

**STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD**

**In the matter of:
July 17, 2020 Water Quality Certification For Federal Permit Or License
for Yuba County Water Agency
Yuba River Development Project (FERC No. 2246)**

**YUBA COUNTY WATER AGENCY'S PETITION FOR
RECONSIDERATION OF JULY 17, 2020 WATER QUALITY
CERTIFICATION FOR FEDERAL PERMIT OR LICENSE**

Appendix E

**TECHNICAL MEMORANDUM ON
CONDITION 7 – NEW COLGATE POWER TUNNEL INTAKET**

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APPENDIX E

TECHNICAL MEMORANDUM ON CONDITION 7 – NEW COLGATE POWER TUNNEL INTAKE

1.0 SUMMARY OF ANALYSIS AND CONCLUSIONS

Condition 7 of the State Water Resources Control Board's (SWRCB) Water Quality WQC (SWRCB 2020, or WQC) is not supported by the available evidence. The Federal Energy Regulatory Commission (FERC) and United States Department of Defense, Army Corps of Engineers (USACE) analyzed a proposal identical to Condition 7 in their January 2019 Final Environmental Impact Statement (FERC and USACE 2019, or Final EIS) for relicensing of the Yuba County Water Agency's (YCWA) Yuba River Development Project (Project or YRDP) and concluded:

- The condition would not be possible to implement in many months, especially in relatively dry years or years following dry years;
- The condition is not needed to preserve the cold water pool in New Bullards Bar Reservoir for cold water releases later in the summer. Use of the lower intake in the New Colgate Power Tunnel Intake Tunnel does not deplete the cold water pool. The cold water pool of New Bullards Bar Reservoir comprises most of the stored water in the reservoir in the spring and summer due to the large depth versus surface area of the reservoir. The cold water pool is only depleted when reservoir storage is depleted in extreme drought conditions, and in these drought years the upper intake would not be available
- Use of the upper intake would not improve water temperatures for salmonids in the lower Yuba River. The frequency of sub-optimal daily mean temperature for salmonids (i.e., temperatures exceeding 20 degrees Centigrade (°C)) and temperatures supporting salmonid growth (i.e., 12°C to 20°C) would be virtually the same under full time use of the lower intake and Condition 7; and
- In addition to FERC and USACE's analysis of the New Colgate Power Tunnel upper intake in the Final EIS, YCWA conducted a detailed analysis of the effects on lower Yuba River water temperatures associated with implementing Condition 7. The analysis compared modelled water temperatures from using both the lower and upper intakes, versus operating the lower intake alone, to three different lifestage-specific water temperature indices on a monthly basis. The analysis confirmed the Final EIS findings that WQC Condition 7 would have minimal environmental benefits, and further demonstrated that operating to Condition 7 would not provide any substantive water temperature-related benefits to spring-run Chinook salmon, fall-run Chinook salmon, or steelhead.

- The estimated average annual cost of \$1,125,650 (i.e., more than \$56 million over the YCWA anticipated 50-year-term of the new license) is not warranted given that Condition 7 would have no environmental benefit.

The WQC contains no analysis to contradict these analyses. In essence, the WQC's adoption of Condition 7 reflects the SWRCB's wholesale adoption of a proposal made by the California Department of Fish and Wildlife (CDFW) and the United States Department of the Interior (DOI) made to FERC and USACE that FERC and USACE rejected for specific technical reasons. The WQC contains no particular technical explanation for its adoption of Condition 7, and does not address FERC's and USACE's technical analysis that caused them to reject the related proposal by CDFW and USACE.

2.0 CONDITION 7

At pages 44 and 45 of the WQC, Condition 7 states:

The Licensee shall, as soon as completing any necessary equipment and safety work and no later than three years following license issuance, operate the upper intake of the temperature control structure on the New Colgate Power Tunnel Intake during the months of March, April, and May. Prior to operation of the upper intake, the Licensee shall continue to operate the lower intake on the New Colgate Power Tunnel Intake during the months of March, April, and May. The Licensee shall consult with the Technical Review Group (TRG) during the annual meeting (Condition 22) to determine which New Colgate Power Tunnel Intake (i.e., does not need to be the upper intake) will be used during each of the months in the remainder of the water year (June –September). A description of which intake was used throughout the remainder of the water year shall be included in the report submitted annually in conjunction with annual meetings (Condition 22).

The Licensee shall inspect the upper intake on the New Colgate Power Tunnel for safety and functionality prior to its first use under this condition. The Licensee shall make any necessary safety inspections and equipment improvements to facilitate use of the upper intake within three years of license issuance. The Licensee shall provide updates regarding safety inspections, necessary equipment improvements, and the timeline for use of the upper intake at the annual meeting (Condition 22).

Any changes to the operations of the New Colgate Power Tunnel Intake associated with this condition shall be approved by the Deputy Director prior to implementation. The Deputy Director may require modifications as part of any approval. The Licensee shall implement any changes to the operations of the New Colgate Power Tunnel Intake upon receipt of Deputy Director and any other required approvals. The Licensee shall file any Deputy Director-approved updates with FERC.

3.0 RELEVANT ANALYSES IN FERC AND USACE's FINAL EIS

Use of the upper intake of the New Colgate Power Tunnel Intake, as described in Condition 7, was recommended to FERC in 2017 by CDFW in CDFW's FPA Section 10(j) recommendation 2.7 (p. 15, CDFW 2017) and by DOI in its Section 10(j) recommendation 13 (pp. 87 through 92, DOI 2017). CDFW's and DOI's recommendations were identical. FERC analyzed CDFW's and DOI's use of the upper intake recommendation in FERC's May 2018 Draft Environmental Impact Statement (FERC 2018, or Draft EIS) and FERC and USACE staff analyzed CDFW's and DOI's use of the upper intake recommendations in their Final EIS.

For the reasons discussed below, FERC and USACE staff did not include in the Final EIS a recommended condition requiring use of the upper intake in the New Colgate Power Tunnel Intake. Essentially, as discussed below, FERC and USACE found that the recommended condition would produce very minimal aquatic benefits that did not justify the high cost of implementing that recommendation.

First, FERC and USACE were concerned that the upper intake would not be physically accessible when CDFW and DOI recommend its use because the New Bullards Bar reservoir water surface elevation would be lower than the invert for the upper intake in portions of those months. FERC and USACE conducted that analysis and at pages 3-112 of the Final EIS, they concluded:

The reservoir level would limit operation of the upper intake more often in March than in April and May, with greater limitations in other months, generally increasing through the summer months, and in relatively dry years or years following dry years.

In addition, as requested by CDFW and DOI, FERC and USACE also evaluated use of the upper intake in the extended drought from 2012 through 2016 and potential effects on lower Yuba River temperatures. Following this analysis, FERC and USACE concluded:

As noted in comments on the draft EIS by the Water Board (2018a) and California DFW (2018), the 2012–2016 period includes a series of very low-flow years that resulted in 7-day average of the daily maximum temperatures in the lower Yuba River that were not suitable for various salmonid lifestages in 2014 and 2015. In response to requests to evaluate this extended drought, we analyzed if New Bullards Bar Reservoir elevations would have supported use of the upper intakes and used this information to evaluate potential effects on lower Yuba River temperatures. Figure 3-30 shows that reservoir levels would support use of the upper intake any time in March through July of 2012, 2013, and 2016. However, the reservoir level would prevent use of the upper intake in 2014 during about half of the March–May period that FWS [DOI] and California DFW recommend, and on all days from May 29, 2014, through February 16, 2016. These limitations on operating the upper intake in March–May of 2014 and 2015 demonstrate the inability of using this strategy to cool the lower Yuba River during latter years of similar multi-year droughts.

Second, FERC and USACE evaluated the water temperature benefits in the Yuba River downstream of Englebright Dam of using the upper intake, to the extent it is available, from March through May. FERC and USACE conducted that analysis and at pages 3-112 of the Final EIS, they conclude:

We evaluated the effects of using both the upper and lower intakes on water temperature employing the same parameters used to evaluate the effects of the proposed operation on water temperature (i.e., mean monthly temperature, the frequency of exceeding 20°C, and frequency of temperatures between 12 and 20°C) and present the results in appendix A (tables A-7, A-8, A-9 and A-10¹). All frequencies are based on daily average temperatures. Comparing simulated mean monthly temperatures for agency [CDFW and DOI]-recommended flows using the upper New Colgate Powerhouse intake in March through May to simulated temperatures for proposed operation indicates only a small increase in New Colgate Powerhouse release temperatures in March through May, ranging from 0.8 to 1.2°C, and a reduction during the remainder of the year (when only the lower intake would be used). The largest reduction in powerhouse release simulated monthly mean temperature would be 0.7°C. As water proceeds 0.1 mile downstream to RM 34.1, the reduction in simulated mean monthly temperature compared to proposed operations is reduced to 0.3°C.

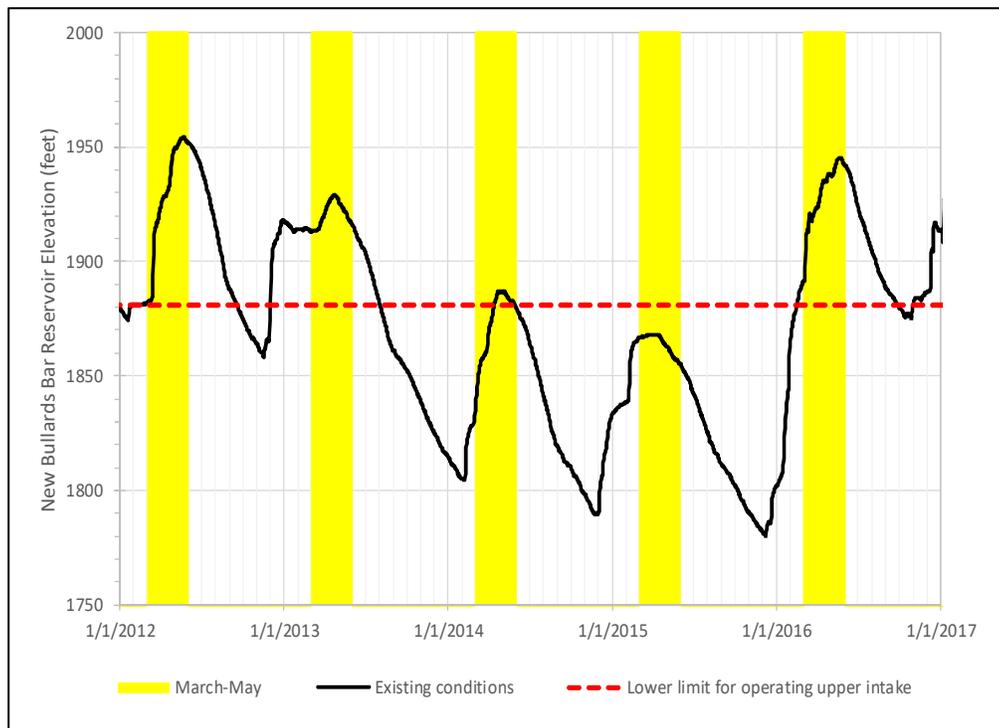


Figure 3-30. New Bullards Bar Reservoir elevations in 2012–2016 as they relate to potential use of the upper intake at New Bullards Bar Dam (Source: CDEC, 2018, as modified by staff).

¹ These tables are included in Attachment E1 to this technical memorandum.

FERC and USACE also analyzed the CDFW's and DOI's concern that the continued use of the lower intake for New Colgate Powerhouse during March through May could deplete the coldwater pool in the reservoir, preventing its use as a source for coldwater releases later in the summer and fall. At pages 3-125 of the Final EIS, FERC and USACE staff conclude that, due to the pattern of temperature stratification in New Bullards Bar Reservoir, using the upper intake in the March-May period would do little to preserve the reservoir's coldwater pool for use in later months. Specifically, FERC and USACE found:

The seasonal pattern of stratification in New Bullards Bar Reservoir would severely limit the ability to reserve cold water in the reservoir by switching use to the upper intake for New Colgate Powerhouse in spring. In March and April the reservoir is isothermal, and by May some stratification may begin, but that stratification is strongest in mid-summer (July/August), which is when an isolated pool of cold water (the hypolimnion) would be present. In the draft EIS, we state that monitoring results in the Yuba River indicate there is no evidence that the coldwater pool has been depleted by the existing operations of exclusively using the lowermost intake for New Colgate Powerhouse and the low-level outlet at New Bullards Bar Dam for the minimum flow turbine. However, after reevaluating this issue, we note that temperature charts for Yuba River locations below Englebright Dam (about 10 miles downstream of the New Colgate Powerhouse) suggest the coldwater pool in New Bullards Bar Reservoir may have been depleted in the critical years of 2014 and 2015, which immediately followed the dry year of 2013 (California DFW, 2017a; Interior, 2017; Water Board, 2017c). That said, model results also indicate that YCWA's proposed operations would not normally deplete water from the coldwater pool in New Bullards Bar Reservoir. Typically, cold water would continue to be released into the North Yuba River, which in turn would continue to be tempered by the warmer inflow at the confluence with the Middle Yuba River.

In addition, FERC and USACE found that use of the upper intake, as in Condition 7, would have minimal benefit. At page 3-126 of the Final EIS, FERC and USACE staff state:

If the upper intake for New Colgate Powerhouse were functional, temperature modeling indicates: the temperature of water released into the upper end of the 8.2-mile-long bypassed reach between New Bullards Bar Dam and New Colgate Powerhouse would remain virtually the same, and New Colgate Powerhouse discharge temperature would change seasonally. However, these changes in powerhouse discharge temperatures would be limited to a slight increase in March through May and a slight decrease in other months. Comparing the simulated temperatures for YCWA's proposed operations using the lower intake to the agency-recommended [CDFW and DOI] use of the upper intake show that both approaches would result in the same overall frequency of daily mean temperatures between 12°C and 20°C, with limited sub-optimal conditions for salmonid spawning, incubation, and rearing. Simulated daily mean temperatures for New Colgate Powerhouse discharge for YCWA's proposed operation (year-round use

of the lower intake) reached a maximum of only 14.4°C, and 99 percent of the values were 11°C or less. This indicates that continued use of the lower intake would seldom deplete the pool of cold water in New Bullards Bar Reservoir (the hypolimnion) or result in warmer discharges from the New Colgate Powerhouse.

Based on the above, FERC and USACE concluded at page 5-44 of the Final EIS:

Use of the upper intake is not expected to provide ecological benefit (i.e., improvement in water temperatures) because the frequency of sub-optimal daily mean temperature for salmonids (i.e., temperatures exceeding 20°C) and temperatures supporting salmonid growth (i.e., 12°C to 20°C) would be virtually the same as under YCWA's proposed operation (tables 3-39 and 3-40, respectively) and would not justify the estimated cost. The upper intake would also be unavailable for use a substantial period of time in March through May, and other months, particularly in dry water years.

Therefore, we conclude that use of the New Colgate Power Tunnel upper intake would not substantially benefit aquatic resources in the downstream Yuba River and is not worth the estimated levelized annual cost of \$1,125,650. We do not recommend including this measure as part of any license issued for the project.

FERC and USACE based their estimated levelized annual cost of \$1,125,650 on YCWA's estimate². YCWA notes that, at the direction of CDFW, YCWA has released all water from the New Colgate Power Tunnel lower intake, and has not used the upper intake since 1993. (YCWA 2000a; YCWA 2000b.) As a result, the upper intake has remained closed by its bulkhead for over 25 years and currently is not in working condition. Consequently, YCWA has not used the system to routinely shift reservoir withdrawals to the powerhouse between the upper and lower intakes. Restoring the upper intake into operation to switch between intakes on a monthly basis, as proposed by CDFW and DOI and as would be required by WQC Condition 7, would require substantial repairs and refurbishment. Changing between the lower and upper intakes on a monthly basis also would substantially increase annual operation and maintenance costs. Intake or shutter adjustments (installing or removing bulkhead gates or shutter panels) require the New Colgate Powerhouse to be shut down for a minimum of 8 hours, resulting in lost generation opportunity and additional personnel hours dedicated to coordination, planning, and implementing each adjustment to ensure that all applicable minimum instream flow requirements are met during and after the adjustments. The process to make adjustments would not be easily achieved and would involve hoisting shutters or bulkhead gates from or to underwater positions, with limited ability to confirm equipment positioning except through operational testing following each adjustment. If the shutters or bulkhead gates were found to be out of position following an attempted adjustment, the entire process would have to be re-initiated, which would extend the outage duration.

² At page 4-132 of the Final EIS, FERC and USACE state that this is the estimated cost YCWA provided in its Ready for Environmental Analysis (REA) Notice reply comments dated October 9, 2017, and filed with FERC on October 10, 2017 (YCWA 2017). Attachment 11, Response to Recommended New Condition: Use of New Colgate Power Tunnel Intake, to YCWA's October 10, 2017, REA Notice reply is included in Attachment E2 to this technical memorandum.

Neither CDFW nor DOI, or the SWRCB, provided any cost estimates. YCWA's estimate includes the initial refurbishments, repair and replacements and annual operation and maintenance of the upper and lower intakes.

4.0 SWRCB'S RATIONALE FOR CONDITION

At page 3 of Attachment B of its preliminary Terms and Conditions (SWRCB 2017), SWRCB staff recommended to FERC and USACE preliminary term and Condition 8, *New Colgate Powerhouse Intake*, which stated:

The State Water Board will likely condition the operation and maintenance of the upper and lower intakes for New Colgate Powerhouse. Alternatively, the State Water Board may rely on Ecological Group (Preliminary Condition 26) consultation to determine the operation of the upper or lower intake. The upper and lower intakes are separated by approximately 180.5 feet of elevation, providing the Licensee flexibility to extract water within and above the cold water pool in New Bullards Bar Reservoir. The goal of operating both the upper and lower intakes is to provide favorable water temperatures for biota year-round downstream of New Colgate Powerhouse and Englebright Dam. The Licensee may also be required to ensure both intakes are operational and maintained.

Because this recommendation was not at all specific, however, FERC could not conduct a detailed evaluation of the recommendation in its Draft EIS, and FERC and USACE could not conduct a detailed evaluation of it in their Final EIS.

Nonetheless, on pages 15 and 16, the WQC lists the material the SWRCB reviewed and considered when preparing its WQC. The SWRCB's offers two rationales for the need for Condition 7. These are that use of the upper intake would, by improving water temperature, allow for greater growth and reproduction of: 1) stream salmonids in the Middle Yuba River; and 2) anadromous salmonids in the lower Yuba River (p. 21, WQC). The WQC does not contain any additional rationale, analysis or discussion regarding Condition 7, or mention CDFW's recommendation 2.7, DOI's recommendation 13, or FERC and USACE staff's analysis regarding CDFW's and DOI's identical recommendations in the Final EIS. Further, in its WQC, the SWRCB did not criticize, or otherwise take objection to FERC's and USACE's analysis regarding use of the New Colgate Power Tunnel upper intake.

In essence, in its Condition 7, the WQC simply seeks to impose on YCWA the recommendation that CDFW and DOI proposed to FERC and USACE, and that FERC and USACE did not accept for the specific reasons discussed above. The WQC contains no additional analysis to support its adoption of CDFW's and DOI's recommendation in Condition 7 and fails to seek to refute, or address in any way, FERC's and USACE's reasons for rejecting that recommendation.

5.0 YCWA'S SUPPORTING TECHNICAL MATERIAL

The discussion below focuses on the difference between FERC and USACE staff recommendation in the Final EIS and Condition 7 in the WQC: that is, operating each year the upper intake of the

New Colgate Power Tunnel Intake from March through May, and consulting with the TRG to determine which New Colgate Power Tunnel Intake will be used from June through September. The analysis assumes:

- The Deputy Director does not modify Condition 7, and that condition would be in effect for the term of the WQC regardless of other changes to the WQC.
- The upper intake is used from March through May. The analysis assumes the lower intake will be used from June through September since YCWA cannot predict the results of the consultation with the TRG.

5.1 SWRCB's First Rationale for Condition - Greater Growth and Reproduction of Stream Salmonids in the Middle Yuba River due to More Suitable Water Temperatures

YCWA is unaware of any reasonable mechanism by which implementation of Condition 7 would improve the growth or reproduction of stream salmonids in the Middle Yuba River due to more suitable water temperature in the Middle Yuba River, as postulated by the State Water Board. To be clear, anadromous salmonids do not occur in the Yuba Basin upstream of USACE's Englebright Dam, which has been a complete physical barrier to their upstream migration since 1941: the only salmonids upstream of Englebright Dam are resident rainbow trout and a few brown trout. Condition 7 would be implemented at the New Colgate Power Tunnel Intake on New Bullards Bar Reservoir on the North Yuba River, with the release occurring at the New Colgate Powerhouse on the Yuba River just upstream of Englebright Reservoir. The Middle Yuba River is upstream of New Colgate Powerhouse. Flow and water temperature in the Middle Yuba River, and in the Yuba River upstream of New Colgate Powerhouse (i.e., the Yuba River forms upstream of the powerhouse at the confluence of the North and Middle Yuba rivers), would not be affected by whether releases to the New Colgate Powerhouse were made by either the upper or lower intakes in the New Colgate Power Tunnel Intake.

5.2 SWRCB's Second Rationale for Condition 7 - Greater Growth and Reproduction of Anadromous Salmonids in the Lower Yuba River due to More Suitable Water Temperatures

Water temperatures in the lower Yuba River were a critical component of the stressor analyses that was foundational to the development of the Lower Yuba River Accord (Yuba Accord) flow schedules, and water temperature considerations received substantial technical scrutiny during that process. The Yuba Accord flow schedules served as the basis for YCWA's FLA proposed minimum instream flow requirements which, in turn, served as the foundational basis for the FERC and USACE FEIS minimum flow requirements. The Yuba Accord also established a River Management Team (RMT) comprised of representatives of YCWA, CDFW, NGOs (South Yuba River Citizens League, Friends of the River, Trout Unlimited, and The Bay Institute), National Marine Fisheries Service (NMFS), DOI and Pacific Gas & Electric Company (PG&E). In 2013, the River Management Team (RMT 2013) concluded that implementation of the Yuba Accord provides a suitable thermal regime for target species (including spring-run Chinook salmon, fall-run Chinook salmon and steelhead) in the lower Yuba River, and did not recommend any water

temperature-related modifications. Additionally, the NMFS (2014) Final Recovery Plan for Central Valley Chinook Salmon and Steelhead states that “Implementation of the flow schedules specified in the Fisheries Agreement of the Yuba Accord is expected to address the flow-related major stressors including flow-dependent habitat availability, flow-related habitat complexity and diversity, and water temperatures.” The applicant-prepared draft biological assessment (APDBA) in YCWA’s FLA analyzed water temperature regimes and they were considered to be a low stressor for spring-run Chinook salmon and steelhead in the lower Yuba River.³

In addition to FERC and USACE’s Final EIS analysis of downstream water temperatures associated with the New Colgate Power Tunnel upper intake in the Final EIS, YCWA conducted a detailed analysis of the effects on downstream water temperatures associated with CDFW’s FPA Section 10(j) recommendation 2.7 (p. 15, CDFW 2017) and by DOI in its Section 10(j) recommendation 13 (pp. 87 through 92, DOI 2017) that would require YCWA to operate the New Colgate Power Tunnel upper intake during the months of March, April and May. These recommendations are repeated in Condition 7 of the WQC.

YCWA analyzed water temperatures resulting from CDFW’s and DOI’s recommended condition, now represented by WQC Condition 7, by modeling the use of both the lower and upper New Colgate Powerhouse intakes, compared to operating the lower intake alone, based on YCWA’s water temperature model. Mean daily water temperatures in the lower Yuba River for the 41-yr (WY 1970 through WY 2010) evaluation period were simulated by YCWA’s HEC-5Q water temperature model used for the FERC relicensing process. Documentation for that model, including details of model construction and validation, can be found in *YCWA 2013. Technical Memorandum 2-6, Water Temperature Models. Yuba River Development Project FERC Project No. 2246*. Available at: <http://www.ycwa-relicensing.com>.

5.2.1 General Comments Regarding WQC Condition 7

If the SWRCB believes that Condition 7 of the WQC is required to address water temperatures in the lower Yuba River, then YCWA provides the following comments.

- The WQC does not provide any substantial evidence regarding the need for different water temperature regimes in the lower Yuba River, or the need for modified operations of the New Colgate Powerhouse intakes. The SWRCB also has not demonstrated that water temperatures associated with the FERC and USACE Final EIS minimum instream flow requirements adversely affect anadromous salmonids in the lower Yuba River.
- The WQC does not provide any evidence that Condition 7 would accomplish the SWRCB’s stated objective or produce any substantial benefits to the fisheries resources of the lower Yuba River. The WQC does not contain, or refer to, any analysis to demonstrate that operating the upper intake during the spring would have any substantial benefits for summer and fall water temperatures in the lower Yuba River. Nor does the WQC establish any relationships between specific water temperatures and potential effects on reproduction or juvenile growth.

³ See YCWA (2017a) YRDP APDBA at pages BA6-194 to BA6-195, BA8-2.

- YCWA analyzed the water temperatures that would result from implementing Condition 7 by modeling a scenario with CDFW’s and DOI’s recommended conditions (see above), and comparing it to a scenario where YCWA would operate only the lower intake, using the YRDP relicensing water temperature models (see Section 5.2.2). Overall, with the exception of causing warmer water temperatures during June, the Condition 7 requirement would generally result in only slightly lower (typically 1°F or less with a low frequency of occurrence) water temperatures during the remainder of the summer and fall. Review of the water temperature results and the species and lifestage-specific evaluations demonstrate that the Condition 7 requirement would not provide substantial benefits to spring-run Chinook salmon, fall-run Chinook salmon, or steelhead in the lower Yuba River – an independent confirmation of FERC and USACE’s conclusion in the Final EIS.

5.2.2 Analysis of Condition 7 - Use of New Colgate Power Tunnel Intake

YCWA’s analysis in this technical memorandum includes evaluations of the resulting water temperatures from the use of both the upper and lower intakes to New Colgate Powerhouse, versus from use of the lower intake only, during March, April and May. To evaluate the potential differences between these two operational regimes, the YRDP relicensing water temperature models were run for the following two scenarios:

- The scenario that includes the WQC’s Condition 7 is referred to as the “YCWA_AFLA_SW_Upper_FlowTemp” scenario, with figures labeled in this analysis as “Dual Intake”.⁴
- The scenario characterizing YCWA’s FLA referred to as the “YCWA_AFLA_SW_FlowTemp” scenario, with figures labeled in this analysis as “Lower Intake”.

To isolate the effects on water temperatures in the lower Yuba River resulting from using both the upper and lower intakes to New Colgate Powerhouse, versus from use of the lower intake only, during March, April and May, the proposed FLA flow requirements for the lower Yuba River served as the modeling basis. The results of that analysis are expected to be very similar if the FERC and USACE Final EIS flow requirements served as the modeling basis. The only difference between the FLA proposed flows and the FERC and USACE Final EIS minimum instream flow requirements (FERC FEIS flows) for the lower Yuba River are modified summertime flows during Schedule 6 years. Although the mechanism of water release is different between the two scenarios during Schedule 6 years, the resultant flows in the lower Yuba River resulting from the FERC and USACE Final EIS flow requirements and the FLA flow requirements are the same. The FERC and USACE Final EIS flow requirements also are different from the FLA requirements for flows below New Bullards Bar Dam, but these changes are a change in the location of release, at the bottom of the dam versus the New Colgate Powerhouse, and do not change lower Yuba River flows.

These two scenarios were evaluated to determine whether, and to what degree, Condition 7 would accomplish the WQC’s stated objectives, whether Condition 7 would provide any substantial

⁴ The FLA scenario is available in Appendix 6 of YCWA’s October 9, 2017, Response to Comments, Recommendations, Preliminary Terms and Conditions, and Preliminary Fishway Prescriptions.

benefit to anadromous salmonids, and whether Condition 7 would result in any re-directed adverse impacts to salmonids in the lower Yuba River. Numerous lifestages of spring-run Chinook salmon, fall-run Chinook salmon, and steelhead were examined and evaluated under these two scenarios.

The evaluation used the Yuba Accord River Management Team's (RMT) (2013) lifestage-specific periodicities for water temperature suitability evaluations for spring-run Chinook salmon, fall-run Chinook salmon and steelhead in the lower Yuba River. Also, three different water temperature indices (WTIs) were used in the evaluation. The evaluation used the two WTIs used by the RMT (2013), which were the lifestage and species-specific Upper Optimum (UO) and Upper Tolerable (UT) WTI values, based on average daily temperatures, for evaluation of water temperature suitabilities at various locations in the lower Yuba River. The UO and UT WTIs were previously used in the Yuba Salmon Forum (YSF) 2013 report which provided a summary assessment of potential anadromous spring-run Chinook salmon and steelhead habitat in the Yuba River Watershed.⁵ During the Yuba River Development Project relicensing process, DOI's comments on YCWA's DLA recommended that the EPA guideline (2003) numeric thresholds and metrics should be used to evaluate potential project-related effects in the lower Yuba River. Thus, the evaluation also used the EPA (2003) criteria, based on 7DADM (daily maximum temperatures), which reflects an average of daily maximum temperatures that fish are exposed to over a week-long period.

The water temperature exceedance probabilities resulting from modeling the use of both the upper and lower intakes to New Colgate Powerhouse, versus from use of the lower intake only, during March, April and May, overlaid with lifestage-specific WTI suitabilities for spring-run Chinook salmon, fall-run Chinook salmon and steelhead are presented in **Attachment E3**.

Detailed species-by-species, lifestage-by-lifestage, month-by-month, location-by-location, WTI value-by-WTI value evaluations and descriptions are presented in Appendix 11 to *Yuba County Water Agency (YCWA). 2017. Response to Comments, Recommendations, Preliminary Terms and Conditions, and Preliminary Fishway Prescriptions (YCWA's Response). Yuba River Development Project, FERC Project No. 2246-065. October 9, 2017*. Overall, Condition 7 would result in slightly cooler water temperatures during some months of a particular lifestage, slightly warmer water temperatures during other months of the same lifestage, and similar temperatures during yet other months of a given lifestage, relative to the "lower intake only" scenario. The Condition 7 requirement would provide minimal differences in water temperature relative to the "lower intake only" scenario, typically less than 1°F and exceeding a Water Temperature Index (WTI) value with a difference of about five percent probability. In other words, the differences between the Condition 7 requirement and the "lower intake only" scenario were typically less than 1°F about five percent of the time. Consequently, the Condition 7 requirement would not provide a substantive benefit relative to the "lower intake only" scenario.

⁵ Because the WQC states that the SWRCB staff considered the "Proceedings of the Yuba Salmon Forum" in developing the WQC (WQC, p. 16), YCWA understands that all materials associated with the Yuba Salmon Forum are already in the WQC's administrative record.

6.0 REFERENCES

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