

Comments regarding:

**KLAMATH RIVER RENEWAL CORPORATION'S LOWER KLAMATH PROJECT FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 14803**

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On its face the draft certification clearly demonstrates a policy directed agenda biased predetermination of unaccountable devastation to be forcibly imposed upon the most affected voting regional supermajority. That devastation, with no funding committed or available to compensate or prevent the vast majority of acknowledged impacts, risks, and loss that will occur not just upon the Project site, but will extend within the ENTIRE DOWNSTREAM WATERSHED to the ocean. Taken largely from the draft KRRC Definite Plan for Facilities' destruction, the draft addresses few of the in depth assessments that would have been required from any other non-agenda applicant, such as financial capacity to mitigate ALL local and downstream damages, adequate impacts research without policy directed predetermination, mitigation to existing species and economy, and proven achievable benefits of hypothetically based unaccountable opinion. While SWRCB will likely repeat its prior modus to make sequential 'rulings' intentionally narrowed to single selective premise to achieve equally intended cumulative drastic wide reaching confiscatory policy objectives, a subjective Board 'determination' of 'approval' even on this narrowed 401 parameters fails any test of science, logic, or duty of 'public trust'. It is highly questionable whether SWRCB even has the current authority to perform and issue the 401 certification at this time, as FERC has neither finalized the Project separation (Project 14803), nor approved KRRC qualification or executed a transfer of the targeted facilities ownership, much less validated the terms of the 'Surrender' upon which this 'permit' is based.

Current studies, data, and experimental results now demonstrate the validity of what multigenerational affected river reach residents have been stating from the beginning of this rewilding agenda 'process', just a few of which are highlighted below, and yet none of that current data has been considered in this SWRCB 'evaluation'.

We now know that:

Upstream Upper Klamath Lake water quality conditions are effectively unameliorable and non-conducive for salmon.

The Project facilities providing for retention and irreplaceable downstream deep water reservoirs jointly targeted for destruction currently provide the ONLY known cost effective and substantial improvement of downstream water quality more conducive to anadromous species.

By approval of this Project 'permit' ILEGALLY providing DEGRADED water quality to downstream endangered coho salmon, SWRCB simultaneously breaks the law by destroying the habitat of one of the few and most viable multi life stage federally listed endangered sucker fish populations in the region.

The supposed 'mitigation' of sucker fish habitat destruction violates every provision of the 'Endangered' Species Act, provisions consistently cited by SWRCB as the excuse for so much imposed human tragedy to date. There is no known ESA provision which allows an entire habitat containing a viable and proven sustainable population of sucker fish to be destroyed by Agencies, including SWRCB, by simply arbitrarily 'dismissing' that extirpation as 'originating elsewhere' and therefore making it suddenly irrelevant and not subject to the ESA. It is also demonstrably biased and deceptive to the reviewing public that in the SWRCB 'Order' to perform 'listed' species mitigations, SWRCB merely 'references' completely inadequate window dressing provisions which the KRRC proposed itself in its own separate document. Those 'Orders' leave it to KRRC's own declared 'mitigation' amounting to a multiday 'capture' and 'transplant' to potentially incompatible isolated sites of an estimated 600 suckers comprising an acknowledged but empirically unknown mere FRACTION of the impacted suckers, with no assurance of transplanted survival or habitat equivalent. In fostering this public deception of 'species mitigations' SWRCB is violating its own claimed 'regulatory responsibility', which it has otherwise to date consistently claimed is its 'mandate' in justifying endless, unaccountable, and failed premise oppression imposed upon the regional public.

In this 'hand holding' of a permit, KRRC is held accountable ONLY for the footprint of intended Project destruction and even then ONLY for limited impacts. By the terms of this draft 'certification', SWRCB makes it clear it is AWARE this Project delivers downstream degrading conditions, and therefore simply 'demands' KRRC 'monitors' the site itself that water quality is not worse than the already degraded water quality entering upstream. Beyond that, there is NO accountability or 'mitigation' suggested or available for that 'naturally' degraded water delivered directly downstream during and after the 2 years of 'monitored' degradation. As SWRCB ALSO knows, the KRRC HAS NO FUNDS to accommodate ANY significant environmental 'mitigations' or public/private damages outside 'agreement' advocate handouts. The proposed 'insurance', unwillingly funded by the same taxpayer/ratepayers suffering its consequence, is carefully stated as intended ONLY to protect the KRRC, PacifiCorp, and the two States from legal liability resulting from damages to the area, downstream environment, and vested public/private assets. As a result, those harmed are paying for the very 'insurance' which guarantees that they will be left with NO effective protection or recourse for damages imposed by the 'liability protected' entities.

Since the stated SWRCB 'intentions' for this irresponsible experiment are the historically and scientifically contradicted volitional travel of salmon and EVENTUAL hypothetical POSSIBILITY of water quality improvement 'requiring' the concurrent destruction of Project facilities, this 'permit' MUST evaluate the CUMULATIVE downstream water quality impacts to the entire Klamath, including the ocean. Rather than the continued speculative agenda based assumptions, that assessment MUST provide PROOF that historically unknown and unsubstantiated 'millions of salmon' in the pre dams salmon inaccessible upper basin can even exist; that the destruction of the ONLY currently known effective Upper Basin water quality improvement the deep water reservoirs provide will result in a cost effective eventual net gain; and that ALL damages to the affected region, public/private property, regional resources, environment, economy, and health and safety are FULLY mitigated. Studies now confirm historical documentation that anadromous salmon were never known in numbers in the Upper Basin due to endemic Upper Basin water quality non-conducive for salmon and prior geological impediments. Current studies and evidence now indicate that the deep water reservoirs are effective BARRIERS to potential instream microcystin toxicity

and there is absolutely NO evidence presented that ANY other listed 'impairments' will be improved with Project destruction. This evidence REQUIRES PRIOR PROOF that cost effective volitional and water quality benefits WILL exist, BEFORE SWRCB can issue a 'permit' for what SWRCB itself acknowledges WILL degrade water quality. By law, NO such degrading activity is ALLOWED into ANY federally designated Wild and Scenic river REGARDLESS of whether an unaccountable SWRCB 'believes' water quality 'may' improve in 50-100 years.

In 'accepting' open ended and non-descriptive 'definitive plan' statements, SWRCB willfully sidesteps its public trust claims. Countless unfounded suppositions and limited promissory narratives are left at face value by a SWRCB under governor mandate to 'facilitate' Klamath Dams removals. Obviously intentionally deceptive to the public, such issues as 'protection' of sucker fish habitat loss and coho preservation receive a 'Definite Plan' referenced complementary pass by SWRCB, though in both cases the 'mitigations' are KHSA signatory-benefitting costly and totally ineffective window dressing offering virtually 0% statistical continuity for the stated purpose and species. Even those few SWRCB mentioned issues such as 'hatchery' replacement and known deficient Bogus/Fall Creek resources fail to address blatant omissions, such as facilities adequacy, water rights impacts, and equivalent production capability which historical Fall Creek Hatchery records prove to be inadequate to meet current salmon production numbers.

In its draft certification, the unaccountable SWRCB demonstrates its prejudicial agenda bias by accepting the suppositional, incomplete, and unfounded 'assurances' of the intentionally crafted limited liability premise of a largely unaffected signatory 'agreement' confiscating self-benefitting funding from the most affected supermajority in opposition to destruction. In its 'draft', SWRCB falsely presents prior expired 'agreements' as though still effective and representative of the affected region. Rewriting history and parsing selective 'modeled' science to create a paper trail 'justifying' unaccountable regional devastation does not change the reality of imposed suffering and loss.

Destruction of the Project facilities irreversibly destroys PROVEN environmental and water quality improvements, renewable power generation for 70,000 homes, irreplaceable recreation, flood damage prevention, and critical wildlife habitat and water storage, all for a political agenda hypothetically based POSSIBILITY of DECADES later 'improvement' for selective species at admitted risk of short term extirpation by virtue of that very destruction. In its politically ordered zeal, SWRCB obviously reveals its predefined position by sanctioning a Board 'opinion' based 401 water quality permit even before completing its own crafted and predetermined EIS normally necessary to make an unbiased 401 permit determination. Illogical and illegal at best, by 'permitting' degraded water conditions into the Wild and Scenic portions of the Klamath River below targeted Project reservoirs currently IMPROVING that downstream quality, SWRCB unleashes further Upper Klamath Basin devastation in imposing historically nonexistent and unattainable 'habitat' requirements for 2 incompatible listed endangered species. Not only will neither suckers nor salmon prosper, every beneficial use and the total region will dramatically suffer.

Draft Certification additional specific comment notes are included within the attached .pdf file, as well as an attached referenced Report of relevant Klamath water quality and dams destruction considerations to which each of the points need be addressed prior to any SWRCB 401 'permit' approval.

Sincerely,

Rex Cozzalio

## **Arguments Against Intended Elimination of: Klamath Hydroelectric Facilities, Existing Project Provided Environmental Water Quality and Habitat Enhancements, Water Storage, Recreation, Flood Damage Prevention, Resident Quality of Life and Property Valuations**

**10/25/2016**

### **Overview**

Recent 'revisions' have been made to the special-interest previously proposed and congressionally rejected Klamath Hydroelectric Settlement Agreement (KHSAs)<sup>137</sup>. That 'agreement' seeks to now bypass Congress in implementing the destruction of Klamath water storage and hydroelectric production facilities and its associated Klamath Basin Restoration Agreements' (KBRA) reallocation of Upper Klamath Basin property rights without compensation<sup>74,87</sup>. Consistent with previously failed versions conceived in secret between selective benefitting special interests, those revisions continue to seek imposition of politically derived destructive agenda and environmental damage upon the most affected and unrepresented majority in opposition<sup>75,139,140,202</sup>. Throughout multiple attempts to superimpose that agenda<sup>122,137</sup>, the rationalized rhetoric justifying political imposition and uncompensated resource confiscation have been entirely based upon prior perceived hypothetical benefit to two, and only two, selected environmentally incompatible species (coho and sucker fish)<sup>44,46,116,167</sup>.

Confiscations and 'restoration' have entailed an acknowledged nearly half billion public/private dollars changing hands within less than 10 years.<sup>179</sup> Hypothetically based special interest 'agreed' upon biological opinions, without accountability or consequence and regulatory created repetitive regional crises engendering extensive regional loss and suffering. Those actions included financial devastation for over 1,400 family homes and livelihoods in 2001 alone, and thousands more over the years since.

The 2001 regulatory shutdown of water provided NO identified targeted species benefit. Subsequently, the same agenda proponents who created policies withholding vested surface waters from agricultural use instead encouraged farms to invest in costly wells to pump from the aquifer for irrigation. 'Emergency loans' were made available for drilling to be secured against the properties, whether adequate water was later found or not<sup>227</sup>. In addition to agriculture paying continued fees for 'vested' surface water they were not receiving, surviving farms struggled to pay for far more expensive, energy consumptive, and hydrologically altering aquifer pumping. Once regulatory recommended pumping began drawing down the aquifer, the regulatory response was to assert further authority over the 'crisis' of groundwater reduction.<sup>228</sup> Those environmentally unbalanced hypothetically based 'adaptively managed' demands have forced the least efficient, most expensive, and environmentally irresponsible possible management of water for the Klamath Basin. Therefore local agriculture is often left bearing the carrying costs for wells and surface water rights they are not allowed to use.

Pressured by the policy driven uncompensated economic push for additional agricultural decommissioning regardless of statistical benefit, the logically inescapable conclusion is that the '*rewilding*' objective was the original intended agenda. Those continuing defective special interest policies are inextricably mandated within the newly 'revised' KHSAs and two interdependent secretly created 'agreements'. As predicted by local residents citing historical documentation and current empirical science, hypothetically conceived 'experiments' targeting

two species to the detriment of nearly all others have consistently resulted in little except repeated environmental, social, and economic damages. During the time of the KBRA/KHSA agencies' Memorandums of Understanding imposed agenda-defined rewilding, there has been ZERO statistically attributable 'restoration' increase to coho populations<sup>44,63,65,153</sup>, and **sucker fish have experienced up to an 86% DECREASE in the most 'restoration enhanced' region**<sup>68</sup>. Despite comprehensive regional losses, the 'Agreements' continue to utilize the same rewilding 'theoretical science' now evidenced in the years since as biased, erroneously 'modeled', and failed in every significant assertion. Those same 'agreement' based biological opinions are compounding regional and environmental disaster through unaccountable 'requirement for dam removals'. Even though the theories have been seen to be defective in both premise and projected outcome<sup>68,90,91,185</sup>, those continuing imposed 'opinions' will conveniently NOT be subject to 'review' until AFTER the dams are scheduled for removal.

After the most recent Congressional rejection of KHSA Klamath reservoir and hydroelectric removals, benefitting 'Agreement' participants have sought to evade representation of the most affected regional majority through a convoluted and contradictory 'division' of 'intrinsically connected' agenda parts<sup>137,138,139,140,141</sup>. By placing one of the most environmentally destructive components, facilities removals, under a FERC determination inundated with conjunctive executive directed KHSA seated Agency endorsement; given the FERC exemption from public NEPA process; given the lack of FERC resources to adequately evaluate the current science contradicting agenda premise; and considering the relative lack of FERC decision consequence for damages; an inherent conflict of interest exists fomenting significant potential for FERC to abrogate its public trust in favor of agenda policy compliance. Many of the now known 'opinion' inconsistencies and empirically revealed failures can only be effectively addressed in an environment of inclusion, accountability, and transparency. That environment to date has not occurred, and upon submission to FERC and approval of an executive policy supported Dam Removal Entity request for transfer of Klamath hydroelectric facilities, likely will not occur. The facilities' water storage, flood damage reduction<sup>21</sup>, power generation<sup>158</sup>, increased downstream water quality<sup>181</sup>, fisheries improvements<sup>8,9,13,40,51</sup>, and habitat enhancements<sup>86,90,105,175</sup> have demonstrated the dams' benefits to a unique regional ecosystem for over a hundred years. In essence, those facilities currently constitute environmentally optimized natural edifices within a historically inconsistent transitional zone. According to one of the world's leading experts on earthen dams construction, removal of Iron Gate in the 'cost effective' manner described by proponents in reality presents one of the greatest disaster risks in modern times through the uncontrollable and nearly instantaneous potential for collapse of an otherwise well-constructed virtually indestructible asset<sup>22</sup>.

Removal of those proven facilities threatens, at best, a return to historically known downstream flood damage and drought prone degraded environment, including salmon habitat. At worst, removals have the potential of eradicating entire species. The 'expert panel' cited possibility of downstream fisheries extirpation resulting from removals extends to the intended 'protected' coho.<sup>46,53</sup> Removals will also bring inescapable Upper Klamath Basin devastation from forced imposition of now evidenced defective 'objectives' demanding that the same habitat support two incompatible 'endangered' species (suckers and coho)<sup>75,127,128</sup>. That seems a drastic price to pay when the primary impacts to salmon have long been associated to their majority life ocean based residence subject to cyclic conditions, including decadal oscillations progressively moving food sources and salmon up and down the coast<sup>156</sup>. That association is supported by studies showing the relative lack of upper Klamath marginally conducive riverine importance when compared to the 75% of 'ideal' coastal influenced Klamath tributary spawning habitat that has gone unused<sup>237</sup>. It is further supported by the fact that millions of salmon

annual escapement out of the Klamath estuary can result in a fraction of one percent returns from the ocean<sup>44</sup>. Consequently, to protect the public interest and insure environmental compliance, it is vital to evaluate proposed environmental, social, and economic impacts through an open NEPA public forum encompassing a holistic watershed-wide multi-species environmental review which includes anadromous ocean interrelated impacts.

### **'Agreement' Based Biological Opinions**

The Klamath Working Group, later renamed Klamath Basin Restoration Agreement or KBRA, was formed in sworn secrecy by 26 largely non vested personally benefitting seated 'members'<sup>74,87</sup>. Many of those members were previously instrumental in the 'public input' compounding FERC approved 'mitigation costs' for Klamath dams relicensing<sup>158</sup> with an apparent intention of making PacifiCorp facilities' relicensing options economically untenable<sup>158</sup>. Using the threat of continuing lawsuits against regional water right holders to force participation, KBRA 'members' demanded participant agreement to, and promotion of, two scientifically unsupported objectives<sup>187,188,189</sup>. 'Acceptance' of both dams' removals and a tiered hierarchal resource reallocation of represented and unrepresented resource owners were required in order to even 'sit at the table'<sup>189</sup>. Those original and irrevocable 'member' requirements for agenda endorsement were accepted by a watershed minority of regional land owners in exchange for promised preferential water allocations over and above their unrepresented neighbors. Given the KBRA 'agreed upon' policy premise of removals, the Secretary of Interior, in conjunction with the same exclusive KBRA compliant special interests, compelled PacifiCorp 'participation' in a separate 'stakeholder working group' to create the Agreement in Principle (later named Klamath Hydroelectric Settlement Agreement or KHSa).<sup>177</sup> At the same time, 'agreement' participants ordered a 'revision' to California Water Resources 401 permit objectives 'coincidentally' precluding acceptance of previously permissible hydroelectric facilities water quality<sup>193,195,196,197</sup>. Facing threatened 401 permit non-compliance should PacifiCorp pursue FERC relicensing; threatened additional seated 'stakeholder' lawsuits if PacifiCorp failed to comply with removal agreements; and given Secretarial promises for PacifiCorp liability indemnification from removals, cost transference to ratepayers, and apparent preferential consideration concerning related PacifiCorp interstate projects; the new owner Warren Buffet directed PacifiCorp to acquiesce. That compelled 'agreement' set the scenario for seated Agency's ratepayer and publically funded propagation of 'biological opinions' consistent with those preexisting agenda requirements<sup>12,39,56,43,58,63,64,72,96,98,106,116,119,123,160,161,164,169,170,171,175</sup>. Truly regionally experienced and affected resident produced alternatives were repeatedly presented. Those alternatives integrate non-attrition holistic actions allowing multiple optimized benefit and facilitation of species throughout their naturally conducive environment at a FRACTION of proposed removals and 'mitigation' costs.<sup>238</sup> Though alternate options previously proven components were assessed practical and effective, they were routinely rejected in favor of the hypothetically based and cost ineffective agenda exclusively for the reason that 'alternatives did not advance the position of dams removals'.<sup>179,238</sup> Utilizing Agency administratively defined 'study' parameters; limited selective 'peer review'; shelving of studies incompatible with agenda premise; extensive 'computer modeled' assumptions; administrative 'final report' parsing of study cited risks and limitations; and 'negotiated' suppression of multiple exposed scientific corruption cases; the current EIS/EIR 'biological opinions' were created advocating for the predetermined recommendations of dams removals and confiscatory resource

reallocation<sup>75,189</sup>. In creating those 'Agreements', the Secretary of Interior 'intrinsically linked' the KBRA and KHSA<sup>74</sup>, publically declaring that one could not exist without the other, all the while anticipating the Congressional approval of facility removals and funding for special interest KBRA participating member financial benefit. Upon the first Congressional submission of 'Agreements', the exorbitant KBRA member 'mitigation costs' with initial conservative estimates at 1-6 BILLION dollars<sup>23,49,51,92,105,106,128,131,138,163,164,179,180,184,189</sup>, failed to gain approval. At that point, the Secretary expended efforts to conceal those costs within other manipulated public sources of funding, altered the 'Agreement', and 'reduced costs' on paper to ensure congressional passage on the next submitted iteration<sup>122</sup>. 'Cost reductions' occurred in part through the Secretary's lead KBRA/KHSA EIR director unilaterally 'determining' a 'blow and go' dam removal along with unbridled release of fisheries toxic sediments in the Klamath as environmentally acceptable<sup>24</sup>, even though against warnings from his own administered 'studies'<sup>14,18,23</sup>. Upon the second submission to Congress, the concurrent exposure of special interest KBRA member benefits<sup>73</sup>; multiple instances of exposed scientific corruption<sup>107,108,109,110,111,112,113,131,162,163,202</sup>; documented resident coercion<sup>83,87,92,96,97,107,121,128,170,187</sup>; revealed hidden studies refuting the 'endangered' sucker numbers and coho flow mandates<sup>68,69,116,124</sup>; Agency manipulation of public survey results<sup>106,200</sup>; the Secretary's attorney authored exclusionary 'Secretarial Recommendation'<sup>39,99,179</sup>; and the 80% majority vote of the most affected region against facility removals<sup>201</sup>; once again resulted in Congressional House rejection and admonition. With the KBRA time frame for approval expired that 'Agreement' also officially ended. However, in fact, those same interests and the Secretary still continued working behind closed doors, further obfuscating, partitioning, and integrating new secured secret 'Agreements' to obtain the exact same original objectives for benefitting participants<sup>45,75,128,142,234</sup>. Since the KBRA had legally expired, any 'biological opinions' dependent upon those KBRA undeliverable resource allocations, implementations, and 'mitigations', also became invalid. However, all KBRA aspects mysteriously appear to remain in full force pending a 'newly revised' legislative submission; the Secretarial marshalling of participating State and Federal Agencies to 'recommend' for FERC determination of facilities' removals; and 'alternative' paper trail funding appropriations for seated members<sup>75,135,139</sup>. Cited below are the KHSA special interest media claims 'supporting' Hydroelectric Facilities removals followed by the current known standing.

**KHSA arguments demanding Klamath water storage and hydroelectric facilities removals using agenda proponent 'theoretical science' versus history, current empirical science, and known results from prior regulatory implementations:**

**Preface:** Implementation of the biological opinions used to authorize Agency created regional crisis and calls for Hydroelectric Facilities removals are based entirely on two determined 'endangered species', Klamath sucker fish in the Upper Klamath Basin and coho salmon in the Klamath River:

**A. Upper Klamath Basin Sucker fish:**

**Originating biological premise:** 'Klamath suckers are near extinction, obviously due to anthropogenic causes, and even though data and biological information are largely unavailable, dire circumstances require immediate drastic theoretically based environmental enhancements including water quantity and quality improvement primarily through decreased agricultural water use, massively decreased agricultural

production, increased land retirement, increased marshland development, raising of Upper Klamath Lake levels far above historically known levels, and reduced Municipality, Forestry, and Industrial use impacts’.

**Current known standing:** Historically, due to Agency considered excessive numbers of suckers and low economic value compared to imported species, multiple government attempts were made to eradicate Klamath sucker fish up to the 1960s to no significant protest or success<sup>73,203</sup>. Suckers had coexisted for over 70 years subsequent to the Klamath Project. Recent Agency experimental ‘biological opinion’ confiscatory impositions appear to have negatively impacted sucker populations more than any ‘anthropogenic cause’ which preceded them<sup>68</sup>. Millennia of sucker fish adaptation to the historically naturally high nutrient, shallow, warm water, and drought prone region allowed it to continue surviving even when faced with newly imported predatory and competitive species adapted to less extreme conditions<sup>50</sup>. New agenda-determined effective ‘confiscation without compensation’ policies creating unsustainably ‘enhanced’ environmental conditions have instead proven detrimental to ‘protected’ suckers advantage in competitive survival<sup>68,69</sup>. Even though the failed results have now been definitively seen, the ‘policies’ still fail to change, confirming a political agenda of regulatory rewilding rather than the professed objective of environmental benefit. The following are a few of the major points addressing the present results of originating biological premise:

**Extinction:** The current ‘endangered’ status is based largely upon USFWS computer modeled predictions<sup>123</sup>. That flawed model cited relatively few and regionally limited sucker expected numbers. A more effective survey later found that those numbers were grossly underestimated. Even though the actual numbers and range would have never supported the original listing, the listing continues<sup>67,168</sup>. Another primary USFWS ‘modeled’ impetus for listing was the determination that Lake Ewauna at Klamath Falls was a ‘dead zone’, not only barren of suckers, but acting as an impenetrable toxic barrier to spawning passage. This was presumed by USFWS due to the ‘toxic’ proximity of Klamath Falls, agricultural inputs, and logging mills. In 2012, BOR Klamath Area Office resident scientists performed a study in Lake Ewauna identifying not only presence of suckers, but a thriving multi-generational population. Those studies surfaced due to complaints by both USFWS and NMFS against BOR for challenging their agenda ‘basis’, resulting in the BOR firing of those scientists and the *scientists’ public release of information and subsequent retaliatory lawsuit*.

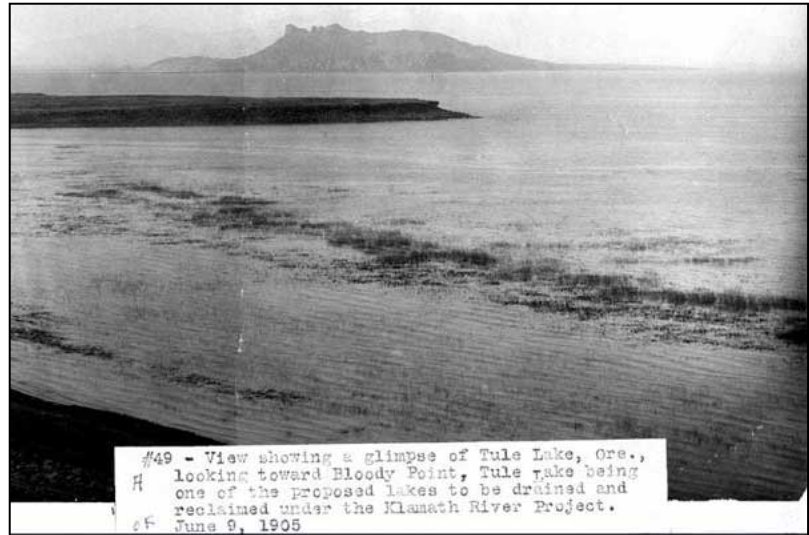
Facing public awareness and solid studies (including another study the scientists performed and described below under coho), BOR rehired the scientists, prohibited them from performing any additional studies, shelved their prior peer reviewed studies from public access, promoted their supervisor who had defended the agenda stance by firing the scientists, sealed the court documents, and placed a nondisclosure clause as a condition of the agreement<sup>107,108,109,110,111</sup>. At present, sucker populations in Lake Ewauna are known to be some of the strongest in the region, and are actively being ‘transported’ in large numbers to other locations<sup>9</sup>. Once again, the ‘endangered’ status, the resultant biological opinions, and their attendant impacts did not change.

In order to ‘restore’ sucker fish, over 15 years of substantial suffering and loss has prevailed within the Klamath Basin from water restrictions based upon the hypothetically based ‘Biological Opinion’ (BO) that Upper Klamath Lake levels should be higher than had ever naturally occurred<sup>123</sup>. That hypothesis was and remains unsupported by historical documentation, local experience, or empirical



science<sup>41,76,77,78,79,80,90,168,174,185,198,203,224</sup>. After approximately 10 years of increased lake levels, a **2012 DOI study cited the DECREASE of lake sucker populations ranging from 38-86%**<sup>68</sup>. Despite those losses and extensive unbiased expert conclusions challenging lake level benefits notwithstanding, the 2013 'programmatically' revised Biological Opinions continue water confiscations to support UKL elevated lake levels<sup>123</sup>.

Required reductions in irrigation withdrawals from reservoirs are promoted as part of the 'opinions' based upon the supposition that fluctuating lake levels are certainly detrimental to sucker habitat and spawning<sup>123</sup>. Actual studies have identified that decreased 'perceived' water quality and increased reservoir fluctuations of water levels directly correlate to the highest most robust sustainable populations of suckers<sup>69</sup>. John Boyle Reservoir, one of the facilities targeted for removal, is presumed by removal proponents to be one of the least conducive to suckers by virtue of its 'worst' water quality and greatest fluctuations. Instead, empirical study demonstrated that **John Boyle sustains one of the strongest and most diverse populations of suckers found in the region**<sup>69</sup>.



Note what appears to be macrophytes and periphyton (algae) in the large, shallow, solar exposed, evaporating, nutrient laden, lake, historically known for the poor quality of water. Those conditions are now being forcibly recreated by dam removal benefitting proponents as 'marshlands' touted as theoretically 'treating' water quality. Those same benefitting proponents seek to forcibly REMOVE downstream smaller surface area, deep water, large volume reservoirs actually PROVEN currently REMOVING nutrient loads and enhancing salmonid conducive water quality DIRECTLY on the Klamath River at the point of greatest benefit.

Downstream Copco, with its increased water quality and lesser fluctuations sustain larger adult suckers but less generational diversity and population. Significant listed sucker numbers are cited as non-supported in current downstream Klamath River conditions, likely due to facilities' progressive water quality enhancements more conducive towards natural and invasive predatory species.<sup>69</sup> Prior to Iron Gate, typical area river conditions were tangentially conducive to both warm and cold water species, presenting mixed marginal fisheries dominated by massive populations of undersized warm water species (i.e. perch and bullhead catfish)<sup>179</sup>. With Iron Gate construction, nutrients and warm water fish were sequestered; area 'unnatural' lake cold water was made available for Hatchery and Klamath River use; and increased downstream water quality improvements occurred respective to salmonids<sup>86,179</sup>. In the case of John Boyle and Copco reservoirs, targeted removals will in fact impair and kill listed suckers by removing an empirically proven sucker conducive habitat, subjecting such removals to potential liability for endangered sucker take. Ironically, as discussed below, with the removal of the facilities, the removal of their progressive water quality conditioning will also significantly degrade downstream coho conditions<sup>17,67,168,175</sup>.

All recent data supports the conclusion that sucker fish endangered status and concurrent failed 'adaptively managed' policies were based upon fabricated and defective premise from the start, challenging the very validity of the endangered listing determination<sup>9,67,168</sup>. Subsequent policy directed failed experiments and 'discovered' sucker numbers have only served to confirm that conclusion<sup>9,29,30,31,32,33,34,43,53,61,74,87,88,95,96,102,103,116,123,187,189,194</sup>.

**Marshes, Nutrients, and Agriculture:** Historically Tule Lake Lost River closed loop marshlands were reduced in order to diminish prevailing disease potentials; increase water quality; enhance Klamath River fisheries late summer low flows which often receded subsurface in upper Klamath locations; synergistically create more reliable downstream flows for fisheries and provide renewable electricity for over 70,000 homes while sustaining BOR integral Upper Basin Project pumping requirements; better optimize utilization of precious water; and continue to provide wildlife benefit through both retained habitat and increased agricultural provisional feed sources<sup>40,41,56,204,205,206</sup>. All improvements were made possible and essentially paid for by the agricultural production provided through the optimized lands of the Project. The symbiotic benefits were recognized as a major success throughout the region for over 70 years. Locals had long cited the naturally occurring geology and climate as the primary factor for historically eutrophic conditions<sup>76,77,78,79,80,174,166,179,190,205</sup> and experienced the consequent holistically enhanced environment as a result of the Project's optimization. Despite that local knowledge, recent rewilding promoted 'theories' demanded re-creating marshes. 'Reassigned' agricultural lands were removed from production and inundated. Just regarding lands above Upper Klamath Lake, out of 150,000 formerly irrigated acres, 97,160 acres were converted into marsh between 1960 and 2006<sup>102</sup>. Research has confirmed that not only is the water exiting those marshes often higher in nutrients (particularly phosphorous) than those entering, overall water loss per acre is also far greater through absorption and evaporation than when used for irrigation further exacerbating eutrophic resident conditions<sup>8,11,198</sup>. The 'restored' Wood River Wetland has easily absorbed and evaporated 100% of the water entering<sup>43</sup>. Interestingly, marshland 'restoration' proximal to Upper Klamath Lake occurring from the 1960's and greatly accelerating after the 1980's appears to correspond to the perceived INCREASE of hyper-eutrophic Upper Klamath Lake algae blooms<sup>2</sup>. Regardless, the agenda of sacrificing agricultural lands to ever increasing marshes continues.

Agricultural lands, including those created by the Project, have repeatedly been accused responsible for the predominant nutrient contributions to eutrophic waters. The National Research Council has determined that the naturally occurring phosphorous in Upper Klamath Lake (UKL), and specifically within the top 1" of sediment alone, is sufficient, even with a presumed physically impossible cessation of nutrient addition, to drive the algae/biological mass/dissolved oxygen cycles for a minimum of decades to come<sup>90,91,185</sup>. Only a minority of the 40% of phosphorous estimated entering UKL annually to existing lake resident amounts is claimed identifiable to agricultural use, and a majority portion of that has been cited likely from the transitory decomposition of resident phosphorous laden peat<sup>3,4,8,11,67,168</sup>. Paleolimnological evidence within UKL indicates a major shift to Aphanizomenon flos aquae dominance over the last century. That study reveals Pediastrum, a non-nitrogen fixing green algae, was dominate prior to Aphanizomenon flos aquae (AFA).<sup>9</sup> Pediastrum is an extremely heavy nutrient dependent feeder found commonly in sewage ponds<sup>233</sup>. Gas fixation by AFA is currently the primary provider of nitrogen to UKL, apparently replacing the nitrogen naturally available to Pediastrum prior to 150 years ago.<sup>229</sup> However, total overall late summer

cyanobacteria, biomass, and nutrients have remained nearly the same, with only the significant concurrent DECREASE in N:P ratios over time<sup>9</sup>, potentially from the transitional organic decomposition of drained former marshes. *Microcystis aeruginosa* (MA) has been a historically present and active participant in UKL bloom cycles<sup>9</sup>. MA development in UKL depends on the nitrogen provided by AFA through its initial bloom senescence release, typically occurring in mid to late summer.<sup>229</sup> Microcystin has an approximate half-life of 2 days in precipitated sediment and 6 days in cellular suspended water column<sup>229</sup> indicating undisturbed sediment has less toxic potential than suspended cellular form. AFA is phosphorus driven and UKL contains high levels of resident phosphorous with greatest turbulence induced water column resuspension in UKL occurring in spring/early summer.<sup>229</sup> Agricultural lands actually offer the ONLY currently known cost effective long term Upper Basin method of reducing eutrophication driving phosphorous from the ecosystem<sup>51,90</sup>. That reduction occurs through phosphorous uptake by plant crops and livestock with their subsequent productive physical removal from the region<sup>51</sup>. Studies have also indicated waters contributed to the Klamath from Lost River Project lands are actually 'cleaner' of nutrients than would 'naturally' exist without agriculture<sup>54,55,207</sup>. Tens of thousands of acres of agricultural lands in the region have already been forced into permanent fallow based upon the 'theory' that land retirement and reduced irrigation would increase surface water flows. The National Research Council model shows that an INCREASE of Basin agricultural irrigation use actually INCREASES contributed flows to the Klamath River at Keno<sup>39</sup>, but the agenda push for increased 'retirements' continue.

## **B. Downstream Klamath coho salmon**

**Originating Biological premise:** Agricultural usage of the upper basin water reduces flows previously available downstream for chinook and endangered coho salmon during migration, thereby reducing spawning habitat, increasing water temperatures, increasing disease, and killing downstream salmon. Klamath water storage and hydroelectric facilities degrade water quality; contribute organic toxins; increase water temperatures to the coast; create the most salmon disease conducive reach in the river; provide no flood prevention or useable storage benefits; retard the flushing of sediment; fail to provide 'natural' gravel recruitment for spawning salmon; reduce salmon populations by blocking the historical access to millions of salmon from hundreds of miles of pristine spawning habitat; and destroy the health and wellbeing of Upper Basin Klamath Tribes who depended on the salmon since time immemorial.

**Current known standing:** Local experience and historic documentation have consistently asserted regional water quality and environmental improvements as a result of the dams compared to pre-dam conditions<sup>21,42,73,74,75,76,77,78,79,80,83,103,104,105,120,179,190,224</sup>. Throughout the special interest agenda of Klamath hydroelectric and water storage facilities removals, that information has been completely disregarded by personally benefiting KBRA/KHSA seated largely nonresident removal proponents<sup>75,189</sup>. As a part of the agenda 'process', a KHSA Interim Agreement demanded there be PacifiCorp ratepayer funded payments made prior to dams' removals for various removal proponent 'stakeholder' benefiting administered 'projects and data acquisition'<sup>32</sup>. Ironically, that site collected data<sup>25,26,27,28,29,30,31,32,33,34</sup>, discussed in further detail below, now confirms the continuing resident stated beneficial importance of the reservoirs and Klamath flow control in enhancing natural background environmental conditions, along with the minimal

negative environmental impacts produced in exchange for those major benefits received. However, removal proponent 'analysis' of that data does not appear to be forthcoming and the current 'Biological Opinions' of removal assumptions are not 'scheduled for review' until AFTER dams are slated for removals<sup>123</sup>.

An originating biological premise of removal proponents has been:

*'Agricultural usage of water in the upper basin reduced the Klamath River flows previously available downstream for chinook and endangered coho salmon during migration, thereby reducing spawning habitat, increasing water temperatures, increasing disease, and killing downstream salmon.'*

Prior to the Klamath Project, the Upper Basin closed loop Lost River system rarely delivered waters to the Klamath River, and never during the period of lowest Klamath River flows<sup>205</sup>. Evaporation from the massively exposed and shallow Lost River and Upper Klamath Lake marshlands was and is far greater than any equivalent area agricultural use.<sup>11</sup> With the preponderance of existing Project agricultural lands located within previous marshlands, the net effect struck a balance between marshland habitat; reduction of detrimental disease conducive conditions; agriculturally produced supplemental migratory avian feed sources; and hydrologic gain for Klamath River system use. The Project captured excess waters stored in deeper reservoirs allowed controlled and optimized productive water usage, reduced evaporation, and increased water quality through limiting exposure to naturally endemic nutrient sources. National Research Council models show that increasing agricultural irrigation within the Upper Klamath Basin actually results in INCREASED flows entering the Klamath River at Keno.<sup>198</sup> History and research support that net gains were made to the Klamath River from the Project's Upper Klamath Lake storage and the Lost River additions, gains which would disappear with Upper Basin 'rewilding'.

***Water quality, toxins, temperatures, disease:***

Water quality in the Upper Klamath Basin has long been demonstrated 'cleaner' coming out of the agricultural areas compared to that entering<sup>54,55,207</sup>. Marshlands being re-created in the Basin have been shown to degrade intended water quality conditions and reduce water quantities available downstream<sup>8,11,43</sup>. Naturally occurring, and according to the National Research Council un-ameliorable resident phosphorous in Upper Klamath Lake has been shown to compound and feed 'current salmon objective' biodegraded conditions downstream<sup>90,91,185,198</sup>. It is now apparent that naturally occurring upstream UKL nutrients, biomass, and dissolved oxygen impacts are sequestered, ameliorated, and detained by the downstream facilities<sup>8,13,,69,103,104,181,182</sup>. Downstream reservoirs have been shown to provide the only effective evidenced improvement towards those current downstream objectives, consistently providing 'cleaner' water below the dams and delaying release of the worst seasonal water quality which, prior to the dams, historically occurred concurrent with the most vulnerable initial salmon runs<sup>4,8,175</sup>. Present data indicates that existing potential microcystin development and impacts may actually be reduced both quantitatively and temporally as a result of the dams<sup>1,2,4</sup>. Considering recent better understanding of cyanobacteria life cycles, particularly *Aphanizomenon flos-aquae* (AFA) and *Microcystis aeruginosa* (MA), any potential toxins originating in Upper Klamath Lake or added through nutrient uptake biological process within immediately downstream reservoirs are diluted, sequestered, and delayed past the period of greatest

potential harm<sup>2,5,25,26,27,28,29,30,31,32,33,34</sup>. MA's recently identified characteristics include in-river competitive advantages of adaptive flotation and tolerance to shade and cooler temperatures; toxicity production potential appearing greater in cooler and shadier conditions than in warmer high light conditions; and much greater potential harm from any toxicity occurring through direct cellular food chain ingestion as opposed to ingestion of or exposure to instream dissolved microcystins.<sup>5,6,35,36,38,175</sup> Microcystin concentrations have been shown to occur in lower Klamath River locations HIGHER than from water exiting Iron Gate reservoir<sup>237</sup>, but the 'modeled' KHSA 'expert opinion' using over 80 qualifiers in one section alone (could, may, possible) to proclaim removal 'instream improvements' state that NO macrophyte/periphyton instream empirical study was or would be performed<sup>235</sup>. Considering MA's characteristics, its containment, growth, and cellular senescence within the reservoirs likely produces far less potential for toxicity development. Considering MA's instream advantages, reservoir released waters likely result in far less potential for instream direct toxicity harm to all species, including coho and human<sup>6,35,36,38</sup>. This 'new' regional data evidenced biological assessment is further supported by the historical fact that not a SINGLE cyanobacteria toxicity related health case was EVER reported on the Klamath in over a hundred years of hydroelectric storage facilities' operations. The facilities sequester and delay water transport downstream approximately 2 months during late summer flows<sup>4,236</sup>. The estimated 2 day transport time without facilities in place would produce significantly higher nutrient loads directly downstream during the lowest flows, highest temperatures, and initiated salmon runs. High instream nutrients would support extensive macrophyte and periphyton densities, salmon disease potential, and drastically increased risk of directly ingestible cellular MA toxicity throughout the Klamath River to the estuary. Further supporting this, pre and post Iron Gate area residents have repeatedly asserted the directly experienced improvement that Iron Gate made towards downstream salmonid conducive conditions.<sup>190</sup> In spite of this, with virtually all other 'impacts' having been discredited, the biggest water quality 'impairment' still claimed by hydroelectric storage reservoir removal proponents is 'toxicity'.

Initially without site specific study, Agency and NGO Klamath dam removal proponent ordered 'computer modeled water temperatures' describe dam influenced temperature increases all the way to the coast. Those 'studies' were used to 'justify' Department of Water Resources (DWR) procurement of regional authority and to amend the 401 permit antagonistic to the facilities<sup>37,117,171,193,196,209</sup>. Using the word 'impairment' based solely upon hypothesis acknowledging little to no regional empirical data, DWR codified 'administrative' language solidifying Agency's power, 'procedural' agenda of removals, and regional 're-wilding'<sup>117,129,166,176,190,191,193,195,196,197</sup>. With each of the several subsequent expanding empirical studies attempting to prove temperature influence, each instead increasingly exposed the opposite. Going from a hypothesized opinion of dams' influence to the ocean, even removal proponent's own modeled study 'opinions' begrudgingly now admit minimal dam impacts for 7 – 15 miles; a margin of error nearly equaling any projected affects; 'benefits' which can only occur with 'fully implemented restoration' as promised by a KBRA that no longer exists; and the continued failing to acknowledge that 'impacts' may actually provide potential overall temperature fisheries benefits for that short distance affected<sup>209</sup>. From the removal agenda's beginning, facilities benefits have been cited by residents experiencing the before and after of Iron Gate, but even now those realities are still ignored by removal proponents. The consequential conclusion of current data supports residents' long held experience that the river very quickly assume an average of day and night temperatures, with any minor temperature effects seen immediately downstream often found by

locals as positive for fisheries. Even with the reversal of the underlying agency 'hypothesis' claiming significant reservoir 'temperature impairment' as justification for authority, the authority granted itself by Department of Water Resources (DWR) still remains. To further assure regulatory determined dam removal, removal proponents concurrently approached EPA to reverse EPA's prior position by adding 'microcystin' to DWR Klamath 'impairment' mandate<sup>16</sup>. Based on their created authority, DWR began 'amending' policy 'interpretations' to allow subjective DWR Board unelected ability to assure the impossibility of achieving facilities 401 (or potentially any other) 'permit' compliance<sup>117,190,193</sup>. One of those 'permit' changes involved 'creating' a computer modeled Klamath naturally unattainable dissolved oxygen requirement<sup>190</sup>. Perhaps unintentionally revealing the true Agency objectives, in typical response to public comment DWR staff wrote the following: *"The Regional Water Board cannot establish life cycle-based water quality objectives for the mainstem Klamath River because the DO (dissolved oxygen) concentrations associated with salmonid life cycle requirements cannot be met even under natural conditions— conditions in which there are no anthropogenic influences. As such, the Regional Water Board staff has proposed water quality objectives that protect natural [modeled pre-anthropogenic estimated background] DO conditions from further degradation (underlines and bracket explanation added).<sup>166</sup>* In other words, NCRWQBC acknowledges the upstream Klamath is a naturally non-conducive salmon environment, but that even though actual salmon returns have shown no overall declines directly resulting from current vested 'anthropogenic' riparian use; and even though any pronounced detriment to salmon has generally been a natural statistically rare and temporary confluence of uncontrollable environmental events; and even though by their own admission salmon should not even exist in the Klamath under utilized NCRWQBC computer modeled tolerance assumptions; and even though the computer modeled 'natural background conditions' without anthropogenic influence bear no resemblance to regional history or experience; DWR imposed naturally unattainable administrative ever expanding policy mandates do NOT allow for regulatory relenting prior to eliminating ALL anthropogenic impacts.

### ***Flood and fire protection, storage, sediment/polychaete flushing, and gravel recruitment:***

Dam removal proponents' adamant claim of 'no flood protection' provided by the facilities, without any admitted prior studies, have again been proven wrong following their original disparaging of local experience. Those locals, who historically sought the dams in large part for that very reason, subsequently experienced the local dramatic reduction in flood damage that resulted. It took regional residents to provide the engineering before removal-promoting lead Agencies finally acknowledged and marginalized those dramatically experienced benefits within their own buried documents<sup>21,75</sup>. The attenuation of ramping and delay of flood maximums have resulted in a fraction of the damages to the immediate downstream Klamath reaches from high flow events relative to regular extensive riparian, fisheries habitat, and asset losses experienced prior to the dams. Removal Proponent claims of no useable reservoir storage benefits have been repeatedly contradicted by their own multiple requests for stored water releases used exclusively for experimental supplemental environmental fisheries coastal benefit<sup>210</sup>. To this day, 'Agreement' Agencies never significantly include facilities' flood damage prevention findings in their 'conclusions' or public media, and NO WHERE do they ever consider mitigations for those damages to the affected downstream majority resulting from their decisions.

A contradiction of claims often emerges with removal proponent assertions, depending upon the momentary rewilding purpose and audience served. Cited on the one hand is a 'need for undammed flood flows' to 'flush' sediment and periphyton for salmon disease control and expansion of spawning habitat. On the other hand they simultaneously proclaim the 'benefits' from undammed accretion of sediment for mollusks, macrophyte/periphyton food sources, and salmon parasite (lamprey) habitat<sup>12,46</sup>. In reality, while those simultaneous claims are logically incompatible and reveal agenda intent rather than consistent environmental objective, the removal of facilities within the areas affected will certainly cause damages to both. **Since Copco and Iron Gate have been in place the reservoirs benefitted warmer water resident species, and formerly degraded proximal downstream river reach conditions shifted dramatically towards salmon conducive objectives.** Attenuated flooding events have allowed existing aggregate appropriate salmonid spawning beds to remain friable and clean without uncontrolled riparian erosion that loaded those beds with basalt clay sediment prior to the dams<sup>14,179</sup>. Recent 'experiments' of water wasting releases intended to discredit that experience and 'prove' proponent contentions have in fact proven the opposite<sup>211,212</sup>. Original computer modeled predictions of 5,000 cubic feet per second flows from Iron Gate to 'flush' sediments and periphyton instead produced the reverse effect, eroding fragile banks, depositing large amounts of sediment in gravel beds, and compounding the periphyton and salmon disease potential conditions for the following year as predicted by local residents. Rather than acknowledge 'modeled' inconsistency which would reverse removal proponent assertions and relieve regional regulatory imposed 'water crisis', the choice was instead made to 'double down' on required flows. A 2016 contrived flood event released over 11,000 cfs from Iron Gate Dam<sup>212</sup>, illegally increasing faster and greater in volume<sup>213</sup> than any actual known natural flood event occurring through recorded history for that date<sup>214</sup>. Long accumulated Upper Klamath Basin water was, with premeditation, suddenly and without public warning 'triggered' for 'flood protection' during dry weather and no forecasted weather events. That event compared to the prior 5,000 cfs 'flush' predictably produced tremendously greater riparian erosion, loss of trees, killing of nested wildlife, and deposition of even greater amounts of sediment within affected river refugias than the previous flush. Exclusively considering only the water quantity above the already high flows at the time, the water wasted to the ocean within a 7 day period alone would have provided enough water for over a half million people for a year. Though the results completely discredit proponent 'undammed' assertions, as typical throughout this 'process' those results, riparian damages, and even the event itself, have received NO public release of information or acknowledgement. Instead of intended proponent objectives, the results actually demonstrate the balanced sediment control benefits that the dams and reservoirs provide. That demonstration, despite being within the most climatically salmon non-conducive region of the historically accessible river, explains how that immediate downstream dam influenced 'most impaired' river reach actually has now provided one of the highest salmon survival rates of any reach to the coastal influence<sup>215</sup>. As to 'gravel recruitment' for potential salmon spawning beds, the agenda proponents' own 'expert panels' have acknowledged that the regional geomorphology provides little appropriate materials or structure to significantly provide increased spawning habitat within the VERY limited area above dams that salmon were previously known to reach, leaving the amount of spawning beds that exist downstream threatened with sediment loading from facilities removals<sup>20,175</sup>. With typical 'adaptive management' agility, the rationale advocating water confiscation for 'flushes' has now shifted more towards polychaete reduction in the river reach below Iron Gate.

The claim is that the dams create elevated salmon disease conditions (polychaete habitat infected with ceratomyxa shasta delivering actinospores downstream in turn infecting salmon). Emerging evidence and inconsistencies now highly challenge that hypothesis and infer a much GREATER potential for salmon infection with removal of the facilities.

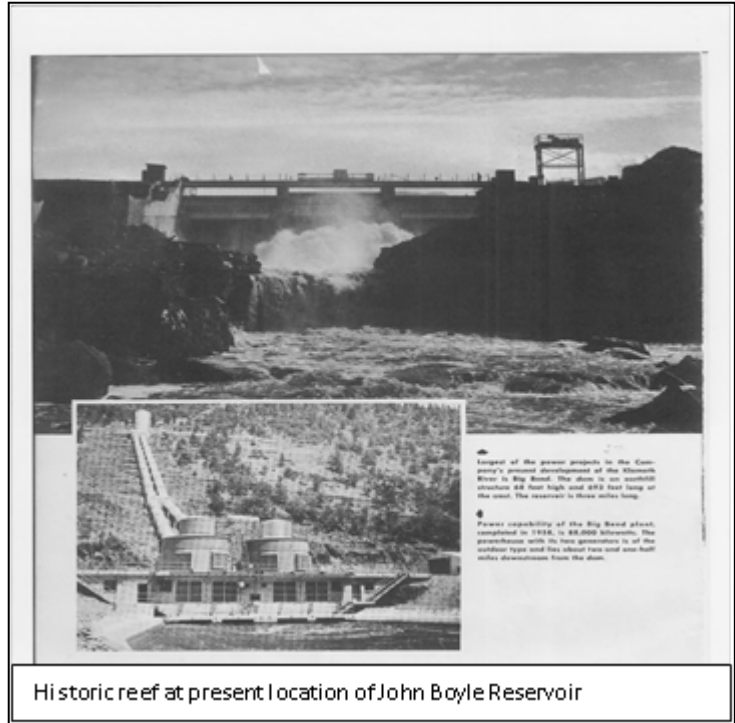
Polychaete has now been found to withstand and mobilize against high flow events. Active and large populations of Polychaete have been observed in the sediments at the mouth of the Williamson River entering Upper Klamath Lake. As the life cycle vector for ceratomyxa shasta, the polychaete worm (Manayunkia speciose) is in turn infected from the myxospores released from decaying C. shasta infected salmon carcasses. Those majority infected carcasses contribute an estimated 89% of myxospores to the Klamath River estimated in the billions, which settle in downstream sediments. High flow events have been found to distribute myxospores great distances. The highest Klamath concentrations of spores are typically found at or below Beaver Creek, substantially downstream of Iron Gate and the Shasta River confluence. Instances of highest spore densities have been tested in Orleans far downstream of Iron Gate. There is greater connectivity of salmon mortality to temperature and spore density than to low water flows. Spores LOSE viability at HIGHER temperatures, with far greatest infectious potential in the winter/spring. Current DNA testing for instream monitored spore concentrations detect ALL arbitrary forms and portions of spores, whether viable, degraded, decomposed, or non-infective, and prescribed 'flushing' experiments based upon acknowledged 'negative' assumptions and 'modeled' inaccuracies have provided minimal inferred or tested data which support as much direct or associated attributable fisheries 'flushing' detriment as benefits.<sup>14, 211, 212, 239, 240, 241, 242, 243</sup>

The above has numerous implications. As polychaete vectors already exist upstream and are well adapted to ALL encountered environments, and as decomposing infected salmon carcasses contribute the vast majority of downstream infectious spores, any salmon that WERE introduced to the Upper Basin would complete the disease lifecycle for C. shasta providing for infection of all downstream fish. It is clear from 'flushing' experiment results and much higher downstream spore concentration rates than exist below Iron Gate that the dams are NOT indicated as a primary factor in downstream infection. It has been shown that sedimentation of the river below Iron Gate by resident clay soils will simply destroy existing salmon redds, fill in deep water instream refugias, and facilities destruction will provide additional habitat for upstream polychaete and myxospore survival and transport, myxospores that will be deposited in increasingly uncondusive upstream conditions as far as the acknowledged infected majority of salmon are pushed past limits they were naturally and historically known to ascend.

***'Salmon access for 'millions of salmon' to 'hundreds of miles of historical habitat' providing 'food for the upper basin Klamath Tribe from time immemorial':***



This is perhaps the most egregious, erroneous, and continually cited proponent argument for Klamath hydroelectric and reservoir facilities' removals. Like many of the other claims made by financially benefitting removal proponents, this 'rewilding' assertion is purposefully constructed to sound reasonable to the uninformed. In fact, those assertions are completely contradicted by regional experience, historical documentation, and current studies<sup>76,77,78,79,80,86,98,146,147,148,149,150,174,224</sup>. Not



a single certain reference from the 1820's to original Klamath dam construction ever asserted anadromous



**Around 1900, Link River**, between Upper Klamath Lake and Lake Ewauna, occasionally went dry before the Klamath Project was built. There was no hydropower, no hatcheries, occasionally no fish (fish need water), no artificially-raised river flows or lake levels.

salmon in any known identified numbers within the upper Klamath basin. In a region frequently subject to pre-european settlement Tribal food shortages, Sucker fish were revered as a 'sustenance' food for the Klamath and Modoc Tribes specifically due to sucker's adapted ability to survive in the Upper Basin's predominately naturally high nutrient shallow warm waters. Dried salmon were commonly known traded by coastal tribes to the Klamath and Modoc in exchange for obsidian and other goods<sup>78,80</sup>. Klamath Tribal guides informed early travelers that **salmon were never known farther upriver than Spencer Creek, near the location of present day Copco**

**Dam**<sup>76,77,80,146,224</sup>. In 1896 biologist Barton Evermann, and in 1897 Dr. Gilbert separately caught, identified, categorized, and documented Upper Basin fisheries<sup>78,174</sup>. In both cases, NO inclusion of anadromous salmon was made. Water quality in the entire Klamath was frequently reported as 'feted', undrinkable, and highly organic long **before the influence of settlers**<sup>76,77</sup>. **The Klamath is unique in being an 'upside down' river and watershed, with naturally high nutrients and little precipitation at the upper end, with increasing**

**quantity and salmon conducive quality nearer the coastal influence.** With all the ‘critical’ emphasis on removing facilities and elimination of agriculture in the upper Basin, the actual historical amount of water exiting Iron Gate comprises an average of approximately 12% of the quantity occurring at the estuary<sup>14</sup>. At least 3 natural upriver impediments in the present location of dams, reefs presently inundated by reservoirs or formerly physically removed, were considered virtually impassable to salmon by all regional accounts<sup>59</sup>. Prior to reservoir’s added storage; Lost River water addition; and regulated flows; it was common late summer for the river in the Klamath Canyon (area of current dams) and directly below to go entirely subsurface in cobble riverbed. **Even IF those historically known pre-facilities conditions of water quality, quantity, and access had NOT been present, by the time spawning salmon reach the present location of dams near the upper limits they were historically known to travel, they are largely depleted, injured, and dying**<sup>179,217</sup>. Prior to dams, Shasta tribal members were known to avoid eating any salmon taken above the Shasta River confluence due to their ‘unpalatable’ condition<sup>179</sup>. The Shasta Indian Tribe occupied a massive region of the Klamath Basin which encompassed current dams location and extended far downstream near present day Happy Camp. Shasta verbal history describes an ‘agreement’ with lower river Tribes even ensconced in lore<sup>223</sup>. Any Shasta member could take as many salmon as they could carry from downstream weirs put in yearly by lower river Tribes, blocking upstream salmon migration to trap salmon for their own use, preservation, and trade. The Shasta being a very powerful Tribe encompassing a massive area, the only reasonable answer they would have tolerated such an arraignment is their belief that the downstream salmon were in a more palatable condition. **The longtime manager and fisheries historian, Curt Hiser, of the Iron Gate Fish Hatchery estimated the maximum unimpeded potential range for the majority of salmon if allowed to travel above the current hatchery would be approximately 30 miles**<sup>217</sup>. That assessment of potential endurance supports the same approximate range salmon were historically known to be found.

Pre-dams local knowledge was a significant factor in the choosing of site locations for the original Klamath Project and Dams being built in the effort to improve regional environmental conditions. No small part of that investigation was based upon research by an already active and influential California Fish and Game Commission. Known limits of Klamath salmon was the reason that mitigating hatcheries were only deemed necessary to compensate for the few known marginal spawning streams affected. It was only upon Iron Gate dam’s created ‘unnaturally’ cold water, water profoundly more conducive for salmon incubation and rearing, that the ability was achieved to contribute FAR more towards salmon numbers and fisheries sustainability than was EVER regionally known to occur naturally in the upstream region prior to dams<sup>213</sup>. So successful were the improvements that media, agencies, and sportsmen continually printed their praises for decades afterwards. In fact, the indisputable statistics of salmon returns to the dams’ region from records beginning with the first dam (Copco) before the dams full effect on salmon returns are proof alone of salmon benefits of the facilities<sup>15,219</sup>. No reduction of upper Klamath salmon returns were evident except for one period during the 1930’s, which upon investigation at the time was found caused by Yurok tribal gill netting near the estuary and which resulting sanctions saw an immediate salmon population recovery<sup>213</sup>. Compared to Copco consistent returns, the construction of Iron Gate demonstrated even GREATER salmon benefit, with an increase of over 20% returns above pre-Iron Gate numbers. When compared to the period since the late 1980s to the present, constantly cited as the period of ‘precipitous collapse threatening salmon extinction’ and somehow attributed to historic dams ‘requiring their immediate removals’, the

returns of salmon to Iron Gate Hatchery during that period averaged over 200% greater than pre-Iron Gate. If DNA identical so-called 'wild' salmon occurring in downstream tributaries are made the exclusive indicator for removals, then the constant century long presence of the hydroelectric facilities upstream CANNOT be the causative factor of claimed declines. However, **it IS significant, if seldom cited, that physically unregulated Yurok Tribal gill net harvests, after approximately 40 years of restriction, resumed on the lower river during the exact same period 'coincidentally' corresponding to so-called 'salmon collapse'**<sup>220</sup>.

Regarding the 'threatened' designation of coho used as the justification to grant 'authority' for demanded facilities removals, coho were never historically locally known native to the upper Klamath River region<sup>218</sup>. Coho are predominately a coastal fish found spawning 'within 20 miles of the ocean' according to CA Dept. of Fish and Game documentation<sup>221</sup>. Initial plantings of coho made in the upper Klamath beginning in 1897 and repeated numerous times over the next 60 years failed every time, apparently due to continued unsuitable upstream natural conditions present both prior to and after the initial Klamath Project<sup>222</sup>. Only after the third attempt in the 1960's using the imported Cascadia strain of coho, and AFTER Iron Gate Dam's further improved downstream anadromous conditions, was a 'marginal return' declared and regular rearing commenced<sup>153,217</sup>. Over 58% of untagged coho entering and rereleased from Iron Gate Hatchery spawning runs have been shown to repatriate and spawn in alternate tributaries<sup>93</sup>. **However, ALL coho entering the hatchery have by 'policy' been and as of this date continue to be euthanized; coho that under normal circumstances would be considered 'endangered' wild stocks**<sup>155,231</sup>. Being DNA identical to 'wild' coho and with current studies proving the high percentage of spawning straying in the Klamath<sup>93</sup>, it becomes difficult to deny the high probability that upper Klamath 'wild' returns of coho are a derivative of those prior plantings. That fact alone raises the specter of likely future upper mid stem Klamath coho decline or 'extinction' following the loss of Iron Gate Hatchery and Dams removal degraded water conditions. Despite acknowledged awareness, NO KHSA alternative to replace the loss of Iron Gate artificially generated cold lake water conducive for salmon rearing has been found<sup>46,53,75</sup>. As such, the only options left for cited 'adaptive management' would be frantic costly construction of a non-resident replacement hatchery at an as yet undiscovered equivalent alternative site, and the immediate response of even greater regional regulatory oppression. Cited by facilities removal proponents as 'necessary' for coho survival, even their own paid 'expert panel' questioned any significant known benefits to coho from facility removals<sup>46,53</sup>. However, that same panel repeatedly admonished the extreme risks to existing coho populations if ALL of the promised but unknown, undefined, and unfunded Upper Klamath Basin KBRA concurrent 'habitat improvements' failed fruition. Those panels frequently expressed their doubts that such functionally and/or cost effective unknown 'mitigations' could or would occur.<sup>46,53</sup>

Despite all of the prior information, the removal proponents' assertion of previous 'millions of salmon in the upper basin' extrapolates primarily from a mere handful of unsupported, regionally contradicted, and logically ambiguous references in a 'synthesis' presented by a paid seated Agency employee<sup>161</sup>. Massively refuted by historical documentation, in the later attempt to seemingly solidify that singular opinion with proponent agencies' paid for 'scientific verification', an archeological study<sup>98</sup> was contracted to examine historic fish bones in Upper Klamath Basin Klamath Tribal middens. Out of over 15,000 bones spanning over 8,000 years being analyzed, 8 specimens were confidently determined to be anadromous. Even though authors acknowledged those numbers may actually be skewed in favor of salmon, as typically salmon bones

are much larger and thereby more durable than the other species they examined, they none the less definitively concluded that anadromous salmon MUST have been resident to the upper basin. Their rationale was that the otolith (Jaw) bones tested could NOT have been from traded salmon as Alaska Tribes were never known to preserve salmon with the heads on. Since they determined 'no records exist' of Klamath estuary Tribal salmon preservation methods, there was 'no reason to believe they [Klamath coastal tribes] would be different in salmon preservation'. Therefore, those 8 bones could NOT exist unless from volitional arrival. **In fact, in the 1851 report by George Gibbs of the Reddick McKee expedition on one of the earliest documented forays in the lower Klamath River, Mr. Gibbs reported in extensive detail the cultural fishing habits of the lower river Tribes, INCLUDING details of salmon preservation 'in their entirety' (heads on). The net effect of that information renders their conclusions unsubstantiated and instead actually supports the opposite historically consistent regional experience and Tribal references citing salmon trading<sup>80,157,224</sup> and NO known significant numbers of salmon reaching the Upper Klamath Basin<sup>77,78,79,86</sup>.** If salmon had been the primary food for Klamath Tribes, it is unlikely that the less palatable suckers would have been such a revered food source, and it is virtually certain that Upper Basin middens would have represented FAR more than 8 longer lasting anadromous bones in relation to 15,000 others found spanning a period of 8,000 years. However, considering the present control of water resources, payments, and land grants being obtained by Klamath Tribes and agenda proponents as a result of facilities removal 'agreements', it may not be entirely unreasonable that a historically unsupported claim of pre-dams dependence on 'salmon' is now 'remembered to time immemorial'<sup>226</sup>.



Link (Klamath ) River flowing out of Upper Klamath Lake over the reef at what is now Putnam's Point before the Link River Dam was built.

With the Project combined facilities providing increased late summer Klamath River augmented flows, river segments going subsurface rarely occurred again. Flow continuity allowed fish consistent migratory mainstem access to any available habitat compliant tributary. However, beyond providing unbroken connection below the facilities, the 'amounts' of water released from Iron Gate have shown little correlation to returning salmon populations. Many instances of drought induced low flows to 395 cfs revealed NO apparent deviation in subsequent life cycles for returning salmon numbers<sup>219</sup>. In fact, in one of the studies performed by the BOR Klamath Area Office scientists, for which studies they were fired, was the conclusion that increased Klamath River flows provided NO equivalent benefit for coho. Scientifically solid, that conclusion conflicted with 'Agreement' seated NMFS demands for confiscated appropriations to increase downstream flows as 'necessary' for coho. Although NMFS retaliation was swift and angry, causing the relevant BOR study to be shelved, over 15 years of mandated increased flows resulting in ZERO statistically attributable benefit for coho further substantiates the scientist's study. As repeated by regional residents and contradictory to the 1 dimensional 'predictive models' utilized by removal proponent agencies<sup>209</sup>, the river is multidimensional and complex in its 'non conducive' allowance of salmon transport to the reaches historically known. The

river responds primarily to average day/night temperatures and macrophyte/periphyton aided recurrent deep water refugias, allowing salmon migration movement during biologically induced dissolved oxygen supersaturated periods with resting holdover deepwater during less salmon conducive conditions. Regionally seasonal short term late summer warm day /night temperatures creating endemic disease conditions randomly occur coincident with heavy migrating salmon populations. Those conditions appear the FAR more consistent predictor of any salmon infection and mortality than flow variations from Iron Gate<sup>90,91</sup>. The lower Klamath below the Trinity confluence harbors the predominant location of past and rarely significant fish mortalities. Compared to coastal influence flows to the estuary, and considering the 150+ miles of largely bedrock canyon channelized solar absorbing riverbed, the greatest potential increase from Iron Gate, to the sacrifice of all else above, represents an extremely small thermal impact upon any 'habitat' within the coastal influenced reach. It is that rationale by which the National Research Council declared the 2002 fish mortality was NOT caused by low flows from Iron Gate Dam<sup>90,91</sup>. However, in 2002 ALL of the prior listed exacerbating endemic disease coincident conditions occurred, plus the simultaneous chemical dump cited above. Though removal proponents are 'certain' in their assumptions, neither fish nor water were tested for transient causes until long AFTER the reported kill and existing water conditions dissipated. Also conflicting with continuing proponent claims of Iron Gate release association, the kill was relatively brief and NO identified kills occurred within the 150 miles of upstream diminishing flows to Iron Gate during or after that incident. Despite the 'fish kill' which ended as abruptly as it started, with the simultaneous decrease in night temperatures and passage of possible chemical laden water, the salmon run was still one of the largest realized returns upriver, a fact to date seldom heard included in dam removal proponent media<sup>219</sup>.

### **Facilities Removal, Known and Potential Losses, Agenda methodology:**

Site specific Klamath science, historic documentation, and regional experience confirm the hydroelectric facilities with their water reservoirs enhance known affected beneficial uses. Their impacts are in optimizing, segregating, and improving both warm and cool water conditions for fisheries in a region previously marginal for each, and providing consistent water resources for sustaining both. Those consistent resources were not known to exist prior to the dams. At the onset of removal proponent Klamath targeted 'rewilding' agenda, Pacific Power and Electric (PP&L) had long owned and operated the Klamath hydroelectric and water storage facilities. Up until that time, PP&L agreed with the regional experienced holistic environmental benefits the facilities have provided to a unique multifaceted watershed. At that time the removal proponent benefitting Agencies, Tribes, and NGO's insisted that PP&L was a 'public entity' and, using their own convoluted special-interest concept of 'public trust' negating private ownership, concluded PP&L MUST succumb to removal 'determinations'. After PacifiCorp fell under Warren Buffet ownership and was compelled to take a 'seat at the table', his representatives encountered KHSA removal proponents' extorting 'agreement' threats and benefits directed at his company and shareholders. Those rewards, threats of litigation, and lack of allowed options forced PP&L position towards removals. Those same KHSA proponent groups now proclaim the 'constitutional right of a private company to make a business decision'. That 'decision' was to sign an 'agreement' between PacifiCorp and the removal proponent entities in an illegally executed exclusionary 'process' which placed the burden of removal costs, losses, 'mitigation', and risk upon the unrepresented ratepayers, taxpayers, regional residents,

and particularly the vested riparian owners. In doing so, the benefitting 'agreement' signatories conveniently authored themselves confiscatory authority; self-benefitting payoffs of land and money; funneled 'administration' of billions of future dollars; and protection from any accountability for damages caused. In reality, PacifiCorp is a quasi-public entity, subject to certain limitations and obligations to regulators, ratepayers, and the affected public in exchange for enjoying a regional monopoly. It is the regionally affected residents and ratepayers vested with the area's history and environmental needs that were instrumental in the initial development, support, construction, and funding of the regional facilities. It was the regionally affected residents who in their participation and sacrifice were willing to suffer either the benefits or the hardships of Klamath facilities construction upon their property and lives. By virtue of those presently integrated property value impacts the affected residents continue to hold a significant vested interest in the proposed unaccountable imposed physical losses to their functional survival and operational environment. There is a vested interest and voice which benefitting and largely non-vested 'agreement' removal proponents have unilaterally dismissed or ignored within KBRA/KHSA exclusionary 'process'. If the theoretical benefits promised by removal proponents were so certain, then proponents would not hesitate to simply indemnify all affected public against consequential losses to their lives and property relative to facilities' benefits and conditions currently enjoyed, as was required with Iron Gate construction. They do not. In the original KHSA Environmental Impact Statement (EIS) 'evaluation', only a few affected entities having financial or political power were able to gain 'report' inclusion of recognized potential damages. All other inescapable downstream and Project resident losses, including many known and stated in public comments, were just simply ignored. Conservatively, over 20,000,000 cubic yards of sediment will be released to the Klamath with removals, enough bumper to bumper dump trucks to extend half way around the world, altering channels, killing wildlife, filling refugia, damaging fisheries, and destroying diversions and irrigation assets. Routinely experienced present sediment blockages to salmon passage at the Klamath estuary will be drastically compounded. Reduced flood control will see a return to still remembered pre-dam repetitive devastation to environment, property, assets, and infrastructure. Given the fact that the original KHSA EIS recognized potential liability for associated damages to approximately 10 influential interests for the removals' resultant sediment, flood, infrastructure, and value losses, then it is inescapable that those same potential losses MUST exist for EVERY riparian or river related vested interest in the over 200 river miles affected. In spite of that massive impact, NONE of the 'agreements' signatories accept such accountability or even recognize the most affected majority non-proponent existence. Ironically, under the 'new' KHSA, most of the prior few interests formerly recognized as affected by removals will now receive no assurance.

It is obviously apparent to anyone reading the proponent crafted, parsed, and exclusionary 'agreements' with constructed 'supporting' documentation, that the intrinsic intent is the inevitable created condition of regional 'rewilding'. Proponents' orchestrated effective 'condemnation without compensation' utilizes imposed 'biological opinions' to empower the regulatory taking of property use and resources, thereby driving the economic attrition of vested residents. To those who have been living it, the proposed amended 'agreement' legislation would, if ratified, permanently codify unaccountable proponent agenda tactics. Those same tactics have already devastated thousands of vested family homes and futures for over 17 years of premised 'biological opinions' which to date have resulted in ZERO targeted species' statistical benefit. Were 'rewilding' not the intent, proponents would extensively assess salmon ocean based life cycle and decadal oscillation impacts; salmon escapement/return relationships; the approximately ¾'s of identified salmon unutilized 'ideal' coastal

influence spawning tributaries; present agenda statement inconsistencies compared to historical documentation of pre-existing conditions; the lack of facilities' attributable connection to cyclic salmon numbers; the present physically impossible ability to produce 'agreement' required 'beneficially contingent' upstream enhancements; the impacts of facilities removal upon all affected species; the impossibility of achieving 'agreement' defined 'programmatic' objectives without massive regional attrition; the complete dismissal of locally presented PROVEN far more cost effective nondestructive alternatives; or the legal basis for imposing the unaccountable 'taking' of property, assets, and value from affected, unrepresented, and uncompensated interests. They have not. Instead, proponents actually set predefined agenda objectives of compelled facilities removals and water resource confiscated tiered hierarchy reallocation, and then proceeded to force, bend, and/or buy the result.

Just a few of the tactics utilized to date in the compulsory 'process' towards 'removal determination', with each item alone sufficient in themselves to prove biased agenda intent, include; the evidenced oppression of multiple whistleblowers; the suppression of science that contradicts removal premise; the illogical frenetic 'urgency' for irreversible removals prior to empirically proven benefit; the refusal to address 'agreement' statistical and environmental objective conflicts; the strategically self-designed parameters administratively allowed for 'consideration'; utilization of deficient data and intentionally misleading assumptions; the concealment of publicly exposed removal proponent corruption; administratively manipulated paid peer review outcomes by limiting allowed 'science' sources; review 'determination' restricted to two predefined options; locally unsupported proponent constructed 'problems' and 'solutions' specifically generated to compel rewilding agenda objectives; the unaccountable tolerance of, or feigned obliviousness to, the 'risks' of imposed consequential major loss to others; and that only proponent selectively-chosen allowed 'impacts' can be considered in any 'evaluation' for removals. As such, much of the historical information and recent empirically pertinent science is banned; alternatives banned; 'expert opinion' being portrayed as proven science encouraged; risks of loss imposed upon others easily dismissed as 'unavoidably unmitigated'; unsupported 'causes' directing regulatory imposed involuntary 'mitigation' without compensation; and the irresponsible ignoring of impacts to all other holistic beneficial uses, human attrition, and ecosystem species in favor of single species based agenda-engineered rewilding. Given past KHSA/KBRA agenda, failed beneficial performance, non-representative 'process', lack of accountability, and current known standing, any FERC determination based upon 'Agreement' participating 'recommendations' will unquestionably end in irreversible devastation both to the environment and to the most affected and knowledgeable regional majority opposed to removals.

#### **Summary of major findings in conflict with KHSA premise:**

- Currently known sucker numbers existing at the time of listing would not have qualified for listing of sucker fish as endangered.
- Over 15 years and hundreds of millions of dollars implementing the KHSA entrained hypothetically based policy 'experiments' have more than sufficiently PROVEN the failure of promised benefit. Increased Upper Klamath Lake levels, fluctuating lake levels, agriculture, and municipal use have NOT shown any regional definitive direct causative link to sucker numbers.

- Past harvesting practices, prior attempts at extirpation, and historically unknown currently increased UKL water levels favoring native and introduced predatory competition presently appear to have exerted greater prior and present contributory factors significant to sucker fish.
- Many documented Upper Klamath Basin fish deaths have occurred prior to the Klamath Project.
- Upper Klamath Lake naturally prevalent background nutrients and particularly resident phosphorous loads will drive currently un-ameliorable Biological cycles for the foreseeable future.
- Upper Klamath Basin cyclic seasonal biomass senescence and associated short term oxygen depletion appears a historically recurrent condition.
- **Upper Klamath Lake elevated lake water levels appear to have NO positive influence on sucker fish survival or prevalence, and in fact are indicative of an inverse relationship to declines.**
- Currently seasonally dominate cyanobacteria *Aphanizomenon flos aquae*, a nitrogen fixer, was not present in UKL 150 years ago, prior to which time the green algae *Pediastrum* was dominate.
- *Microcystis aeruginosa* was fully present and active in UKL prior to the 1850s.
- Current limnologic data shows the only significant UKL change from prior to 150 years ago is a DECREASE of spring/early summer N:P ratios.
- *Pediastrum* as the predominant Upper Klamath Lake species prior to the Klamath Project is a non-nitrogen fixer alga, and an extremely heavy nutrient feeder most commonly found in sewage ponds.
- *Aphanizomenon* currently dominates in Upper Klamath Lake in spring to early summer, supporting that a shift in dominance from *Pediastrum* may be due in large part to presently REDUCED UKL early spring nitrogen levels.
- Blooms of *Aphanizomenon* occur concurrently with humic acid levels input from Klamath Marsh spring flows and both tend to diminish in late spring/early summer, inferring a causative connection.
- Senescence of *Aphanizomenon* releases large amounts of nitrogen into the water column allowing for competitive dominance from alternate species dependent upon available nitrogen, such as *Microcystis aeruginosa*.
- Senescence of the secondary *Aphanazomenon* and *Microcystis* blooms in later summer re-release nutrients, with unsettled and un-gassed remaining dissolved amounts becoming available in outflowing downstream waters to the Klamath along with undecomposed biomass.
- Naturally available nitrogen may have shifted to lower N:P ratios over the past 150 years, but *Aphanzomenon* fixated replacement of available nitrogen has resulted in essentially the same overall late summer total cyanobacteria, nutrient loads, and biological mass production available for downstream transport.



- According to the National Research Council, UKL resident phosphorous levels present NO currently known viable means for substantively altering outgoing Upper Klamath Basin water quality, even with a TOTAL and unaccountable cessation of ALL Upper Basin agriculture. As it stands, long term agricultural production absorbing and physically removing naturally occurring phosphorous is the ONLY known permanently effective option to reduce nutrient contributory conditions within the Upper Klamath Basin.
- **Regardless of initial bloom species, limnologic assessment of sediment indicates the overall biomass and nutrients entering the Klamath from UKL are essentially unchanged from 150 years ago. With the present day inclusion of increased Lost River and Upper Klamath Lake available stored water plus the gains from historically reduced evaporation augmenting the late summer Klamath River flows, even when INCLUDING current agricultural usage, it is probable that present late summer flows are seasonally substantially GREATER than occurred pre-Project, a scenario coinciding with historical accounts. Even if that were NOT the case, NO attributable statistical benefit for downstream Klamath fisheries has been empirically shown to exist from 'naturally' unsustainable increased UKL flows discharged over the past 15 years of implemented and regionally destructive 'Biological Opinions'.**
- With UKL endemic high biomass and nutrients, including nitrogen, entering the Klamath River during late summer low water flows, conditions are conducive for renewed downstream biological growth, including by *Microcystis aeruginosa*.
- Recent investigation reveals *Microcystis* characteristics including the potential to: outcompete other species through changing light levels by its ability to adjust float height within the water column; tolerate shadier and cooler conditions; generate LESS toxicity in warmer higher light conditions than in shadier cooler conditions; and create a greater potential for realized toxicity in the food chain found from direct cellular ingestion rather than from contact with microcystin dissolved in the water column.
- Any subsequent blooms, including *Microcystis*, occurring in John Boyle, Copco and Iron Gate Reservoirs sequester entering nutrients and delay water and nutrient transport downstream for up to two months during the warmest, lowest Klamath flows, and generally concurrent time of most susceptible salmon entry to the Klamath.
- Waters released to the Klamath River from Iron Gate during the time of lowest, warmest incoming UKL flows are of higher quality relative to salmon downstream salmon objectives. Any temperature 'modeled' impacts from Iron Gate released waters are positive at that time, and any delayed later 'negative' have been shown to be minor, ameliorated within 7 to 15 miles, and has demonstrated NO adverse consequence within the limited reach theoretically affected.
- Upon senescence of hydroelectric facilities blooms, decomposed biomass and nutrients are partially precipitated, out-gassed, and permanently sequestered within the deep reservoir non turbulent depths before any amounts remaining in the water column are transported downstream.

- Higher concentrations of microcystin have been known to occur under conducive conditions in the **lower** Klamath River than within that released from Iron Gate, confirming a **natural** instream Microcystis compatible habitat.
- When finally released, any nutrients from the facilities reservoirs are effectively delivering those added nutrients during a less detrimental period of lower ambient temperatures, potentially increased water flows, and conditions less conducive to development of macrophyte/periphyton/ceratomyxa salmon disease potential.
- **Removing the Hydroelectric facilities would allow the high nutrient UKL biomass to be delivered downstream to the Iron Gate location within 2 days. Delivered directly instream at the time of highest ambient temperatures and lowest water flows will return the river to experienced pre-dam historical conditions of decomposing biomass and high macrophyte/periphyton salmon disease conducive conditions at the most detrimental time of initiated salmon runs. Nutrient conditions and the instream competitive characteristics of microcystin allow the potential for heavy algae production throughout the entire river length. Without dams, any Microcystis growing under in-river cooler shadier locations conducive for fisheries holdover has a far greater likelihood of toxicity production, direct cellular ingestion, and thereby greater toxicity consequence throughout the entire food chain.**
- Historical returning salmon counts to the facilities region reveal NO perceptible negative pre-dams correlation to facilities existence, an overall 20% average INCREASE of returning salmon numbers realized through the later addition of Iron Gate Reservoir and Hatchery, and a 100% INCREASED return to Iron Gate during the so-called 'salmon collapse'. Historical documentation, geological impediments, and current returning salmon physical condition at the facilities location conflict with the assumption of pre-dam 'significant salmon numbers' extending beyond existing facilities reach into the Upper Klamath Basin.
- Over 15 years of hypothetical KHSA defined 'Biological Opinions' demanded the forcefully appropriated naturally unsustainable increase of flow releases from Iron Gate. Conjectured solely for the advantage of 'endangered' coho, those flows mandated to continue within KRRC amended KHSA policy have clearly demonstrated ZERO attributable statistical coho or any other salmon benefit. Even so, 'programmatically' those 'opinions' will receive NO reversionary review until AFTER intended facilities removals occur.
- Removal of the Hydroelectric Facilities destroys existing optimized and otherwise unavailable environmental habitat for multiple listed KHSA dismissed species. It also imposes the functionally unsustainable, biologically incompatible, historically unsupported, and regionally devastating regulatory enforced environmental mandate of 'salmon habitat' upon the Upper Klamath Basin. The already failed unfunded, undefined, irreversible, and unaccountable special interest administrative policies entailed within the KHSA logically allow NO possible outcome besides predefined 'adaptively managed' regional attrition and media managed inevitable return to 'rewilded' pre-Project degraded conditions.

- **As current data reveals, the Klamath Hydroelectric facilities provide the ONLY known cost effective substantial improvement to known and experienced pre-dam Klamath River conditions, and NO regionally substantiated significant negative impacts.**

### **Conclusion:**

The above facts and implemented results conflict with agenda proponent assumptions regarding facilities removals and endangered species theoretical benefit. A large part of the agenda-refuting evidence has been unintentionally provided by the rewilding and removal proponents themselves. With the demise of the KHSA's 'intrinsically linked' KBRA, upon which exact 'agreement' terms the Department of Interior based its entire EIR/EIS 'peer reviewed' science, the KHSA EIS/EIR became functionally void. No part of the prior KHSA EIR/EIS is still applicable and under the 'amended' KHSA no part of the science-dependent 'agreement' proclaimed 'mitigations' necessarily occur. Similarly, the previous FERC considered options are ALSO currently invalid, as the intervening new data, studies, and proven science in the years since now refute prior predicating FERC EIS assumptions and limitations. The current 'amended' KHSA desperately seeks FERC to force the immediate irreversible agenda defined objective of facilities removals with NO functional assurances, protections, or provisions in place. Even though the KBRA has NO legal standing or structure, it is the same continuing concealed process and benefiting 'agreement' affiliated individuals who have been exclusively 'appointed' to the unaccountable Dam Removal Entity (DRE) Board. As a 'private' 501 (c)3 'non-profit', of which Board members include seated government agencies, that DRE seeks to illegally use unrepresented ratepayer and public funds to facilitate the political agenda of rewilding and removals under a self-created bylaws provision of secrecy and non-disclosure. Using those public funds, that special interest 'appointed' DRE Board is to secure 'indemnification', NOT for consequential damages resulting from removals imposed upon the majority of regional residents, but ONLY for 'agreement' participating entities' protection from legal liability. That 'indemnification' for benefitting seated participants provides no accountability for policy based failed decisions to the environment or region, leaving the unrepresented regionally affected residents no reasonable redress for realized damages. Whether pursued under FERC or EPA, ANY consideration of advancing facilities removals going against the most affected regionally opposed majority DEMANDS a new and transparent NEPA EIR/EIS. That EIR/EIS MUST be without pre-condition; holistically inclusive of ALL species; fully accountable for damages and losses to ALL directly impacted vested interests; substantively address ALL relevant information and alternatives; preferentially pursue the LEAST detrimental and most HOLISTICALLY beneficial regional options; and effectively resolve and indemnify ALL identified social, economic, and environmental consequential impacts prior to ANY publically imposed 'determination'. The self-established and non-representative KRRC has the single professed purpose of unaccountable Klamath dams removals. Given past KHSA/KBRA agenda, performance, non-representative 'process', lack of accountability, and current known standing, any FERC determination based upon 'Agreement' participating 'recommendations' will unquestionably end in irreversible devastation both to the environment and to the most affected and knowledgeable regional majority opposed to removals. Approval by FERC for any transfer of assets to the KRRC prior to a full and open EIS/EIR effectively constitutes administrative authorization of that singular defined outcome. Such authorization would allow only

minor subsequent ineffective amendment to the original agenda outcome of environmental and regionally devastating attrition. Any proposed Project involving a change of ownership with intended major revisions to the operational function of the facility demands a complete and UNBIASED FERC process and affected public inclusion prior to authorization. FERC policy has previously publically proclaimed their internal requirement to perform a complete, open, inclusive, and transparent public EIR/EIS for any significant project. **The largest dam removal in world history would likely qualify as a significant project. Anything less than FERC requirement for a full and complete EIS/EIR prior to approval of license transfer would abrogate the constitutional, scientific, ethical, and public trust obligations incumbent upon ANY regulatory Agency seeking to exercise subjective agenda authority, and NO FERC approval should be allowed to occur without COMPLETE mitigation for ALL damages imposed upon the affected.**

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171. Predicting the Thermal Effects of Dam Removal on the Klamath River, Bartholow, et al, USGS, December 2004 (modeled Dam impacts for 200km, 'possible' 18 day shift, removals 'might' lower upper temperatures somewhat)
172. Klamath Project fish survey: Klamath Falls, Oregon, Bureau of Reclamation, 1989
173. Klamath Salmon: Understanding Allocation, By Ronnie M. Pierce, February 1998 (includes gill netting)
174. Fishes of the Klamath Basin, Charles H. Gilbert PhD, Professor of Zoology, Leland Stanford University, 1898 (no basin salmon, resident lamprey with diseased and dying masses of Upper Klamath Lake suckers in June)
175. Session C6: Predicting the Effects of Klamath River Dam Removal Room C120-122 3:30 – 5:00 pm, Stillwater, Asarian, Kann, USGS, et al, (instream nutrients much higher without dams and alteration towards non-nitrogen fixers such as toxic potential Microcystis) 2012
176. Appendix 1: Staff Report for the Proposed Site Specific Dissolved Oxygen Objectives for the Klamath River In California, North Coast Regional Water Quality Control Board, Santa Rosa, CA, March 2010 ('modeled' arbitrary and naturally unattainable dissolved oxygen 'impairment' requirements)
177. W.Va. meet led to Klamath dam removal, salmon aid, Medford Mail Tribune, 9/30/2009 (Kempthorne admission of government position that dams were coming out)
178. Statement Regarding Klamath Dam Removal Meeting March 16, 2016, Congressman Doug LaMalfa written public statement March 13, 2016
179. 4310-MN-P Department of the Interior - Bureau of Reclamation Klamath Hydroelectric Settlement Agreement (KHSA), Including Secretarial Determination on Whether to Remove Four Dams on the Klamath River in California and Oregon Notice of Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) and Notice of Public Comments 6/7/2010 [FR Doc. 2010-14174 Filed 6-11-10; 8:45 am Dennis Lynch], including consequent Scoping Comments.
180. Department of Interior Secretary Kempthorne Letter to Governor Schwarzenegger November 13, 2008 (KBRA/KHSA intrinsically linked, 1 billion cost for KBRA alone)
181. Final Technical Report Klamath Hydroelectric Project (FERC Project No. 2082) Analysis Of Potential Klamath Hydroelectric Project Effects On Water Quality Aesthetics, PacifiCorp, Portland, Oregon October 2004 (turbidity improved by facilities)
182. Periphyton in Selected Sites of the Klamath River, California, Prepared for Tetra Tech, Inc. By J.M. Eilers MaxDepth Aquatics, Inc., Bend, OR, January, 2005 (denser at Shasta, Scott, high at Requa)
183. Salazar, Abbey Restore Protections for America's Wild Lands, Ken Salazar Press Release, Kendra Barkoff (DOI), 202-208-6416, 12/23/2010 (Commitment to rewilding)

184. Report to Congressional Requesters: KLAMATH RIVER BASIN CONSERVATION AREA RESTORATION PROGRAM - Limited Assurance Regarding the Federal Funding Requirements, US Government Accountability Office, 2005 (2000-2004 DOI budget assessments)
185. Endangered and Threatened Fishes in the Klamath River Basin: Causes of Decline and Strategies for Recovery, Committee on Endangered and Threatened Fishes in the Klamath River Basin, National Research Council, 2004
186. Cal/EPA Environmental Justice Action Plan Pilot Project Summary for Community Capacity Building – Klamath River, California State Water Resources Control Board, May 18, 2005 (compelling Tribes to support rewilding and KBRA dominance)
187. Agenda - Klamath Basin Coordinating Council Meeting, Redding, CA, (KBCC) December 15, 2010 (objectives)
188. Summary of Changes in the Klamath Basin Restoration Agreement between the January 7, 2010 Public Review Draft and the January 15, 2008 Draft, Prepared January 21, 2010 by Ed Sheets, Klamath Settlement Process Facilitator (incorporation of KHSA)
189. Klamath Basin Restoration Agreement for the Sustainability of Public and Trust Resources and Affected Communities, (KBRA) February 18, 2010 (signed)
190. Staff Report for the Klamath River TMDLs, the Klamath River Site Specific Dissolved Oxygen Objective, and the Klamath and Lost River Implementation Plans, North Coast RWQCB, 2009 (revisions to further target Klamath dams for 303d CEQA and 401 permit)(all chapters including public comments)
191. 2006 CWA SECTION 303(d) List of Water Quality Limited Segments (and TMDL Inclusion), North Coast Regional Board, SWRCB APPROVAL DATE OCTOBER 25, 2006 (California implementation targeting Klamath hydro facilities removals and Klamath Basin regulation)
192. Fact Sheets Supporting Revision of the Section 303(d) List, California Regional Water Quality Control Boards, March 2006
193. Notice of Opportunity to Comment Proposed Approval of an Amendment to the Water Quality Control Plan for the North Coast Region (Basin Plan) to Establish: (1) Site Specific Water Quality Objectives For Dissolved Oxygen in the Klamath River; (2) An Action Plan for the Klamath River Total Maximum Daily Loads Addressing Temperature, Dissolved Oxygen, Nutrient, and Microcystin Impairments in the Klamath River; and (3) An Implementation Plan for the Klamath and Lost River Basins, State Water Resources Control Board, March 24, 2010
194. The Federal Register: The Daily Journal of the United States Government Proposed Rule Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Lost River Sucker and Shortnose Sucker, A Proposed Rule by the Fish and Wildlife Service on 12/07/2011
195. Policy for Aquatic Ecosystem Restoration CEQA Scoping Document, North Coast Regional Water Quality Control Board, 10/3/2011 (proposed policy change to allow themselves ability to break own laws to facilitate Klamath Dams removals)
196. California Regional Water Quality Control Board North Coast Region Resolution No. R1-2012-0013 Policy Statement for Implementation of the Water Quality Objective for Temperature in the North Coast Region, California Regional Water Quality Control Board, North Coast Region, January 19, 2012 (arbitrary Klamath temperature authority)

197. California Regional Water Quality Control Board North Coast Region Resolution No. R1-2015-0001 Policy in Support of Restoration in the North Coast Region, North Coast Regional Water Quality Control Board, January 29, 2015 (self-authorized 'policy' to break own regulatory prohibition laws in order to remove Klamath dams)
198. Hydrology, Ecology, and Fishes of the Klamath River Basin, Committee on Hydrology, Ecology, and Fishes of the Klamath River, National Research Council, National Academies Press 2008 (critical of lack of information for major or irreversible management decisions, models show increasing agricultural irrigation in the Upper Klamath Basin actually INCREASE flows entering the Klamath River at Keno)
199. Klamath River Sediment Study, Coastal Conservancy, Staff Recommendation June 16, 2005 (funding of the special interests and designed outcome pushing Klamath Dams removals and rewilding agenda)
200. Letter to Secretary of Interior Ken Salazar et al - Re: Request for Correction of Information Disseminated as a Result of the Klamath Nonuse Valuation Survey, OMB Control Number 1090-0010 and Withdrawal of Final Report disseminating information gained from the Survey, by Siskiyou County Board of Supervisors, 4/3/2012
201. Siskiyou County Clerk's Office , NOVEMBER 2, 2010 Consolidated General Election Final Election Night Results, Report #5 including voting Precincts District Map, 11/2/2010 (showing 79+% Siskiyou County official vote in favor of keeping the Klamath Facilities and Dams, including Upper Klamath Basin Tule Lake District)
202. *The President's Unfinished Promise: The Federal Government Still Lacks a Meaningful Scientific Integrity Policy*, Huffington Post, Dr. Corey Goodman, 2\_26\_2016 (administrative failed science integrity, Klamath Dam corruption, Dr. Houser's persecution, and 2009 Secretarial statement that Klamath Dams removals 'will not fail')
203. *The Klamath Science Workshop, organized by the Department of the Interior*, by KBC editor, [klamathbasincrisis.org](http://klamathbasincrisis.org), 2/3/04 (Report on DOI's Klamath Science Workshop declaring much 'project' money spent, no science monitoring, virtually no verifiable results, no resulting correlation to sucker numbers from increased water dedication and levels, and no observed benefits to water quality from increased marshlands)
204. Joint Application for Approval of License Amendment and License Transfer to the Federal Energy Regulatory Commission including all appendices and exhibits, submitted by PacifiCorp and KRRC (Klamath River Renewal Corporation), 9\_23\_2016 (details submission for property transfer, approval for facilities removals, parsed and inaccurate historical background, power productions, lake capacities, already proven erroneous environmental claims, and limited provisional accountability)
205. DRAFT #15 Lost River Subbasin Agricultural Water Quality Management Area Plan developed by Oregon Department of Agriculture with assistance from Lost River Local Agricultural Water Quality Advisory Committee and Klamath Soil and Water Conservation District August 27, 2003 (includes local historic Tule Lake water quality and regional conditions, geothermal, algae in Lost River, evaporation of surface waters, etc)
206. *Herald and News Viewpoint - Management shift dooms local wildlife refuges*, by guest columnist Henry Christensen, retired employee of U.S. Fish & Wildlife Service on the Tule Lake and the Lower Klamath wildlife refuges, February 9, 2003, as archived at [klamathbasincrisis.org](http://klamathbasincrisis.org) and including ancillary kbc editor comments (includes Wildlife Refuge avian numbers, USFWS management causes of declines, 2788% pumping electrical cost increases, etc)
207. Nitrogen, phosphorus and salt transfers at the landscape scale in the Upper Klamath Basin of Oregon and California, S. R. Kaffka, Department of Plant Sciences, University of California, 2005 (Irrigation has little nutrient eutrophication impacts over natural conditions, Tule Lake Project reduces nutrients that would otherwise contribute to Klamath)

208. Klamath County Water Crisis 31 Thursday Oct 2013 (Halloween Tricks –NO TREATS!), By Heather Smith Thomas, Article in Livestock Market Digest, 10/31/2013 (judicial interim confiscation of Upper Klamath Basin water and regional impacts including interview with Roger Nicholson)
209. Simulating Water Temperature of the Klamath River under Dam Removal and Climate Change Scenarios, By Russell W. Perry, John C. Risley, et al, USGS, 2011 (Created using a one dimensional model to support dams removals, margin of errors nearly equal to assumption based benefits, with any resulting minimal ‘potential impacts’ unassessed as to actual fisheries impacts, positive or negative. Proves primary day/night average air temperature primary correlation establishing water temperatures within 7 to 15 miles, but fails to acknowledge dam released limited high end temperature fluctuation extremes.)
210. *More water released to aid salmon*, Herald and News – Klamath Falls, Oregon, By LACEY JARRELL H&N Staff Reporter, Sep 30, 2014 (Use of water from Copco and Iron Gate Reservoirs to augment Klamath flows for fish)
211. Bureau of Reclamation Klamath Water Release Statistics for Klamath River at Iron Gate Dam – 11/12/2010-3/12/2011 (up to 5,000 cubic feet per second ‘flush’ for sediment and periphyton/macrophyte removal for Iron Gate to Shasta River confluence river reach assessed by BOR Colorado personnel in summer of 2011. BOR Colorado office responded to inquiry by email in 2016 that NO report was generated as the experiment failed)
212. Bureau of Reclamation Klamath Water Release Statistics for Klamath River at Iron Gate Dam – 3/15-3/22/2016 (up to 11,000 cubic feet per second increased at 300% allowed ramping rate and without public notice. Communication with BOR Klamath area Director of Operations Jason Cameron stated was a long term accumulated Biological Opinion triggered ‘flood control’ event at the exact revised level then ‘recommended’ for sediment flushing and gravel recruitment for the reach from Iron Gate to the Shasta River confluence )
213. Case Study #C-064007 IRON GATE DAM KLAMATH RIVER, Document C-064013 – CalWater, [http://www.calwater.ca.gov/Admin\\_Record/C-064007.pdf](http://www.calwater.ca.gov/Admin_Record/C-064007.pdf), (includes FERC Project 2028 Protest Dismissal Clause Iron Gate ramping requirements, Copco/Iron Gate history, hatchery production requirements, historic Klamathon egg takes, etc)
214. USGS Streamflow Data, Iron Gate Klamath discharges since construction, <https://www2.usgs.gov/water/>
215. Summary of Survival Data from Juvenile Coho Salmon in the Klamath River, Northern California, 2006, U.S. Geological Survey 2007 (Tagged juvenile coho salmon escapement from Iron Gate to the Klamath estuary showing the Iron Gate to Shasta River confluence has one of the highest survival rates of any Klamath river reach to the coastal influence, shows transport too rapid for disease assumptions, and demonstrates very high apparently predatory attrition rate)
216. River entry and migration behavior of adult coho salmon in the Klamath River Basin Lower Klamath River – 2004 Radio Telemetry Study Final Progress Report, Joshua S. Strange, Yurok Tribal Fisheries Program, Fall 2004 (Estuary radio tagged released spawning coho salmon showing no survival beyond Trinity confluence for unknown causes)
217. Communication with Kurt Hiser, historian and retired California Department of Fish and Game long term manager of Iron Gate Fish Hatchery, 1995 (Salmon largely depleted by arrival at hatchery; estimated average additional effective range of 20-30 miles; no researched historic evidence of salmon above Spencer Creek; marginal conducive resources upstream for spawning grounds with Fall Creek being the most conducive but prior Fall Creek Hatchery being resource quantity limited for significant or reliable production; several failed attempts at coho planting until the third attempt using coho from the Cascadia imported variety resulted in a ‘marginal’ return now considered the ‘natural’ run supported by continued plantings)

218. SHASTA NATION Alien fish to the Klamath River Letter, By Roy Hall Jr., Chairman of the Shasta Nation, January 23, 2012 (coho salmon not historically known indigenous in Shasta Tribal area which included location of Klamath Dams)
219. Iron Gate Hatchery Summary of Salmon Runs from 1962 to 2004, [http://cahatcheryreview.com/bibliography/IGH Fish Runs 1962 to 2004.doc](http://cahatcheryreview.com/bibliography/IGH_Fish_Runs_1962_to_2004.doc)
220. *The Right to Fish*, Adam Spencer, The Triplicate - Del Norte County, Published Sep 13, 2013 (timeline and judicial process reinstating Yurok gillnet fishing on Klamath)
221. California Finfish and Shellfish Identification Book - a companion guide to the California Fishing Passport, California Department of Fish and Game, 2007 (coho a coastal fish with a spawning range of approximately 20 miles inland)
222. A Study to Determine the Feasibility of Establishing Salmon and Steelhead in the Upper Klamath Basin, John D. Fortune, JR., Arthur R. Gerlach, C. J. Hanel, Pacific Power and Light April 1966
223. Shasta Indian Tales, "Coyote and the Yellow Jackets" - A Shasta Indian story, Holsinger/Piemme – Naturegraph Publishers, 1982 ("there was a fish weir on the river... Coyote was living upriver and thought... he would get some salmon. So he WENT TO THE FISH WEIR and the people gave him a great amount" for his pack, emphasis added – NOTE: the Shasta lived as far upriver as the current Klamath dams, the closest documented fish weirs were around 100 miles downstream)
224. Aboriginal Use of Fishery Resources in Northwestern North America, by Gordon Winant Hewes, 1938 (Klamath Lake: "Salmon were not present in the Klamath Lakes and adjacent districts". "Fish was the major animal food of all these groups, but salmon were available only in the Klamath River and its tributaries below Copco Marsh to which a few ascended". "Suckers were abundant in the Klamath Lakes region. The Lost River Sucker fish were the most important to the Klamath Indians. Some were 3 feet long. They were cured for winter, and oil was also extracted from them." "The Klamath Indians did take salmon and steelhead when spawning near the outlet to Copco Marsh. The Shasta Indians employed A-frame nets from platforms along the Klamath river and its tributaries.") as quoted in: The history of the Shasta Tribe, by Betty Hall, Pioneer Press December 16, 2009 <http://www.klamathbasincrisis.org/settlement/letters/2009/historyshastabettyhall121709.htm>
225. Submissions before the Senate Committee on Energy and Natural Resources Re: Klamath Basin Water Recovery and Economic Restoration Act of 2014 (S.R. 2379), by Rex Cozzalio, 6/13/2014
226. Klamath Agreements Strengthen Tribal Sovereignty, Don Gentry, <http://indiancountrytodaymedianetwork.com/2014/08/07/klamath-agreements-strengthen-tribal-sovereignty-8/7/14> (Tribal benefits from 'agreements' for compensated 'loss' of 'time immemorial salmon')
227. Klamath livelihoods wither / Water shut-off along Oregon border takes toll on farmers, Eric Brazil, Chronicle Staff Writer, Published 4:00 am, Monday, July 16, 2001, <http://www.sfgate.com/green/article/Klamath-livelihoods-wither-Water-shut-off-along-2899778.php>, (2001 reaction well drilling loan assistance programs reference)
228. Oregon's expansion of regulations of surface and groundwater use, Press Release, Senator Doug Whitsett, R-Klamath Falls, District 288/13/14 (Report of pending Oregon Groundwater Regulations)
229. Microcystins, nutrient dynamics, and other environmental factors during blooms of nonmicrocystin- producing Aphanizomenon flos-aquae in Upper Klamath Lake, Oregon, Sara L. Caldwell Eldridge et al, 2009 (presence of microcystin in Upper Klamath Lake has been historically prevalent and an interactive part of seasonal blooms, microcystin has a brief life in dissolved sediment accumulation, majority sediment myrocystin is from internal

cellular settling, Microcystis relies on Aphanizomenon for nitrogen growth in August/September, Aphanizomenon appears predominant from low nitrogen ratios in spring, half-life of sediment and water column suspended microcystin)

230. The History of Recent Limnological Changes and Human Impact on Upper Klamath Lake, Oregon, J. Platt Bradbury, USGS 1/1/2004 (Pediastrum dominance replaced by Aphanizomenon approximately 1850s, Microcystis fully present and active in UKL prior to 1850s)
231. *Hatchery Surpluses in the Pacific Northwest*, Peter A. Bisson, et al, Fisheries Management Perspective, www.fisheries.org, December 2002 (Report recommendation for euthanizing excess returning hatchery salmon)
232. Deadly Sucker Fish, by John C. Eastman, Ashbrook Publications, August 2001 (Onerous EPA interpretation of EPA Endangered Species Act resulting in Klamath hardship and death of 4 firefighters)
233. Investigating the life-cycle and growth rate of Pediastrum boryanum and the implications for wastewater treatment high rate algal ponds, Jason Park et al, National Institute of Water and Atmospheric Research, 4/28/2014 (Pediastrum high nutrient feeder common to sewage ponds)
234. 2016 KLAMATH POWER AND FACILITIES AGREEMENT (KPFA), 'Confidential Agreement' between KHSA 'stakeholders', 3/31/2016
235. Klamath Facilities Removal EIS/EIR Public Draft, Chapter 3 – Affected Environment/Environmental Consequences, 3.4 Algae, Sept 2011 (No mass studies on Klamath River, supposition for modeled inputs and significance, over 80 qualifiers in this section alone – 'could, may, possible, potential, etc')
236. Nutrient Budgets and Phytoplankton Trends in Iron Gate and Copco Reservoirs, California May 2005 - May 2006, for Ca State Water Quality Control Board, by Karuk Natural Resources, J. Kann, & E. Asarian, 2007 (reservoir retentions - 18-29.8% nitrogen, 11.8% phosphorous)
237. Microcystis aeruginosa Occurrence in the Klamath River System of Southern Oregon and Northern California, Prepared By: Jacob Kann, Ph.D., Aquatic Ecosystem Sciences LLC, Prepared For: Yurok Tribe Environmental and Fisheries Programs, February 3, 2006 (Instream Microcystis downstream higher than Iron Gate discharges in spite of claims it will 'go away' with removals and increased instream nitrogen)
238. Alternatives to Dam Removals, Siskiyou County Water Users Association, 2010
239. Bureau of Reclamation (BOR) Long-Term Plan to Protect Adult Salmon in the Lower Klamath River (BOR LTP), Humboldt County, California, Draft Environmental Impact Statement, Bureau of Reclamation, October, 2016 (BOR 'precautionary' confiscation of public and private stored water Klamath and Trinity resources to produce subjectively determined late summer 'flushing' flows and increased lower Klamath minimum flows)
240. Response to Request for Technical Assistance – Sediment Mobilization and Flow History in Klamath River below Iron Gate Dam, DOI Dept. of Fish and Wildlife, by Conor Shea, Nicholas J. Hetrick, and Nicholas A. Som, Arcata Fish and Wildlife Office, September 29, 2016 (Selectively chooses theoretical premise to support 'flushing flows' accommodating Yurok and BOR request used to secure BOR LTP, admitted profound lack of knowledge and variance of studies regarding mobilization flow requirements and their hypothetical benefits, major and varied assumptions throughout – i.e. of Iron Gate to Shasta converging banks requiring massive floods to remedy which is historically inaccurate)

241. Response to Request for Technical Assistance – Prevalence of *C. shasta* Infections in Juvenile and Adult Salmonids, DOI Dept. of Fish and Wildlife, by Conor Shea, Nicholas J. Hetrick, and Nicholas A. Som, Arcata Fish and Wildlife Office, September 20, 2016 (Selectively chooses theoretical premise to support ‘flushing flows’ accommodating Yurok and BOR request used to secure BOR LTP, “effects of temperature and spore concentration much stronger influences on (salmon) mortality than (water) discharge variable consistent among both Chinook and Coho salmon... increasing velocities decrease parasite transmission and transmission stopped above 0.2 – 0.3 m/s (only unsustainably increased unnatural flows)... At higher temperatures a slower rate of increasing prevalence of infection with increasing spore concentrations, reflects known degradation of actinospores at higher temperatures... assay to detect spore concentrations relies on DNA content cannot distinguish among viable actinospores, degraded actinospores, or even myxospores... majority of spawned Klamath River salmon are infected with *C. shasta*, myxospore development occurs predominately in decomposed carcasses rather than recently post-spawned adults... myxospore detection from carcasses range from 22 – 52%... high myxospore carcasses average 89% of total estimated myxospore input to the river per spawning season... suggests billions myxospores produced annually from adult carcasses in Klamath... myxospores are associated with sediments on the spawning grounds after carcass decomposition... Myxospore viability rapidly lost in temperatures greater than 18°C limiting infection transmission to winter and early spring... physical carcass removal is not a viable method for reducing myxospore levels, in addition to being contrary to natural ecological processes” (which would include their memo purpose advocating for ‘carcass redistributing flushes’ and illogically trying to have it both ways))
242. Response to Request for Technical Assistance – Ceratonyx shasta Waterborne Spore Stages, by Conor Shea, Nicholas J. Hetrick, and Nicholas A. Som, Arcata Fish and Wildlife Office, September 23, 2016 (Selectively chooses theoretical premise to support ‘flushing flows’ accommodating Yurok and BOR request used to secure BOR Long Term Plan, “The current hypothesis is that myxospores released from adult salmon carcasses contribute the bulk of myxospore to the system”...“in riverine locations quite distant from entry location under turbulent high-flow conditions. The settling characteristics and relative resiliency of (*Ceratonyx Shasta*) myxospores suggests that they could be prone to redistribution and potential infection of polychaetes at spatial locations and time periods distant from their initial release time and location”...“ highest spore concentrations below Beaver Creek, Seiad Creek, Tully Creek, Orleans”...“ One hypothesis for the unique spatial pattern of spore concentrations observed in 2016 relates to the 11,200 cfs Iron Gate Dam discharge event occurring March 2016. This event could have dislodged and moved high numbers of polychaete worms downstream in the drift and these redistributed worms, if infected, may have contributed to the relatively high spore concentrations observed in the lower river (J. Alexander, pers. comm)”...“managed discharge events have not produced dramatic reductions in (myxospore) spore concentrations”.)
243. Response to Request for Technical Assistance – Polychaete Distribution and Infections, by Conor Shea, Nicholas J. Hetrick, and Nicholas A. Som, Arcata Fish and Wildlife Office, September 20, 2016 (Selectively chooses theoretical premise to support ‘flushing flows’ accommodating Yurok and BOR request used to secure BOR LTP, “polychaete worms observed prevalent and active in Upper Klamath Lake at mouth of Williamson River, survives under various environmental and nutrient availability conditions... found in still-water depositional habitats, slow flowing habitats such as lake reservoir inflows and outflows, and lotic habitats including pools, eddies, riffles, and runs... Knowledge of reproduction and development is limited... polychaetes exhibited attachment abilities similar to taxa found in higher-gradient, rapidly-flowing environments, and that *M. speciosa* could potentially move to lower velocity sections of stable substrates (e.g., behind rock outcroppings) during high flow events... The ability of some polychaetes to persist after high flow events complicates ability to predict effectiveness of pulse flow events targeted to scour polychaetes..)

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## State Water Resources Control Board

### PUBLIC COMMENT PERIOD FOR DRAFT WATER QUALITY CERTIFICATION

#### KLAMATH RIVER RENEWAL CORPORATION'S LOWER KLAMATH PROJECT FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 14803

To: Interested Parties Mailing List

On September 23, 2016, the Klamath River Renewal Corporation (KRRC), a nonprofit organization, applied to the Federal Energy Regulatory Commission (FERC) to decommission the [Lower Klamath Project](#) (Project) and submitted a water quality certification (certification) application to the State Water Resources Control Board (State Water Board)<sup>1</sup> for the Project. A certification, issued under section 401 of the Clean Water Act, is required before FERC can issue a license surrender order for the Project.

The Project is located on the Klamath River in Siskiyou County, California and Klamath County, Oregon. The nearest city to the California portion of the Project is Yreka, which is located approximately 20 miles southwest of the downstream end of the Project. The Project consists of the decommissioning and removal of four dams (J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate) and associated facilities on the Klamath River consistent with the [Klamath Hydroelectric Settlement Agreement](#) (KHSAs), as amended on November 30, 2016. The KHSAs seek to return the Klamath River to free-flowing conditions and provide volitional fish passage in the portion of the Klamath River currently occupied by the Project's dams and associated facilities. The State Water Board is not a signatory to, and is not bound by, the KHSAs.

This draft certification does not constitute a final action by the State Water Board. The State Water Board is releasing this early draft certification in order to: 1) provide the public with an early opportunity to review and comment on draft conditions to protect water quality in light of the Project's anticipated water quality impacts; 2) enable coordinated public review periods for the State Water Board and Oregon Department of Environmental Quality's (ODEQ)<sup>2</sup> draft certifications; and 3) inform the State Water Board's environmental document under the California Environmental Quality Act, as appropriate. The State Water Board plans to release a draft environmental document for the Project for public comment later this year.

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<sup>1</sup> The KRRC filed its most recent application for certification of the Project with the State Water Board on September 23, 2017.

<sup>2</sup> ODEQ released a Project draft certification for public review on May 23, 2018. Information on ODEQ's draft water quality certification and associated review period is available online at: <http://www.oregon.gov/deq/wq/wqpermits/Pages/Section-401-Hydropower.aspx>



The certification comment period is from the date of this notice until July 23, 2018. **Comments on the draft certification must be received by 12:00 pm (noon) on July 23, 2018**, and can be submitted electronically or by mail as follows:

**Email:**

[WR401Program@waterboards.ca.gov](mailto:WR401Program@waterboards.ca.gov)

or

**Mail:**

Ms. Michelle Siebal  
State Water Resources Control Board  
Division of Water Rights – Water Quality Certification Program  
P.O. Box 2000  
Sacramento, CA 95812-2000

The **draft certification and additional information** regarding the State Water Board's process, including frequently asked questions about the Project, **are available on the Project webpage**, which is located online at:

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/water\\_quality\\_cert/lower\\_klamath\\_ferc14803.shtml](https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/lower_klamath_ferc14803.shtml).

***KEEP INFORMED OF PROJECT MILESTONES***

To receive emails related to the Lower Klamath Project, interested persons should enroll in the "Lower Klamath Project License Surrender" e-mail notification service. Instructions on how to sign up for the State Water Board's Email Subscription List are outlined below:

1. Visit: [http://www.waterboards.ca.gov/resources/email\\_subscriptions/swrcb\\_subscribe.shtml#rights](http://www.waterboards.ca.gov/resources/email_subscriptions/swrcb_subscribe.shtml#rights)
2. Provide your name and email in the required fields.
3. In the categories below the email and name fields, select "Water Rights," then "Lower Klamath Project License Surrender."
4. Click the "Subscribe" button.
5. An email will be sent to you. You must respond to the email message to confirm your membership on the selected list(s).

By enrolling in this email list, you will receive notices for Division of Water Rights' Water Quality Certification Program pertaining to the Lower Klamath Project License Surrender. If you do not have internet access or do not wish to participate in the email subscription list, you may contact Ms. Michelle Siebal by phone at (916) 322-8465 to request to receive notices by mail. You can enroll or un-enroll from the email subscription service at any time.

If you have questions regarding this notice, please contact Project staff by email at: [WR401Program@waterboards.ca.gov](mailto:WR401Program@waterboards.ca.gov), or Ms. Michelle Siebal by phone at (916) 322-8465.

ORIGINAL SIGNED BY

June 7, 2018

\_\_\_\_\_  
Erin Ragazzi  
Assistant Deputy Director  
Division of Water Rights

\_\_\_\_\_  
Date

STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD

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In the Matter of Water Quality Certification for

**KLAMATH RIVER RENEWAL CORPORATION  
LOWER KLAMATH PROJECT**

**FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 14803**

Source: Klamath River  
County: Siskiyou

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**DRAFT WATER QUALITY CERTIFICATION FOR FEDERAL PERMIT OR LICENSE**

**Comments on the draft certification must be received by  
12:00 pm (noon) on July 23, 2018.**

**Comments can be submitted by:**

**Email:**

**WR401Program@waterboards.ca.gov**

**or**

**Mail:**

**Ms. Michelle Siebal  
State Water Resources Control Board  
Division of Water Rights – Water Quality Certification Program  
P.O. Box 2000  
Sacramento, CA 95812-2000**

**KLAMATH RIVER RENEWAL CORPORATION  
LOWER KLAMATH PROJECT  
FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 14803**

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STATE OF CALIFORNIA  
STATE WATER RESOURCES CONTROL BOARD

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In the Matter of Water Quality Certification for the

**KLAMATH RIVER RENEWAL CORPORATION  
LOWER KLAMATH PROJECT**

**FEDERAL ENERGY REGULATORY COMMISSION PROJECT NO. 14803**

SOURCE: Klamath River

COUNTY: Siskiyou

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**DRAFT WATER QUALITY CERTIFICATION FOR FEDERAL PERMIT OR LICENSE**

BY THE EXECUTIVE DIRECTOR:

**1.0 BACKGROUND**

On September 23, 2016, PacifiCorp and the Klamath River Renewal Corporation (KRRC or Licensee) filed a joint application with the Federal Energy Regulatory Commission (FERC) to: separate PacifiCorp's Klamath Hydroelectric Project (FERC Project No. 2082) facilities into two separate projects (outlined below); and transfer ownership of the newly created project – the Lower Klamath Project – to the KRRC.

- **Lower Klamath Project** consists primarily of four dams and associated facilities, listed from upstream to downstream: (1) J.C. Boyle (Oregon); (2) Copco No. 1 (California); (3) Copco No. 2 (California); and (4) Iron Gate (California).
- **Klamath Hydroelectric Project**<sup>1</sup> consists primarily of the following facilities, listed from upstream to downstream: (1) East Side (Oregon); (2) West Side (Oregon); (3) Keno (Oregon); and (4) Fall Creek (California).

On the same day, the KRRC applied to FERC for permission to decommission the Lower Klamath Project (Project) in accordance with the amended Klamath Hydroelectric Settlement Agreement. Also on September 23, 2016, the KRRC applied to the State Water Resources Control Board (State Water Board) for a water quality certification (certification) for the Project under section 401 of the Clean Water Act. On March 15, 2018, FERC approved separation of the Klamath Hydroelectric Project into

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<sup>1</sup> The Klamath Hydroelectric Project is not part of this water quality certification action.

# DRAFT WATER QUALITY CERTIFICATION FOR LOWER KLAMATH PROJECT

two licenses, creating a new license for the Lower Klamath Project (FERC Project No. 14083).<sup>2</sup>

## 2.0 LOWER KLAMATH PROJECT DESCRIPTION

The Project is located on the Klamath River in Siskiyou County, California and Klamath County, Oregon (Attachment 2; Figure 1: Lower Klamath Project Location). The nearest city to the California portion of the Project is Yreka, which is located approximately 20 miles southwest of the downstream end of the Project.

The Project primarily consists of the decommissioning and removal of four dams (J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate) and associated facilities located in the Hydroelectric Reach (i.e., the Klamath River and tributaries from Iron Gate Dam [River Mile [RM]192.9] to the upstream extent of J.C. Boyle Reservoir [RM 233.0]) on the Klamath River. The Project implements portions of the [Klamath Hydroelectric Settlement Agreement](#) (KHSA), as amended on November 30, 2016. The KHSA is an agreement among: PacifiCorp; several state, federal, and local governmental agencies; Native American tribes; non-governmental organizations; irrigators; and individual stakeholders. **The State Water Board is not a signatory to, and is not bound by, the KHSA.** The KHSA seeks to return the Klamath River to free-flowing conditions and provide volitional fish passage in the portion of the Klamath River currently occupied by the Project's dams and associated facilities.

The KRRC proposes to decommission the Project consistent with: 1) the KHSA; 2) the September 23, 2016, certification application, including the Detailed Plan; 3) the September 30, 2017, *California Environmental Quality Act (CEQA) and California and Oregon 401 Water Quality Certifications Technical Support Document*; 4) the January 3, 2018, update to the *Administrative Draft of the Definite Plan for Decommissioning*; and 5) the submittal that updates Section 7.8 of the June 1, 2018 *Fourth Administrative Draft of the Definite Plan for Decommissioning*<sup>3,4</sup>. The KRRC's proposed Project schedule can be found in Attachment 1: KRRC's Proposed Project Schedule of this certification. The Project description is provided below, and includes discussions of each dam and associated facilities from the most upstream facilities to the most downstream, followed by a discussion of other major Project elements (e.g., City of Yreka's water supply line replacement, hatcheries).

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<sup>2</sup> As of the date of this draft certification, FERC has deferred its decision on transferring Project ownership from PacifiCorp to the KRRC until FERC is provided with additional information needed to inform a transfer decision. As such, the Project is currently owned by PacifiCorp.

<sup>3</sup> The KRRC will further update its Project description with the issuance of a Definite Plan, which is expected to be submitted to FERC and the State Water Board no later than July 1, 2018. Prior to a final decision on the Project certification, the State Water Board will review and consider the Definite Plan.

<sup>4</sup> All referenced documents are available on the State Water Board's Lower Klamath Project website at:

[https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/water\\_quality\\_cert/lower\\_klamath\\_ferc14803.shtml](https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/lower_klamath_ferc14803.shtml)

## DRAFT WATER QUALITY CERTIFICATION FOR LOWER KLAMATH PROJECT

J.C. Boyle Complex: J.C. Boyle Dam and associated facilities are located on the Klamath River between RM 233 and RM 225 in Klamath County, Oregon. Primary components of the J.C. Boyle Complex include:

- 1) J.C. Boyle Reservoir, an approximately 2,267-acre-foot (AF) reservoir and associated facilities (Topsy Campground boat ramps, floating docks, and pier; Pioneer Park; and numerous dispersed shoreline recreation sites);
- 2) J.C. Boyle Dam, a 68-foot combined earthen embankment and concrete dam with associated pool-and-weir fish ladder and concrete spillway;
- 3) An intake structure connecting to a 2.5-mile water conveyance system with an overflow forebay;
- 4) J.C. Boyle Powerhouse, a 98-megawatt (MW) facility;
- 5) A 4.6-mile bypass reach;
- 6) A switchyard with 2.8 miles of transmission lines; and
- 7) Ancillary buildings including an office building (known as the Red Barn), maintenance shop, fire protection building, communications building, two occupied residences, and a warehouse.

The proposed Project includes removal of all physical features associated with the J.C. Boyle Complex (i.e., all items listed above except the bypass reach). Prior to dam removal, the KRRC proposes to make access road improvements and create equipment staging areas. Cofferdams will be constructed, as appropriate, to create dry work areas.

J.C. Boyle Reservoir drawdown will begin in January of the drawdown period<sup>5</sup>. Drawdown rates will be limited to five feet per day. Water will be released through the gated spillway, powerhouse intake, and two diversion culverts located beneath the dam. Modification to these facilities is not required prior to drawdown. Drawdown rates will be controlled by the spillway and capacity of the intake structure. The diversion culverts' concrete stop logs will be blasted once the reservoir stabilizes with the spillway and intake fully open, after which flows will be controlled by the capacity of the culverts, which is approximately 6,000 cubic feet per second (cfs).

J.C. Boyle Dam removal will occur via earth moving equipment, drilling, and blasting. Earthen materials generated from removal of J.C. Boyle Dam will be permanently buried on-site in a six-acre portion of the original borrow pit used to construct J.C. Boyle Dam, located on PacifiCorp property near the right abutment of J.C. Boyle Dam (Attachment 2; Figure 3: J.C. Boyle Disposal Site). Additionally, earthen material will be used to bury the powerhouse tailrace in place. Concrete rubble associated with removal of the J.C. Boyle Complex will be placed in an eroded scour hole below the forebay spillway structure created by J.C. Boyle power generation operations. Following concrete rubble placement in the scour hole, the scour hole will be covered with three to five feet of rock and soil debris sourced from material aggrading the river channel at the base of the scour hole. Removal of the J.C. Boyle Complex will generate approximately 130,800 cubic yards of bulk earthen material, 51,900 cubic yards of bulk concrete, 4,100 tons of rebar, 2,500 tons of mechanical and electrical equipment, 2,700 cubic yards of building waste, and 2.8 miles of transmission lines. Rebar, mechanical and

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<sup>5</sup> Drawdown is the release of Project reservoir water into the Klamath River to lower the elevation of the reservoirs and facilitate dam removal. The KRRC proposes to drawdown the Project reservoirs commencing with Copco No. 1 in November, followed by J.C. Boyle and Iron Gate in January, and concluding with Copco No. 2 in May.

## DRAFT WATER QUALITY CERTIFICATION FOR LOWER KLAMATH PROJECT

electrical equipment, building waste, and powerlines will be disposed of offsite in a landfill near Klamath Falls. Hazardous waste will be removed from the Project area and disposed per a Hazardous Materials Management Plan.

Copco No. 1 Complex: The Copco No. 1 Complex is located on the Klamath River between RM 208.3 and RM 201.8 in Siskiyou County, California. Primary components of the Copco No. 1 Complex include:

- 1) Copco No. 1 Reservoir, an approximately 33,724-AF reservoir and associated Mallard Cove and Copco Cove recreation facilities;
- 2) Copco No. 1 Dam, a 133-foot concrete gravity arch dam, including a gated spillway and gatehouse on the right abutment, deck, and piers;
- 3) A diversion tunnel and diversion control structure;
- 4) Three miles of transmission lines, including poles and transformers;
- 5) A switchyard;
- 6) Two 10-foot-diameter and one 14-foot-diameter penstock pipes;
- 7) A 20-MW powerhouse with intake structure and associated equipment; and
- 8) An adjacent warehouse and two residences for powerhouse operators.

The proposed Project includes removal of all Copco No. 1 Complex features (i.e., all features listed above), with Copco No. 1 Dam removed to approximately 20 feet below the existing streambed level.

The following activities will be performed prior to Copco No. 1 Dam removal: local seed collection and invasive weed control; access road improvements; and creation of equipment staging areas. Additionally, the diversion tunnel will be equipped with new remote operated spillway gates capable of discharging 13,000 cfs.

The initial drawdown of Copco No. 1 Reservoir is proposed to begin on November 1, commencing the Project drawdown period. Drawdown will initially proceed at the rate of not more than two feet per day, which is within the range of drawdown observed under existing hydroelectric operations. The maximum drawdown rate of five feet per day at Copco No. 1 Reservoir will not be implemented prior to January 15. The maximum additional discharge associated with drawdown of Copco No. 1 Reservoir will not exceed 6,000 cfs. Drawdown of Copco No. 1 Reservoir is anticipated to be complete by March 15. Cofferdams will be constructed upstream of Copco No. 1 Dam, as appropriate, to create dry work areas.

Approximately 104,000 cubic yards of bulk concrete, 1,000 tons of rail and steel, and 1,100 tons of mechanical and electrical equipment will be removed at the Copco No. 1 Complex. Inert debris such as concrete will be buried at a 3.5-acre disposal area located on the slope north of Copco No. 2 Reservoir (Attachment 2; Figure 4: Copco No. 1 and Copco No. 2 Disposal Site). The disposal area will be graded for drainage and hydroseeded to prevent erosion. Reinforced steel and other recyclable materials will be sent to local recycling facilities. Hazardous waste will be removed from the Project area and disposed per a Hazardous Materials Management Plan.

## DRAFT WATER QUALITY CERTIFICATION FOR LOWER KLAMATH PROJECT

Copco No. 2 Complex: The Copco No. 2 Complex is located on the Klamath River between RM 201.8 and RM 200 in Siskiyou County, California. Primary components of the Copco No. 2 Complex include:

- 1) A 70-AF unnamed reservoir;
- 2) Copco No. 2 Dam<sup>6</sup>, a 32-foot-tall concrete diversion dam with a gated spillway, basin apron, end sill, and a remnant cofferdam upstream of the concrete dam below the normal water surface elevation of the reservoir;
- 3) An approximately 15,000-square-foot earthen embankment section and a cutoff wall along the river right sidewall;
- 4) A water conveyance system consisting of 3,610 feet of concrete lined tunnels, a 1,333-foot-long wood-stave pipeline, underground surge tank, and two steel penstocks;
- 5) A 27-MW powerhouse;
- 6) Approximately 6.5 miles of transmission lines;
- 7) A control center building, maintenance building, and oil and gas storage building;
- 8) A switchyard;
- 9) Copco Village, a nearby village consisting of a cookhouse/bunkhouse, modern bunkhouse, garage/storage building, bungalow, three modular houses, four ranch-style houses, and a schoolhouse/community center; and
- 10) A 1.5-mile-long bypass reach in the Klamath River between Copco No. 2 Dam and Copco No. 2 Powerhouse, created by water diversions at Copco No. 2 Dam for hydropower generation at Copco No. 2 Powerhouse.

The proposed Project includes removal of all Copco No. 2 Complex features (i.e., all features listed above), except for the switchyard, which will be partially removed. PacifiCorp plans to use the remaining portion of the switchyard for power transmission.

The following activities will be performed prior to removal of Copco No. 2 Complex: local seed collection and invasive weed control; and access road improvements; and creation of equipment staging areas.

Under the proposed Project, Copco No. 2 Reservoir drawdown is scheduled to begin in May (Attachment 1: KRRC's Proposed Project Schedule). Drawdown of Copco No. 2 is anticipated to take 24 hours, with a total Copco No. 2 reservoir surface elevation drawdown (drop) of five feet, from 2486.5 feet to 2481.5 feet. Due to the proximity of the two Copco reservoirs, drawdown of Copco No. 2 Reservoir will complete Copco No. 1 Reservoir drawdown. Following drawdown of Copco No. 2 Reservoir, temporary cofferdams will be constructed to assist in the removal of Copco No. 2 Dam spillway bays, powerhouse, and powerhouse water intake structures. A cofferdam<sup>7</sup> will permanently be left in place to facilitate restoration activities following removal of the Copco No. 2 Complex.

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<sup>6</sup> Copco No. 2 Dam is located approximately 0.3 miles downstream of Copco No. 1 Dam.

<sup>7</sup> The cofferdam will be located in the tailrace of the Copco No. 2 Powerhouse, not in the Klamath River channel.



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Copco No. 2 Dam removal will occur via blasting, hydraulic excavators, diamond-wire saw cutting, and drilling. Inert debris such as concrete will be buried at a 3.5-acre disposal area located on the slope north of Copco No. 2 Reservoir (Attachment 2; Figure 4: Copco No. 1 and Copco No. 2 Disposal Site). Inert debris associated with Copco No. 1 powerhouse may be buried within the existing tailrace channel. Approximately 2,100 cubic yards of bulk earthen fill, 16,600 cubic yards of bulk concrete, 400 tons of reinforced steel, 2,200 tons of mechanical and electrical equipment, 2,300 cubic yards of building waste, 700 tons of treated wood, and 6.5 miles of transmission line will be removed. Recyclable materials will be sorted and brought to local recycling centers. Hazardous waste will be removed from the Project area and disposed per a Hazardous Materials Management Plan.

Iron Gate Complex: The Iron Gate Complex is located on the Klamath River between RM 200 and RM 193.1 in Siskiyou County, California. Primary components of the Iron Gate Complex include:

- 1) Iron Gate Reservoir, a 50,941-AF reservoir;
- 2) Iron Gate Dam, a 189-foot-tall earthen dam with a central impervious clay core on basalt bedrock foundation;
- 3) A fish hatchery with a warehouse\*, hatchery building\*, four fish-rearing ponds\*, visitor information center\*, and four employee residences\*;
- 4) A water supply pipeline and aerator for the hatchery;
- 5) A fish collection facility at Iron Gate Dam, including fish ladder and trapping and hauling facilities;
- 6) An ungated side-channel spillway capable of discharging approximately 26,200 cfs;
- 7) A reinforced concrete diversion tunnel capable of diverting approximately 2,700 cfs, and a footbridge to a gate control building;
- 8) A 45-foot-tall freestanding concrete penstock intake structure and its adjoining footbridge, and a 12-foot-diameter, welded steel penstock with concrete supports;
- 9) An 18-MW powerhouse;
- 10) A switchyard;
- 11) Approximately 0.5-mile of transmission lines; and
- 12) Several recreation facilities, including Fall Creek\*, Jenny Creek\*, Wanaka Springs, Camp Creek, Juniper Point, Mirror Cove, Overlook Point, Long Gulch, and other small, unnamed, dispersed shoreline recreation sites.

The proposed Project includes removal of all physical features listed above with the exception (in the areas noted above with an \*) of the fish hatchery warehouse, hatchery building, four fish-rearing ponds, visitor information center, four employee residences, and two recreation facilities (Jenny Creek and Fall Creek). The KRRC proposes to make a later determination on whether or not to remove the Jenny Creek and Fall Creek recreation facilities.

The following activities will be performed prior to removal of the Iron Gate Complex: local seed collection and invasive weed control; access road improvements; and creation of equipment staging areas. Additionally, the diversion tunnel will be equipped with new remote operated spillway gates capable of discharging 16,000 cfs.

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Iron Gate Reservoir drawdown is proposed to begin on January 1 of the drawdown period. To ensure dam embankment stability, reservoir drawdown will be limited to a maximum of five feet per day and the reservoir's water will be released from the modified diversion tunnel. The maximum additional discharge associated with drawdown of Iron Gate Dam will be approximately 6,000 cfs. During dam removal, operators will maintain adequate water storage capacity to accommodate inflows from probable high flow events. Iron Gate Reservoir drawdown is anticipated to be complete by March 15. Iron Gate Dam removal will follow the receding reservoir and is expected to be completed by September.

Iron Gate Complex removal will occur via earth-moving equipment, drilling, and blasting. Cofferdams will be used as needed to keep work areas dry and assist with Iron Gate Complex removal. Cofferdam breaches at Iron Gate and J.C. Boyle Complexes will be coordinated to reduce downstream impacts. The spillway structure will be buried in place with approximately 300,000 cubic yards of backfill to mimic the pre-dam appearance of the area.

The majority of earthen material and all the concrete rubble generated from Iron Gate Complex removal will be buried on-site in a 36-acre disposal site located on PacifiCorp property, approximately one mile south of Iron Gate Dam (Attachment 2; Figure 5: Iron Gate Disposal Site). Estimated quantities of materials associated with Iron Gate Complex removal include approximately 1,257,000 cubic yards of bulk earthen material, 20,700 cubic yards of bulk concrete, 700 tons of rebar, 1,200 tons of mechanical and electrical equipment, 600 cubic yards of bulk building waste, and approximately 0.5 miles of transmission lines. The disposal area will be covered with top soil, graded to conform with existing topography, and seeded to prevent erosion. Hazardous waste will be removed from the Project area and disposed per a Hazardous Materials Management Plan.

City of Yreka Water Supply Line: The primary water intake for Yreka's water supply line is located on Fall Creek, downstream of PacifiCorp's Fall Creek hydroelectric facility. The intake diverts raw water to a pump station along Fall Creek. From the pump station, the water supply line crosses the Klamath River near the upstream end of Iron Gate Reservoir to supply the City of Yreka with 10 cfs of raw water. To prevent potential water supply interruptions associated with Project implementation, prior to drawdown activities the KRRC will replace the portions of Yreka's Fall Creek Water Supply Line that cross the Klamath River, as described in the January 3, 2018, update to the *Administrative Draft of the Definite Plan for Decommissioning*. In addition, the proposed Project includes evaluation of the fish screens at the water supply intakes, and modifications or replacements as needed, to ensure they meet applicable fish screen requirements.

Hatchery Modifications: Prior to initiating Project drawdown activities, the proposed Project includes modifications to Iron Gate Hatchery and reconstruction of the Fall Creek Hatchery to allow for continued salmonid hatchery production during, and for eight years following, removal of the four dams. Hatchery operations will be managed by a Hatchery Operations Management Plan.

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Iron Gate Hatchery will be modified to create a new water supply line from Bogus Creek and the auxiliary trap and ladder system currently in place will be used for fish collection to produce Chinook smolts and incubate coho eggs<sup>8</sup>. Modifications to Iron Gate Hatchery will occur within the existing footprint, with the exception of the new water supply line from Bogus Creek.

Fall Creek Hatchery, which has not been used since 2003, will be reconstructed to produce Chinook smolts, Chinook yearlings, and coho yearlings. The reconstructed Fall Creek Hatchery will use Fall Creek as a water supply to support salmonid production.

**Project Measures:** In addition to removal of the four dams and associated facilities, Yreka water supply line replacement, and hatchery modifications, the KRRC has included Project measures and plans to reduce impacts to local communities and environmental resources. Project measures and plans include:

- Aquatic Resource Measures for mainstem spawning salmonids, out-migrating juveniles, Iron Gate Hatchery fish, listed sucker species located in Copco No. 1 and Iron Gate reservoirs, and freshwater mussels;
- Reservoir Restoration Measures to manage remaining sediment and restore the Klamath River within the reservoir footprints. These measures also address the potential for discovery of cultural resources and human remains;
- Terrestrial Resource Measures for habitat restoration, nesting birds, Bald and golden eagles, special-status bats, northern spotted owls, special-status plants, and wetlands;
- Road improvements for construction access, ongoing and post-Project maintenance, and long-term road infrastructure;
- Traffic Management;
- Water Quality Monitoring and Adaptive Management;
- Groundwater Well Management;
- Fire Management;
- Hazardous Materials Management;
- Emergency Response; and
- Noise and Vibration Control.



### 3.0 REGULATORY AUTHORITY

The State Water Board is issuing a certification for the water quality impacts of the Project in California. The water quality impacts of the Project in Oregon are addressed by the Oregon Department of Environmental Quality (ODEQ), Oregon's state agency with Clean Water Act section 401 authority. (See ODEQ's May 2018 Draft Water Quality Certification<sup>9</sup>.



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<sup>8</sup> Coho eggs will be hatched and reared until they reach a size of approximately 300 fish per pound at Iron Gate Hatchery and then will be transported to Fall Creek Hatchery for rearing until release.

<sup>9</sup><http://www.oregon.gov/deq/FilterDocs/401klamathcertification.pdf>, last accessed June 4, 2018

## DRAFT WATER QUALITY CERTIFICATION FOR LOWER KLAMATH PROJECT

### Water Quality Certification and Related Authorities

The federal Clean Water Act (33 U.S.C. §§ 1251-1387) was enacted “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” (33 U.S.C. § 1251(a).) Section 101 of the Clean Water Act (33 U.S.C. § 1251 (g)) requires federal agencies to “co-operate with the State and local agencies to develop comprehensive solutions to prevent, reduce and eliminate pollution in concert with programs for managing water resources.”

Section 401 of the Clean Water Act (33 U.S.C. §1341) requires every applicant for a federal license or permit, which may result in a discharge into navigable waters, to provide the licensing or permitting federal agency with certification that the project will be in compliance with specified provisions of the Clean Water Act, including water quality standards and implementation plans promulgated pursuant to section 303 of the Clean Water Act (33 U.S.C. § 1313). Clean Water Act section 401 directs the agency responsible for certification to prescribe effluent limitations and other limitations necessary to ensure compliance with the Clean Water Act and with any other appropriate requirement of state law set forth in the certification. Certifications should also comply with the water quality standards of downstream states, including tribes with treatment-in-the-same-manner-as-a-state status under the Clean Water Act. (33 U.S.C. §§ 1341(a)(2), 1377(e).) Section 401 further provides that state certification conditions shall become conditions of any federal license or permit for the project. The State Water Board's Executive Director has been delegated the authority to issue a decision on a certification application. (Cal. Code Regs., tit. 23, § 3838, subd. (a).)

On October 21, 2016, the State Water Board provided notice of receipt of a complete application for certification to the applicable parties pursuant to California Code of Regulations, title 23, section 3835, subdivision (c). The State Water Board provided public notice of the certification application pursuant to California Code of Regulations, title 23, section 3858 by posting information describing the Project on the State Water Board's website on December 22, 2016. No comments were received regarding the public notice for the certification application.<sup>10</sup>

### Water Quality Control Plans and Related Authorities

The California Regional Water Quality Control Boards (Regional Water Boards) have primary responsibility for the formulation and adoption of water quality control plans for their respective regions, subject to the State Water Board and United States Environmental Protection Agency (USEPA) approval, as appropriate. (Wat. Code, § 13240 et seq.) The State Water Board may also adopt water quality control plans, which will supersede regional water quality control plans for the same waters to the extent of any conflict. (Wat. Code, § 13170.) For a specified area, the water quality control plans designate the beneficial uses of water to be protected, the water quality objectives established for the reasonable protection of those beneficial uses or the

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<sup>10</sup> Additionally, the State Water Board is the lead agency for preparation of an environmental impact report for the proposed Project, and has solicited and received extensive public comment through that process. (See [Scoping Report](#) with Appendices A, B, C, and D.) These comments have informed the draft certification, and will inform the California Environmental Quality Act analysis.

## DRAFT WATER QUALITY CERTIFICATION FOR LOWER KLAMATH PROJECT

prevention of nuisance, and a program of implementation to achieve the water quality objectives. (Wat. Code, §§ 13241, 13050 subd. (h), and 13050 subd. (j).) The beneficial uses together with the water quality objectives that are contained in the water quality control plans, in addition to state and federal anti-degradation requirements, constitute California's water quality standards. Additionally, USEPA designates specific tribes to be treated in the same manner as states under the Clean Water Act. In the Klamath Basin, the Hoopa Valley Tribe has received such status, and has adopted a water quality control plan, as well.

### *North Coast Basin Plan*

The North Coast Water Quality Control Board (North Coast Regional Board) has adopted, and the State Water Board and the USEPA have approved, the *Water Quality Control Plan for the North Coast Region* (North Coast Basin Plan). The North Coast Basin Plan designates the beneficial uses of water to be protected along with the water quality objectives necessary to protect those uses.

The North Coast Basin Plan identifies beneficial uses<sup>11</sup> in the Klamath River Basin as: municipal and domestic supply; agricultural supply; industrial service supply; industrial process supply; groundwater recharge; freshwater replenishment; navigation; hydropower generation; water contact recreation; non-water contact recreation; commercial and sport fishing; warm freshwater habitat; cold freshwater habitat; wildlife habitat; rare, threatened, or endangered species; marine habitat, migration of aquatic organisms; spawning, reproduction, and/or early development; shellfish harvesting; estuarine habitat; aquaculture; and Native American culture. The North Coast Basin Plan sets forth narrative and numeric objectives to protect these beneficial uses.

The North Coast Basin Plan includes a "Policy in Support of Restoration in the North Coast Region" that allows for certification of restoration projects "that result in significant and sometimes unavoidable impacts (including temporary exceedances of water quality objectives) if it is shown that the project will result in long-term protection of beneficial uses and water quality."

State Water Board staff provided portions of the draft certification that have the potential to cause adverse water quality impacts to the North Coast Regional Board in April and May 2018. (California Code of Regulations title 23, section 3855 subdivision (b)(2)(B)). North Coast Regional Board staff responded with comments, which have been incorporated into this document.

### *Hoopa Reservation Plan*

The Hoopa Valley Tribe has adopted the *Water Quality Control Plan, Hoopa Valley Indian Reservation* (Hoopa Reservation Plan)<sup>12</sup>. The northernmost end of the Hoopa

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<sup>11</sup> This overview includes all beneficial uses in the Klamath River Basin: a specific use may not apply to all reaches in the Klamath River Basin, and may be either an existing or potential use in any specific reach. For further detail, see Table 2-1 of the North Coast Basin Plan.

<sup>12</sup> The Hoopa Reservation Plan is available online at: <https://www.epa.gov/sites/production/files/2014-12/documents/hoopa-valley-tribe.pdf> (last accessed June 4, 2018).

## DRAFT WATER QUALITY CERTIFICATION FOR LOWER KLAMATH PROJECT

Valley Indian Reservation includes part of the Klamath River just upstream of the confluence with the Trinity River. The Hoopa Reservation Plan establishes the following beneficial uses for all waterways on the Hoopa Valley Indian Reservation: scenic; fisheries; wildlife; fisheries; and fishing rights. Additionally, specific to the Klamath River, the Hoopa Reservation Plan designates potential beneficial uses as: municipal and domestic supply; agricultural supply; industrial service supply; and industrial process supply. The Hoopa Reservation Plan designates existing beneficial uses for the Klamath River as: groundwater recharge; cold freshwater habitat; and water-contact recreation. (See Hoopa Reservation Plan, Table 2.1.) The Hoopa Reservation Plan also describes the intent to support spawning habitat as a use on the Klamath River. The Hoopa Reservation Plan sets forth numeric and narrative objectives to protect these beneficial uses.

### *List of Impaired Water Bodies*

The State Water Board has listed the Klamath River on the Clean Water Act Section 303(d) list. The Klamath River and waterbodies associated with the Project are listed in *California's 2014 and 2016 California Integrated Report (Clean Water Act Section 303(d) List / 505(b) Report) (2014/2016 Integrated Report<sup>13</sup>)* as follows:

- The Klamath River from the Oregon border to the Pacific Ocean is listed for nutrients, organic enrichment/low dissolved oxygen, and temperature.
- Iron Gate and Copco No. 1 reservoirs are listed for mercury and for a liver toxin produced by blue-green algae, called microcystin.
- The Klamath River from Copco No. 1 Reservoir to the Trinity River is listed for microcystin.
- The Klamath River from the Trinity River to the Pacific Ocean is listed for sediment.
- The Klamath River from Iron Gate Dam to the Scott River is listed for aluminum.



### *Delegation of Authorities*

In this certification, actions that could be taken by the State Water Board may also be taken by the State Water Board designee. Water Code section 13383 provides the State Water Board with the authority to "establish monitoring, inspection, entry, reporting and recordkeeping requirements... and [require] other information as may reasonably be required" for activities subject to water quality certification under section 401 of the Clean Water Act that involve the diversion of water for beneficial use. The State Water Board delegated this authority to the Deputy Director of the Division of Water Rights (Deputy Director), as provided for in State Water Board Resolution No. 2012-0029. In the *Redelegation of Authorities Pursuant to Resolution No. 2012-0029* memo issued by the Deputy Director on October 19, 2017, this authority is redelegated to the Assistant Deputy Directors of the Division of Water Rights.

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<sup>13</sup> The 2014/2016 Integrated Report is available online at: [https://www.waterboards.ca.gov/water\\_issues/programs/tmdl/integrated2014\\_2016.shtml](https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2014_2016.shtml) (last accessed June 4, 2018).



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### *Construction General Permit*

The *General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit; Water Quality Order No. 2009-0009-DWQ and NPDES No. CAS000002, as amended by Order No. 2010-0014-DWQ and 2012-0006-DWQ), applies to dischargers whose projects disturb one or more acres of soil or are part of a larger common plan of development that totals more than one acre. The Construction General Permit sets forth detailed best management practices to protect water quality from stormwater discharges associated with land disturbance.

### *Aquatic Weed Control Permit*

The *Statewide National Pollutant Discharge Elimination System Permit for Residual Aquatic Pesticide Discharges to Waters of the United States from Algae and Aquatic Weed Control Applications* (Aquatic Weed Control Permit; State Water Board Order No. 2013-0002-DWQ and NPDES No. CAG990005, as amended by State Water Board Order No. 2014-0078-DWQ), applies to projects that require aquatic weed management activities. The Aquatic Weed Control Permit sets forth detailed management practices to protect water quality from pesticide and herbicide use associated with aquatic weed control.

### *Onsite Wastewater Treatment Systems Policy*

The *Water Quality Control Policy for Siting, Design, Operation and Maintenance of Onsite Wastewater Treatment Systems* (OWTS Policy; State Water Board Resolution No. 2012-0032, as amended by State Water Board Resolution No. 2018-0019) establishes a statewide, risk-based, tiered approach for the regulation and management of onsite wastewater treatment system installation and replacement, and sets the level of performance and protection expected from onsite wastewater treatment systems.

### *Thermal Plan*

The *Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and the Enclosed Bays and Estuaries of California* (Thermal Plan), establishes water quality objectives for temperature in certain waters in California, including the Klamath River.

### *Water Quality Control Policy for the Enclosed Bays and Estuaries of California*

The *Water Quality Control Policy for the Enclosed Bays and Estuaries of California* establishes statewide policies for discharges to enclosed bays and estuaries, including the Klamath Estuary. (See State Water Board Resolutions 74-43 and 95-84.) It establishes management policies, water quality requirements, and discharge prohibitions for discharges affecting enclosed bays and estuarine waters, including silt discharges.

### *California Environmental Quality Act*

The State Water Board is the lead agency for purposes of California Environmental Quality Act (CEQA) compliance. The State Water Board issued a [Notice of Preparation](#) (NOP) for the Project on December 22, 2016. The NOP comment period began on December 22, 2016, and ended on February 1, 2017. During the NOP comment period,





**ACCORDINGLY, BASED ON ITS INDEPENDENT REVIEW OF THE RECORD, THE STATE WATER RESOURCES CONTROL BOARD CERTIFIES THAT THE LOWER KLAMATH PROJECT** will comply with sections 301, 302, 303, 306, and 307 of the Clean Water Act, and with applicable requirements of State law under the following terms and conditions.

**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 (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 Licensee 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 WQMP, together with any required plan modifications, with FERC. The Licensee shall implement the WQMP upon Deputy Director and any other required approvals. 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. 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 Compliance Schedule (Condition 2). Additionally, the WQMP shall describe: field sampling and analytical methods; monitoring locations; types of sampling (e.g., continuous, grab, etc.) and frequency by the category (as enumerated below); pre-drawdown monitoring; quality assurance/quality control (QA/QC); 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). Samples that require laboratory analysis shall be analyzed by ELAP-certified laboratories.

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Types of Sampling and Frequency by Category: At a minimum, the WQMP shall identify the parameters and sampling frequency<sup>14</sup> 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 (hourly readings averaged based on 15-minute interval recordings) 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;
- (5) chlorophyll-a; and
- (6) pH.

Frequency: At a minimum, hourly readings (averaged based on 15-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) total phosphorus;
- (3) organic phosphorus;
- (4) particulate organic carbon;
- (5) dissolved organic carbon;
- (6) nitrate;
- (7) nitrite;
- (8) ammonia;
- (9) orthophosphate;
- (10) turbidity;
- (11) microcystin toxicity (beginning May 1 following drawdown activities and continuing annually thereafter from May 1 through October 31);
- (12) suspended sediment concentrations;
- (13) methylmercury (Klamath River monitoring locations below Copco No. 1);
- (14) settleable solids; and
- (15) total and dissolved aluminum (Klamath River monitoring locations below Iron Gate).

Frequency: Every two weeks, at approximately the same time of day, during and following drawdown.



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<sup>14</sup> See pre-drawdown monitoring below for minimum monitoring frequency prior to drawdown.

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### *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) aluminum;
- (6) dioxin;
- (7) cyanide;
- (8) polychlorinated biphenyls (PCBs);
- (9) Dichlorodiphenyltrichloroethane (DDT); and
- (10) Dichlorodiphenyldichloroethane (DDE).

**Frequency:** One monitoring event prior to drawdown activities<sup>15</sup> and one event within three to six months of completing drawdown activities.



**Monitoring Locations:** 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:

*Continuous Water Quality Monitoring (Category 1) and Water Quality Grab Samples<sup>16</sup> (Category 2)* 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)
- California/Oregon Stateline;
- 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;
- Jenny Creek within 1,000 feet upstream of Iron Gate Reservoir's footprint (*for suspended sediment grab samples and continuous turbidity monitoring only*);
- Klamath River at or near USGS gage no. 11516530 (below Iron Gate);
- Klamath River at or near USGS gage no. 11520500 (below Seiad Valley);
- Klamath River at or near USGS gage no. 11523000 (Orleans);
- Trinity River at or near USGS gage no. 1153000 (*for suspended sediment grab samples and continuous turbidity monitoring only*);
- Klamath River at or near USGS gage no. 11530500 (Klamath); and
- Klamath River Estuary.

<sup>15</sup> 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.

<sup>16</sup> Samples shall be collected at the same location, or as close as possible, each time.

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*Klamath Riverbed Sediment Grab Samples (Category 3)* shall be collected at the following locations<sup>17</sup>:

- 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;
- Klamath River downstream of Copco No. 2 Powerhouse, no further 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 River Estuary.

Pre-Drawdown Monitoring: 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 15.**

QA/QC: The Licensee shall outline the QA/QC measures in the WQMP that will be implemented as part of the Project's monitoring program. Equipment shall be maintained per manufacturer's recommendations unless alternative standards are approved as part of the WQMP.

Sediment Load Quantification: At **12 months and 24 months** following completion of drawdown activities, the Licensee shall submit a **report** to the Deputy Director that quantifies: (a) the amount of sediment present in each Project reservoir footprint; (b) the total amount of sediment exported from the Project reservoirs; and (c) the amount of sediment that has settled in the Klamath River **between Iron Gate Dam and Cottonwood Creek (River Mile [RM] 185)**. 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 average particle size.

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


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<sup>17</sup> Samples shall be collected at the same location, or as close as possible, each time.

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to the State Water Board, ODEQ, and North Coast Regional Board. Monitoring and monthly reporting shall continue until otherwise approved by the Deputy Director. The monthly report shall, at a minimum: summarize the results of the month's monitoring; highlight any exceedances of water quality objectives; highlight observed trends; request any changes to the WQMP; and propose any adaptive management measures to address exceedances. Any proposal to modify, reduce, or discontinue monitoring 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 20). Modifications to the WQMP or adaptive management measures requested by the Licensee require Deputy Director approval prior to implementation.

At 12 months and 24 months following the completion of drawdown activities, the Licensee shall submit the estimates required by the Sediment Load Quantification Section above.

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 includes, but is not limited to monitoring under the following conditions: City of Yreka Water Supply (Condition 7); Construction: General Permit Compliance, and Water Quality Monitoring and Protection Plans (Condition 9); Hatcheries (Condition 12); and Recreation Facilities (Condition 17).

### **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. rsuant 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 n 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, the Licensee shall submit a report that documents: 1) Project attainment of sediment-related water quality objectives over a

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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 13) or other measures proposed by the Licensee. If a water quality objective is exceeded and the Licensee believes the exceedance it is not a result of Project activities, the Licensee shall provide information and rationale demonstrating that the exceedance is not related to Project activities. The Deputy Director will consider the Licensee’s rationale 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 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)	Stateline to the Scott River: <ul style="list-style-type: none"> <li>• October 1 to March 31: 90%</li> <li>• April 1 to September 30: 85%</li> </ul> Scott River to Hoopa: <ul style="list-style-type: none"> <li>• All year: 90% saturation</li> </ul> Downstream of Hoopa to Turwar: <ul style="list-style-type: none"> <li>• June 1 to August 31: 85%</li> <li>• September 1 to May 31: 90%</li> </ul> Upper and Middle Estuary: <ul style="list-style-type: none"> <li>• September 1 to October 31: 85%</li> <li>• November 1 to May 31: 90%</li> <li>• June 1 to July 31: 85%</li> <li>• August 1 through August 31: 80%</li> </ul>
Temperature	Elevated temperature waste discharges into COLD** interstate waters are prohibited.  Thermal waste discharges having a maximum temperature greater than 5°Fahrenheit above natural receiving water temperature are prohibited.  At no time or place shall the temperature of WARM*** intrastate



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Table 1: Minimum Parameters to Demonstrate Attainment of Numeric Water Quality Objectives	
Parameter	Water Quality Objective*
	water be increased more than 5°Fahrenheit above natural receiving water temperature.
Specific Conductance	<p>Klamath River above Iron Gate Dam and including Iron Gate and Copco Reservoirs:</p> <ul style="list-style-type: none"> <li>• 275 micromhos (50% upper limit)****; and</li> <li>• 425 micromhos (90% upper limit)*****</li> </ul> <p>Middle Klamath River below Iron Gate Dam:</p> <ul style="list-style-type: none"> <li>• 275 micromhos (50% upper limit); and</li> <li>• 350 micromhos (90% upper limit)</li> </ul> <p>Lower Klamath River:</p> <ul style="list-style-type: none"> <li>• 200 micromhos (50% upper limit); and</li> <li>• 300 micromhos (90% upper limit)</li> </ul>
<p>* 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.</p> <p>** 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.</p> <p>*** 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.</p> <p>**** 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.</p> <p>***** 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.</p>	


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 Water Board (Executive Officer), and consistent with Tribal Water Quality Standards (Condition 20). 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 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

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- A **proposal** to address the water quality objective(s) exceedance and associated timeline for attainment of compliance with the water quality objective(s).


The compliance report, if needed, shall be submitted to the Deputy Director for review and approval no later than 35 months following the beginning of drawdown. 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 January 3, 2018, update to the *Administrative Draft of the Definite Plan for Decommissioning*, and any subsequent updates thereto. 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 reservoir drawdown facilities;
- (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;



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- (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 breach of cofferdams will be coordinated to limit impacts;
- (12) A detailed description of operations required to maintain Copco No. 1 reservoir level at the gated spillway crest elevation on Copco No. 1 Dam (2,597.0 feet) between the conclusion of the first phase and initiation of the second phase of Copco No. 1 drawdown.
- (13) Detail on how long Project powerhouses are anticipated to be operational during drawdown; 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 for entrainment and all bypass routes (e.g., pipelines, outlets, etc.) shall be properly sealed upon completion of Project activities to prevent human and wildlife access to these areas.

The Licensee shall notify the Deputy Director, in writing, within 24 hours of initiation and conclusion of drawdown activities at each reservoir. If reservoir drawdown has the potential to be delayed or extended while still meeting the requirements outlined in this certification, the Licensee shall notify the Deputy Director within 72 hours. 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 five-month period between November 1 (earliest date to start drawdown) and March 15 of the following year (latest date to conclude drawdown), and shall occur as more specifically outlined below:

- Copco No. 1 drawdown is divided into two timeframes based on the rate of drawdown<sup>18</sup> allowed at specific reservoir elevations.
  - The first phase of Copco No. 1 drawdown, from its normal operating reservoir elevation (2,609.5 feet) to gated spillway (crest elevation 2,597.0 feet), 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 is two feet per day. The initial phase of Copco No. 1 drawdown shall be concluded no later than January 1.

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<sup>18</sup> 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 by March 15 of the year directly following the initiation of Copco No. 1 drawdown.

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- The second phase of Copco No. 1 drawdown, from the gated spillway until empty, shall not start until at least two weeks after Iron Gate drawdown begins and shall start no later than February 15 of the year directly following the initial drawdown of Copco No. 1. Copco No. 1 drawdown shall conclude no later than March 15 of the year in which the second phase of Copco No. 1 drawdown is initiated. The maximum drawdown rate for the second phase of Copco No. 1 drawdown shall be five feet per day.



The maximum additional discharge below Copco No. 1 Dam associated with Copco No. 1 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 drawdown shall start no sooner than January 1 of the year directly following the initiation of Copco No. 1 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 drawdown shall be five feet per day. The maximum additional discharge below Iron Gate Dam associated with Iron Gate 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 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 drawdown shall conclude no later than March 15 of the same year in which J.C. Boyle drawdown is initiated.
- Copco No. 2 drawdown shall conclude no later than March 15 of the year following initiation of Copco No. 1 drawdown.



Removal of the Project dams 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 so as not to interfere with instream flow requirements<sup>19</sup> below Iron Gate Dam.


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<sup>19</sup> The United States Bureau of Reclamation's Klamath River Project must meet flows below Iron Gate Dam that are specified in the *2013 Joint Biological Opinion issued to the Bureau of Reclamation for the Klamath Irrigation Project (NMFS and USFWS, 2013)*, and additionally must meet requirements of injunctions issued in *Hoopa Valley Tribe v. Bureau of Reclamation*, No. 16-cv-4294 (Docket No. 111), and *Yurok Tribe v. Bureau of Reclamation*, No. 16-cv-6863 (Docket no. 70). It is anticipated that United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) will issue a new biological opinion with potentially revised instream flow conditions in the near future, and potentially prior to or during drawdown. Drawdown must not interfere with implementation of the flow requirements current at that time.


**CONDITION 4. ANADROMOUS FISH PRESENCE**

The purpose of fish presence monitoring is to ensure that anadromous fish can voluntarily access the Klamath River and its tributaries within and upstream of the California portion of the Hydroelectric Reach (i.e., the Klamath River and tributaries from Iron Gate Dam [RM 192.9] to the California/Oregon Stateline on the Klamath River following Project implementation. 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) 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.

Fish Species: The Fish Presence Plan shall, at a minimum, include surveys for the following anadromous fish species: spring and fall run Chinook (*Oncorhynchus tshawytscha*), coho (*Oncorhynchus kisutch*), Pacific lamprey (*Entosphenus tridentatus*), and steelhead (*Oncorhynchus mykiss*). 

California Survey Reaches: Unless otherwise approved by the Deputy Director, the Licensee shall survey, in California, all tributaries with potentially viable anadromous fish habitat that have a confluence within the Hydroelectric Reach, as well as the extent of anadromy in the mainstem 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. 

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. 

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

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(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 monitoring results annually to the Deputy Director.

All 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) reported 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.



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 5. AQUATIC RESOURCES**

The Licensee shall implement Aquatic Resource (AR) Measures 1, 2, 4, 6, and 7 as proposed in the Licensee's May 2018, *Appendix I of the Third Administrative Draft of the Definite Plan for Decommissioning*<sup>20</sup> (May 2018 Appendix I), and as updated based on the requirements presented in this condition. Except to the extent changes are required by this condition, the Licensee shall submit any proposed changes in the material terms of the measures as described in the May 2018 Appendix I, 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 proposed by the Licensee.

#### *Aquatic Resource Measure 1 – Mainstem Spawning*

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

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<sup>20</sup> Note the Licensee's May 2018, Appendix I submittal proposes implementation of five aquatic resources measures, which are identified as AR Measures 1, 2, 4, 6, and 7. The document discusses, but does not propose implementation of potential AR Measures 3 and 5.

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*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.

At a minimum, the Tributary-Mainstem Connectivity Plan shall include: proposed monitoring including: 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 the tributaries identified in AR Measure 1, Action 1 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 calendar years directly following the completion of drawdown activities, and within one month following a 10-year flow event<sup>21</sup> unless it is unsafe for field crews, in which case monitoring shall be conducted as soon thereafter as safe conditions occur.

*Action 2: Spawning Habitat Evaluation.* The Licensee shall implement spawning gravel surveys as proposed in AR Measure 1, Action 2. 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 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.

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<sup>21</sup> A 10-year flow event is 14,854 cfs as recorded at USGS gage no. 11516530 (below Iron Gate).

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; and 4) assessment of estimated spawning habitat benefits resulting from the proposed action compared to the targets identified in AR Measure 1, Action 2. In the SHARP, the Licensee shall evaluate a range of actions to meet the spawning targets identified in AR Measure 1, Action 2. AR Measure 1, Action 2 identified spawning gravel targets to improve spawning habitat. When spawning gravel augmentation is not appropriate<sup>22</sup>, the Licensee shall evaluate and propose other actions to improve spawning and rearing habitat that meet the targets identified in Table 3-1 of AR Measure 1, Action 2. The range of other actions may include: installation of large woody material, riparian planting for shade coverage, wetland construction or enhancement, and cattle exclusion fencing.



*Aquatic Resource Measure 2 – Juvenile Outmigration*

AR Measure 2 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 AR Measure 2, Action 1. The Licensee shall survey a minimum of 15 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 AR Measure 2, Action 1 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 AR Measure 2, Action 2 as proposed, with the same modifications identified in AR Measure 1, Action 1, 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 Rescue and Relocation Plan (Salmonid Plan) to the Deputy Director for review and approval. The 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 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 Salmonid Plan, together with any required plan modifications, with FERC prior to initiating drawdown. The Licensee shall implement the Salmonid Plan upon receipt of Deputy Director and any other required approvals. Any changes to the Salmonid Plan shall be approved by the Deputy Director prior to implementation.



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<sup>22</sup> Gravel augmentation shall only be performed in the mainstem Klamath River, unless otherwise approved by the Deputy Director.



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At a minimum, the Salmonid Plan shall include:

- (1) Methods that will be used to find and relocate juvenile salmonids;
- (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 tributaries<sup>23</sup> listed in AR Measure 2, Action 3. 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 QA/QC procedures identified in the Deputy Director-approved WQMP (Condition 1). The Licensee may use water quality monitoring results associated with implementation of the WQMP (Condition 1), as applicable. The Licensee shall provide the proposed frequency, duration, and location for AR Measure 2, Action 3 water quality monitoring;
- (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 State Water Board on the implementation of AR Measure 2, Action 3 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 salmonid, including number of lamprey and juvenile salmonids **rescued (including age class), release location, and the success of such efforts.**


### **Aquatic Resource Measure 4 – Iron Gate Hatchery Management**

The Licensee shall implement AR Measure 4 as listed in the Licensee's May 2018, Appendix I. 

### **Aquatic Resource Measure 6 – Suckers**

The Licensee shall implement AR Measure 6 as listed in the Licensee's May 2018, Appendix I.

### **Aquatic Resource Measure 7 – Freshwater Mussels**

The Licensee shall implement AR Measure 7 as listed in the Licensee's May 2018, Appendix I. 

## **CONDITION 6. 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 Deputy

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<sup>23</sup> 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.

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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 description of all Project facilities and structures that will not be removed during Project implementation<sup>24</sup>, including facilities buried in place;
- (2) An analysis of potential water quality impacts associated with remaining facilities, including hazardous materials or wastes present at the facilities and the potential for erosion or runoff to surface waters;
- (3) Measures the Licensee proposes to ensure remaining facilities do not contribute to water quality impairments; and
- (4) How any ongoing measures will be implemented once title of the facilities is transferred to another entity following conclusion of the Project.

### **CONDITION 7. CITY OF YREKA 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 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 intakes' screens comply with fish screen criteria shall be completed within the water delivery outage period specified above.

Except as provided in this condition, the Licensee shall ensure uninterrupted water supply during replacement of the pipeline section, any required intake screen 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. 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 12-hour 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 9 of this certification for Deputy Director review and approval.

### **CONDITION 8. 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

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<sup>24</sup> It is not necessary to include recreational facilities addressed under Recreation Facilities (Condition 17).



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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 (4) a description of how the proposal incorporates or addresses agency comments and recommendations. The Deputy Director may require modifications as part of any approval. The Licensee shall file the Deputy Director-approved proposal, together with any required plan 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.

### **CONDITION 9. 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 12], and Restoration [Condition 13]) site-specific Deputy Director-approved water quality monitoring and protection plans shall be prepared and implemented. Prior to the construction or other activity that could impact water quality or beneficial uses, including, but not limited to, planned recreation-related construction, 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 plan shall include measures to control erosion, stream sedimentation, dust, and soil mass movement. The plan 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;

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- 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 January 3, 2018, update to the *Administrative Draft of the Definite Plan for Decommissioning*, the Licensee's September 30, 2017, Technical Support Document<sup>25</sup>, *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 10. 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 properly dispose of all non-hazardous wastes<sup>26</sup> 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 September 30, 2017, Technical Support Document, 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 activities and 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;

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<sup>25</sup> September 30, 2017, *California Environmental Quality Act (CEQA) and California and Oregon 401 Water Quality Certifications Technical Support Document*

<sup>26</sup> Management of hazardous materials is covered in Hazardous Materials Management (Condition 11).

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- (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 and reporting on the implementation of this condition to ensure the stability of the restored disposal site and protection of water quality.

On-site disposal of inert, non-hazardous debris resulting from dam removal activities may be buried in accordance with requirements in division 2, title 27 of the California Code of Regulations. The Licensee shall ensure that the disposal sites are above the ordinary high water 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 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. In no circumstance shall spoil sites be located at or below the OHWM. 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 within 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 11. 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: (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, 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 Section 7 of the Licensee's September 30, 2017, Technical Support Document, 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 material spill, at a minimum, the Licensee shall immediately inform the California Emergency Management Agency, CDFW, North Coast

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- Regional Board, and the State Water Board staff of the magnitude, nature, time, date, location, and action taken for the spill;
- (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 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 10) 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 exists. 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 the Project 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)<sup>27</sup> (State Water Board 2012).

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<sup>27</sup> The OWTS Policy was adopted by the State Water Board on June 19, 2012 per Resolution No. 2018-0019; 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.

**CONDITION 12. 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 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 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. Any changes to the Hatcheries Plan shall be approved by the Deputy Director prior to implementation. At a minimum, the Hatcheries Plan shall include:

- (1) The Licensee's plan to construct, operate, and maintain the Fall Creek and Iron Gate Hatcheries, as presented in the Licensee's June 1, 2018 submittal of updates to Section 7.8 of the *Administrative Draft of the Definite Plan for Decommissioning*<sup>28</sup>, and as updated based on the requirements presented 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 hatchery location;
- (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 amount (annual and monthly), minimum amount of flow that will be bypassed below the diversion to provide volitional fish passage; 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; and
- (5) Duration of each hatchery's operations.



Prior to operation of the Fall Creek and Iron Gate Hatcheries, the Licensee shall, for each hatchery, obtain coverage under and comply with the *Cold Water Concentrated Aquatic Animal Production Facility Discharges to Surface Waters, National Pollutant Discharge Elimination System* permit (NPDES No. CAG131015) or subsequent NPDES permits issued by the North Coast Regional Board.

**CONDITION 13. 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

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<sup>28</sup> The June 1, 2018 update to Section 7.8 of the Administrative Draft of the Definite Plan for Decommissioning is available online at: [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/water\\_quality\\_cert/lower\\_klamath\\_ferc14803.shtml](https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/lower_klamath_ferc14803.shtml)

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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 the Licensee's September 30, 2017, Technical Support Document, and as updated based on the requirements presented 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 a 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 of how the Licensee will evaluate for the presence of wetlands that could be affected by the Project (including potential disposal areas) and ensure no net loss of wetland or riparian habitat functions;
- (5) Description of how the Licensee will ensure floodplain connectivity within the reservoir footprint;
- (6) Description of how the Licensee will monitor for and address invasive weeds in the restored area;
- (7) 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
- (8) 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 instability<sup>29</sup>, etc.). Monitoring shall occur frequently enough to

<sup>29</sup> Adaptive management measures for soil stabilization may refer to the Slope Stability Monitoring Plan required in Slope Stability (Condition 16).

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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 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 14. 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 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 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, the Licensee shall provide temporary accommodations (e.g., replacement water, settling basins, etc.) to address them. 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.

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.





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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 Section 7.7.3 of the Licensee's September 30, 2017, Technical Support Document. 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 three years directly following completion of drawdown. Monitoring duration may be adjusted based on groundwater levels reported in 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.

**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 15. 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 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 or the California Endangered Species Act, or are designated as Species of Special Concern by CDFW. These species may include, but are not limited to: southern torrent salamander, Scott Bar salamander, Siskiyou Mountains salamander, Pacific tailed frog, foothill yellow-legged frog, northern red-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;
- (3) Identification of the minimum qualifications for the individual(s) that will conduct the surveys and relocations, if necessary;



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- (4) 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;
- (5) Identification of potential relocation areas, which may include lower reaches of Klamath River tributaries with suitable habitat approved by USFWS and CDFW; and
- (6) 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 Amphibian and Reptile Plan.

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 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 16. 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. Within three months of issuance of the FERC license surrender order and prior to starting drawdown, the 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. 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 Sections 3 and 4 of the Licensee's September 30, 2017, Technical Support Document, 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 a 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;

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- (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.

The Licensee shall submit the Slope Stability Monitoring 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 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.

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 proposed changes, and resubmit the Slope Stability Monitoring Plan for Deputy Director approval.

### **CONDITION 17. 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

## DRAFT WATER QUALITY CERTIFICATION FOR LOWER KLAMATH PROJECT

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 8.9.1 of the Licensee's September 30, 2017, Technical Support Document, 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 or maintained following dam removal, including location, the types of facilities to be added or maintained, and the proposed schedule for completion of new facilities;
- (5) Proposed recreation site restoration or improvements;
- (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 efforts<sup>30</sup> 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.

<sup>30</sup> 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.

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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 beneficial use, 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.

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

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

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. 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, unless otherwise approved by the Deputy Director.

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 and any other required approvals. 

### **CONDITION 18. 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.

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The Licensee shall solicit comments from the agencies listed above. Additionally, 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 19. 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 diversions of water.



### **CONDITION 20. 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, as described in the *Water Quality Control Plan, Hoopa Valley Indian Reservation* (Hoopa Valley Tribe 2008)<sup>31</sup>. The Yurok Tribe has applied to the United States Environmental Protection Agency 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 assessment on anticipated compliance under Compliance Schedule (Condition 2) shall also be submitted to the Hoopa Valley Tribe and any other Native American tribe that has subsequently 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.

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<sup>31</sup> 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.



## DRAFT WATER QUALITY CERTIFICATION FOR LOWER KLAMATH PROJECT

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 21. CONSULTATION REQUIREMENTS**

For any condition that requires consultation with specific agencies, the Licensee may consult with additional parties (e.g., 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 is likely to result in plans that are better conceived and more likely to receive approval without the need for additional modification.

### **CONDITION 22. FILINGS AND APPROVALS**

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 23.** 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 24.** 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 25.** 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 26.** 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 27.** 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.

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**CONDITION 28.** 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 Endangered Species Act (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 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 ESAs for the Project authorized under this certification.

**CONDITION 29.** 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 30.** 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 31.** In response to a suspected violation of any condition of this certification, the State Water Board or North Coast Regional Water 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 32.** 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 33.** 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 and ordinances and shall obtain authorization from applicable regulatory agencies prior to the commencement of Project activities.

**CONDITION 34.** 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.

DRAFT WATER QUALITY CERTIFICATION FOR LOWER KLAMATH PROJECT

**CONDITION 35.** 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 Deputy Director and Executive Officer. The Licensee shall provide State Water Board and Regional Water Board staffs access to Project sites to document compliance with this certification.

**CONDITION 36.** 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 37.** This certification is conditioned upon total payment of any fee required in California Code of Regulations, title 23, article 4.

**CONDITION 38.** 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 39.** 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.

DRAFT

\_\_\_\_\_  
Eileen Sobeck  
Executive Director

\_\_\_\_\_  
Date

**ATTACHMENTS**

**ATTACHMENT 1: KRRC'S PROPOSED PROJECT SCHEDULE**

**ATTACHMENT 2: FIGURES**

- Figure 1: Lower Klamath Project Location
- Figure 2: Lower Klamath Project Boundary
- Figure 3: J.C. Boyle Disposal Site
- Figure 4: Copco No. 1 and Copco No. 2 Disposal Site
- Figure 5: Iron Gate Disposal Site

**ATTACHMENT 3: REFERENCES**



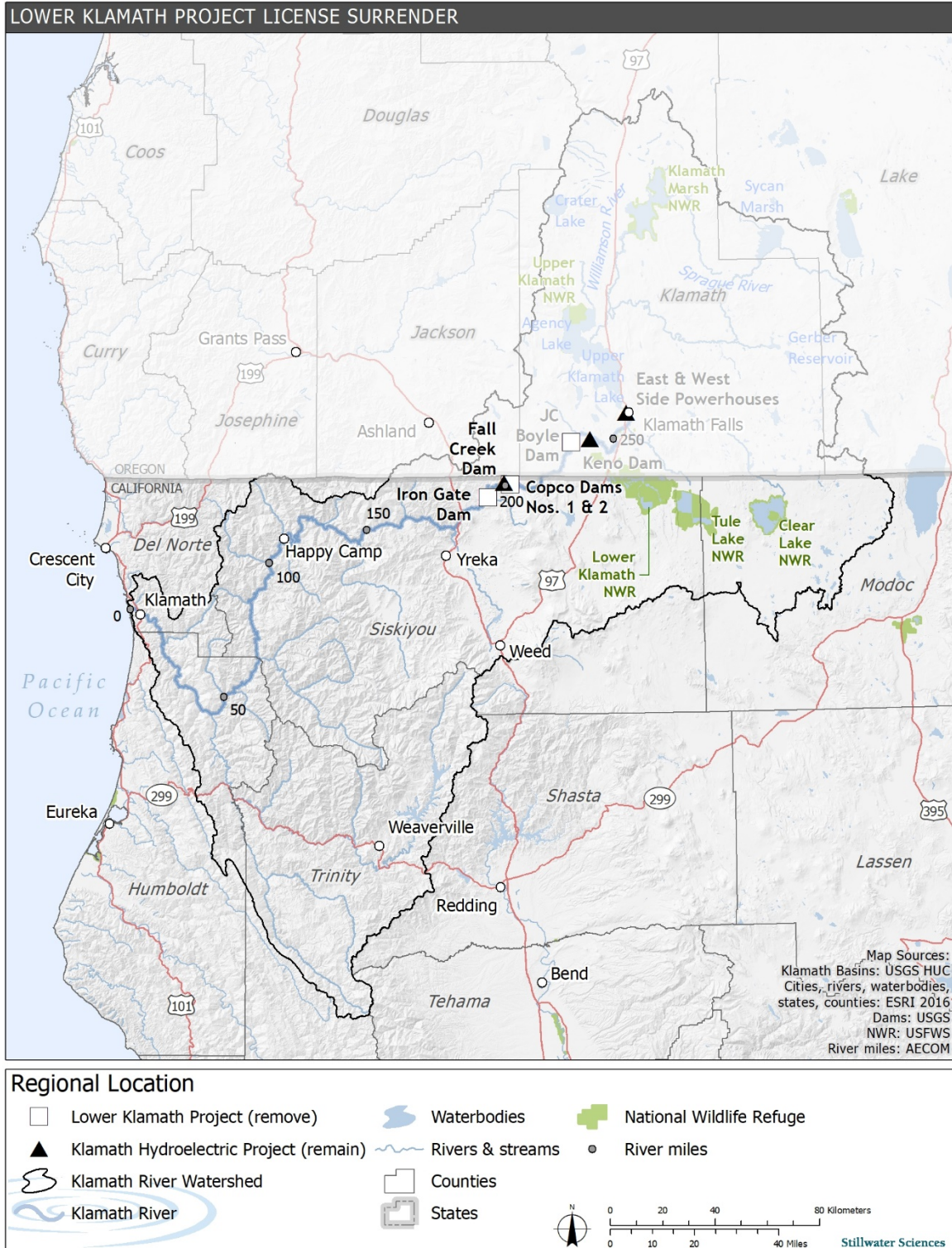
**ATTACHMENT 1: KRRC'S PROPOSED PROJECT SCHEDULE**

	Dam Removal Year 1												Dam Removal Year 2												Post-Dam Removal Year 1	Post-Dam Removal Year 2-5	Post-Dam Removal Year 5-10	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
<b>Pre-Dam Removal Activities</b>																												
Pre-construction activities (e.g., staging area preparation)																												
Invasive exotic vegetation (IEV) pre-dam removal surveys																												
Iron Gate Hatchery modifications including water supply replacement <sup>1</sup>																												
Fall Creek Hatchery modifications including water supply <sup>1</sup>																												
City of Yreka water supply pipeline relocation <sup>2</sup>																												
Road, bridge, and culvert improvements																												
<b>J.C. Boyle Dam and Powerhouse</b>																												
Modify canal, prepare for drawdown																												
Power generation																												
Remove powerplant																												
Reservoir drawdown																												
Remove dam																												
Final deconstruction activities and demobilize																												
<b>Copco No. 1 Dam and Powerhouse</b>																												
Modify diversion tunnel, prepare for drawdown																												
Power generation																												
Remove powerplant																												
Reservoir drawdown																												
Remove dam																												
Final deconstruction activities and demobilize																												
<b>Copco No. 2 Dam and Powerhouse</b>																												
Power generation																												
Remove powerplant																												
Reservoir drawdown																												
Remove dam																												
Final deconstruction activities and demobilize																												
<b>Iron Gate Dam and Powerhouse</b>																												
Modify diversion tunnel, prepare for drawdown																												
Power generation																												
Remove powerplant																												
Reservoir drawdown																												
Remove dam																												
Final deconstruction activities and demobilize																												
<b>Reservoir Restoration</b>																												
Restoration within reservoir footprint																												
Restoration of upland areas outside of reservoir footprint																												
Adaptive management of reservoir restoration																												
Hatched shading denotes periods designated for maintenance of minimum flood capacity in the reservoir																												

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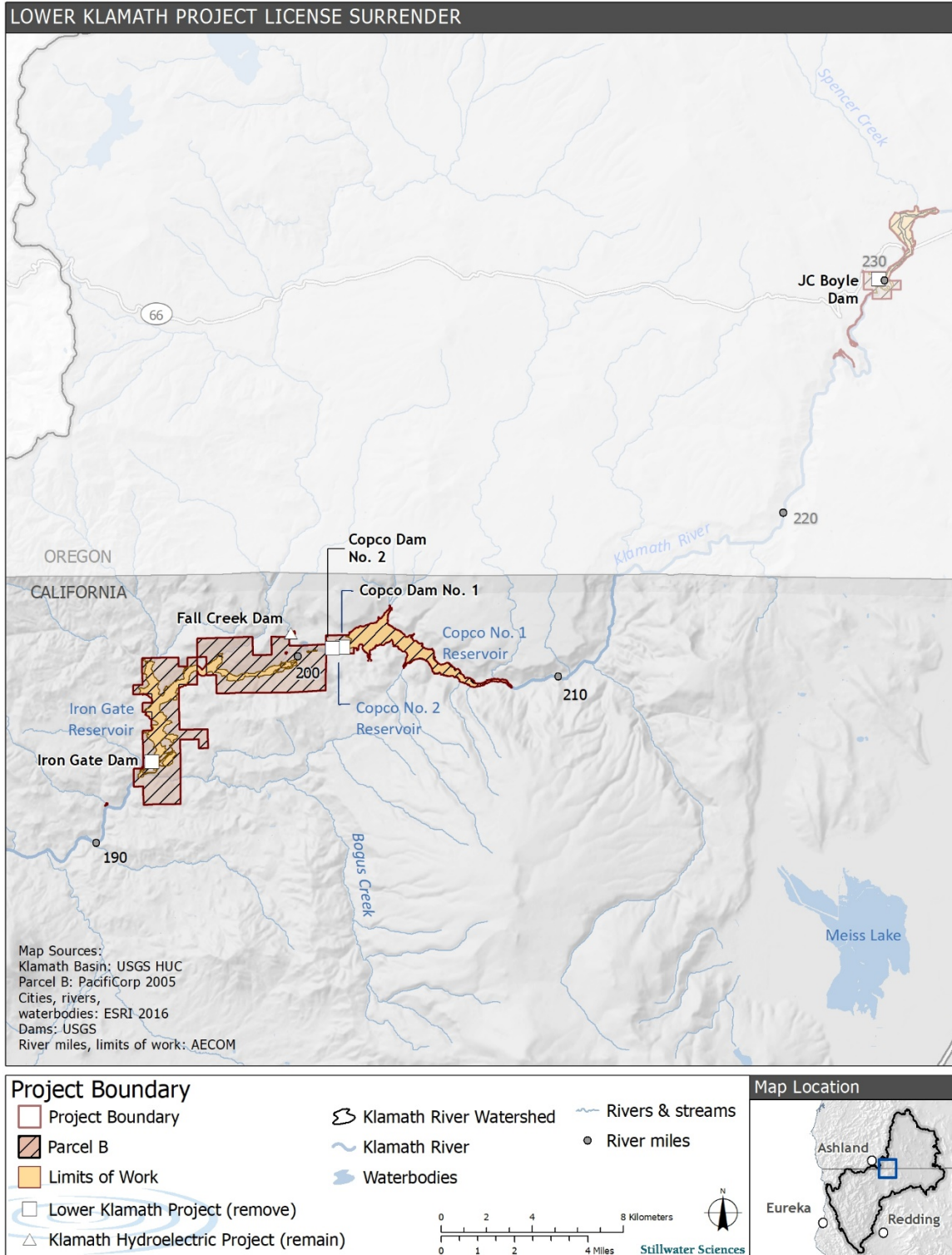
ATTACHMENT 2: FIGURES

Figure 1: Lower Klamath Project Location



# DRAFT WATER QUALITY CERTIFICATION FOR LOWER KLAMATH PROJECT

Figure 2: Lower Klamath Project Boundary





# DRAFT WATER QUALITY CERTIFICATION FOR LOWER KLAMATH PROJECT

Figure 3: J.C. Boyle Disposal Site (shown in purple)

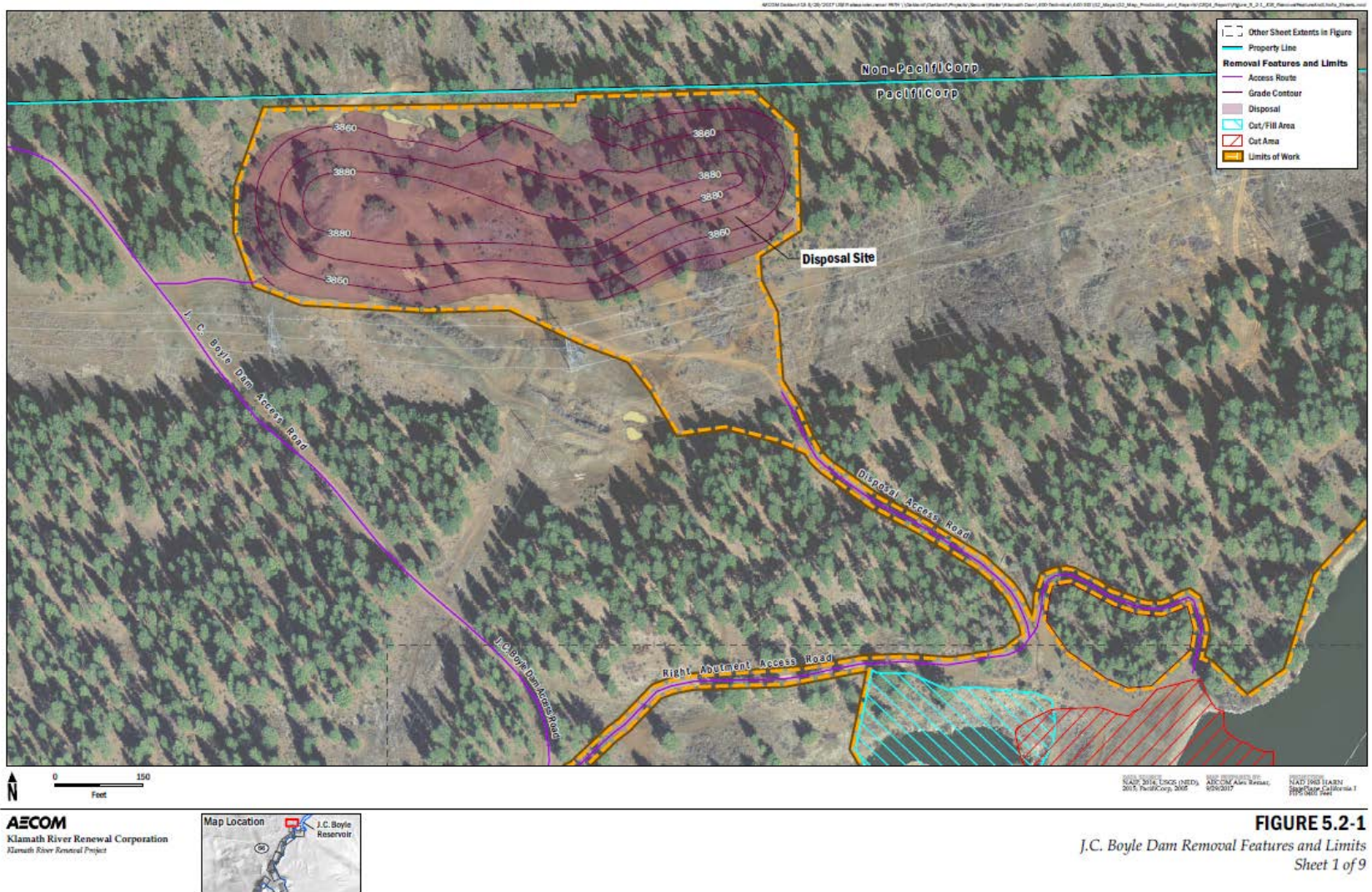
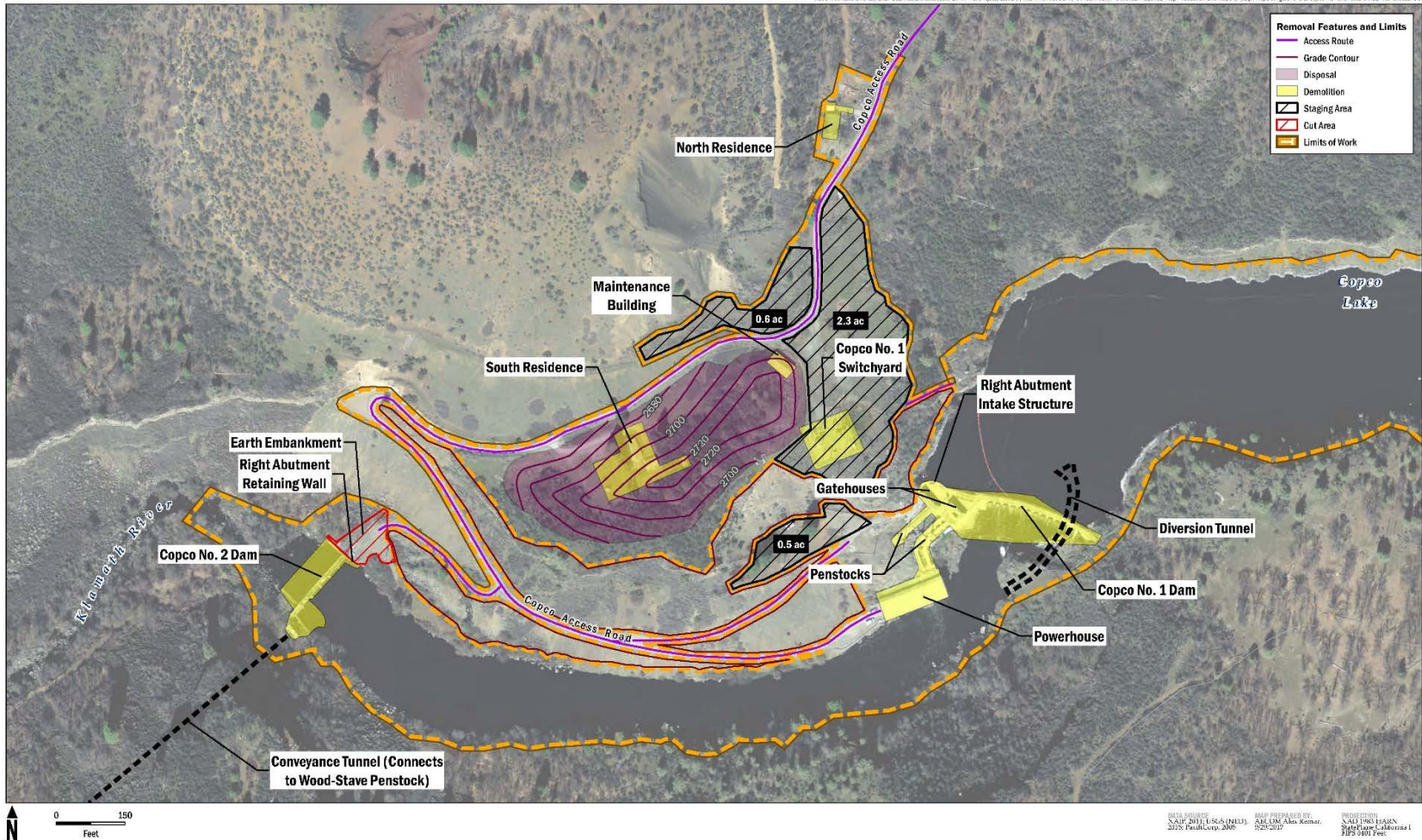




Figure 4: Copco No. 1 and Copco No. 2 Disposal Site (shown in purple)



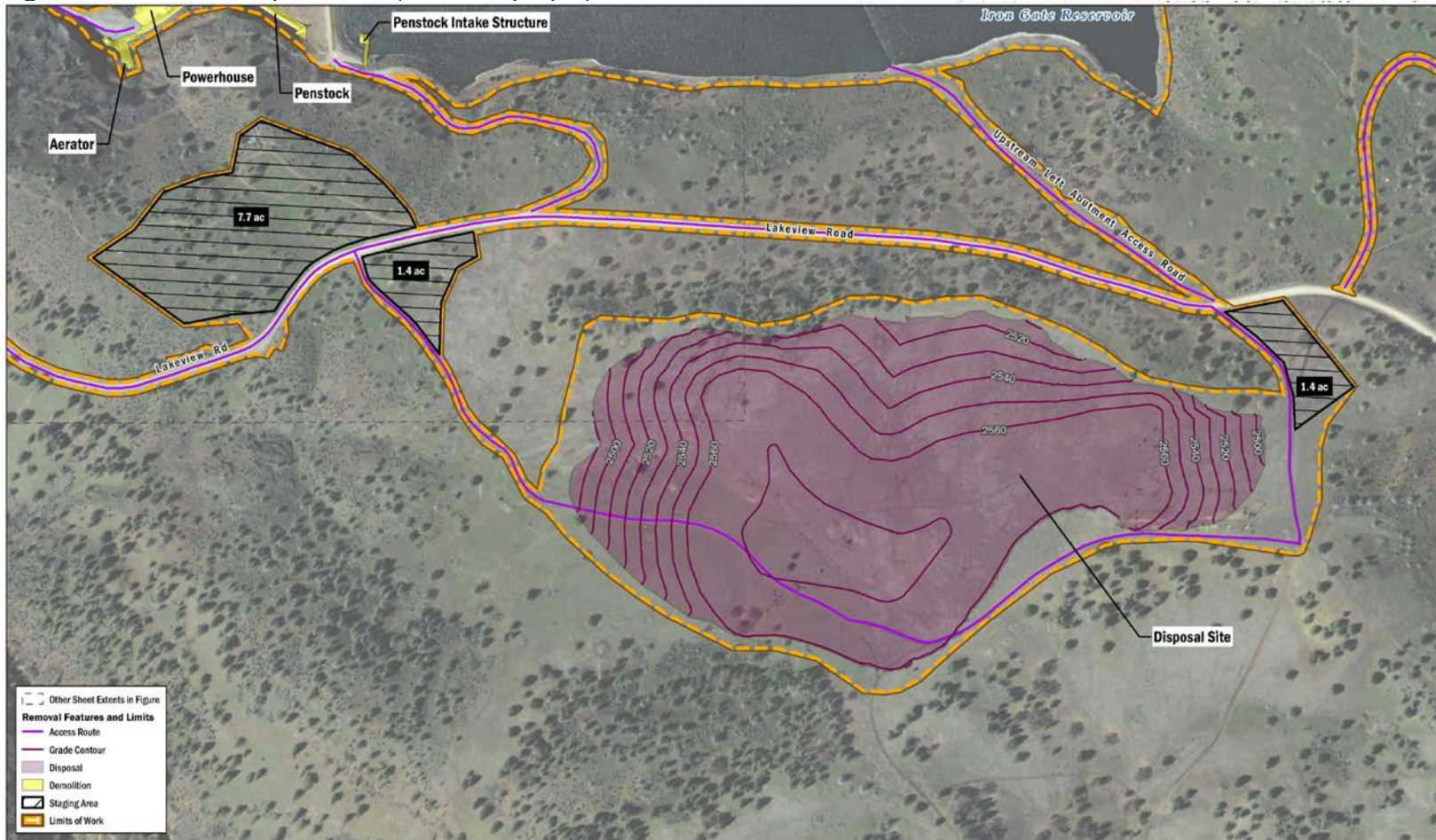
**AECOM**  
Klamath River Renewal Corporation  
Klamath River Renewal Project



**FIGURE 5.3-1**  
Copco No. 1 and Copco No. 2 Dams Removal Features and Limits  
Sheet 1 of 4



Figure 5: Iron Gate Disposal Site (shown in purple)



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**FIGURE 5.5-1**  
Iron Gate Dam Removal Features and Limits  
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