Paragraph or Location	Correction	Reason for Correction
255	1	add ")" after "Habitat section"	grammatical
256	2	delete "actions" after "human activities"	editorial clarification
257	1	add "by" between "resources" and “State”	editorial clarification
258	1	delete "that" after "production"	grammatical
260	1	change "to" to "on" after “ <i>Beneficial Effects</i> ”	language inconsistency
262	2	change "one-year" to “one year”	grammatical
267	1	add "the" before "Iron"	grammatical
270	2	change "quality and quality" to "quality and quantity"	editorial clarification
297	3	change “ <i>Status of (SONCC coho salmon) Critical Habitat in the Action Area</i> ” to “ <i>Status of Habitat in the Klamath Basin, including the Action Area</i> ”	language inconsistency
299	2	change “ <i>SONCC ESU Critical Habitat in the Action Area</i> ” to “ <i>Status of Habitat in the Klamath Basin, including the Action Area</i> ”	language inconsistency
300	4	change "2.5.1, Effects to SRKWs" to "2.5.2, the Effects of the Action section for SRKWs"	incorrect cross-reference numbering and editorial clarification
302	2	change "2.5.1, Effects to SRKWs" to "2.5.2, the Effects of the Action section for SRKWs"	incorrect cross-reference numbering and editorial clarification
303	1	change "is expected to" to "will"	editorial clarification
304	2	change "on SRKWs (Section 2.5.1)" changed to "section for SRKWs (Section 2.5.2)"	incorrect cross-reference numbering and editorial clarification
305	3	change "2.5.1, Effects to SRKWs" to "2.5.2, the Effects of the Action section for SRKWs"	incorrect cross-reference numbering and editorial clarification
305	4	change "2.5.1, Effects to SRKWs" to "2.5.2, the Effects of the Action section for SRKWs"	incorrect cross-reference numbering and editorial clarification
307	5	change “Effects to Eulachon” to “the Effects of the Action section for southern DPS eulachon”	editorial clarification

Page	Paragraph or Location	Correction	Reason for Correction
308	4	change "the <i>Effects to Eulachon</i> section" to "Section 2.5.3, the Effects of the Action section for southern DPS eulachon"	editorial clarification
308	5	add ")" after "salmonids"	grammatical
309	1	change "sDPS" to "southern DPS"	unintroduced acronym
309	2	change "sDPS" to "southern DPS"	unintroduced acronym
309	4	change "2.5.3.2" to "2.5.3.4"	incorrect cross-reference numbering
310	4	delete ")" after "April of year 1" at the end of the paragraph	grammatical
311	2	add "elevated" before "SSCs"	editorial clarification
319	1	add "of" after "occurrence"	grammatical
321	2	add "be" after "will need to"	grammatical
323	Reasonable and Prudent Measure 8	add "extent of" after "amount or"	editorial clarification
330	Term and Conditions	delete one space at beginning of sentence	editorial clarification
331	Conservation Recommendation c	add "the" after "measure", and add "the" after "success of"	grammatical
334	2	delete ")" after "(PFMC 2014)"	grammatical
336	3	add "the" after "concludes that", and add "," after "pelagics"	grammatical
338	1	change "8%" to "13%"	language inconsistency
340	5	change "Pacific coast groundfish" to "coastal pelagic species" in the first sentence of the paragraph for consistency with the section heading	language inconsistency
340	5	change "Pacific coast groundfish" to "coastal pelagic species" in the last sentence of the paragraph for consistency with the section heading	language inconsistency

**UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION**

Hydropower License Surrender and Decommissioning,)	Project No. 14803-001
Lower Klamath Project;)	Project No. 2082-063
Klamath Hydroelectric Project, Oregon and California;)	
Surrender and Decommissioning of the Lower Klamath)	
Hydroelectric Project, Klamath County, Oregon, and)	
Siskiyou County, California)	
)	
)	
)	

CERTIFICATE OF SERVICE

I hereby certify that I have this day served, by first class mail or electronic mail, a letter to Secretary Bose, Federal Energy Regulatory Commission, containing NOAA's National Marine Fisheries Service's Comments on Draft Environmental Impact Statement for Hydropower License Surrender and Decommissioning, Lower Klamath Project, FERC Project No. 14803-001, Klamath Hydroelectric Project, FERC Project No. 2082-063, Oregon and California; and Correction of Non-substantive Errors in the Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Surrender and Decommissioning of the Lower Klamath Hydroelectric Project, FERC Project No. 14803-001, Klamath County, Oregon, and Siskiyou County, California.

This Certificate of Service is served upon each person designated on the official P-14803-001 and P-2082-063 Service Lists compiled by the Commission in the above-captioned proceedings.

Dated this 15th day of April 2022,



Andrea Berry
Administration Support Assistant
National Marine Fisheries Service

