DON PEDRO HYDROELECTRIC PROJECT
FERC NO. 2299

AMENDMENT OF APPLICATION

ATTACHMENT A
DISTRICTS' RESPONSE TO COMMENTS ON DRAFT LICENSE APPLICATION



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List of Appendices

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Table 1.0-1 Districts' response to comments received on the Don Pedro Hydroelectric Project Draft License Application.[1]

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ARTA-DLA-01	ARTA	1	Throughout the study phase and repeatedly at the Focus Group Meetings, the need for simultaneous access by multiple groups was stressed.	The Districts are proposing, as an enhancement to river recreation and to help ameliorate bridge and road safety concerns, to build on river left just upstream of the bridge a platform sized and suitable to support up two to three truck cranes and associated vehicles, allowing equipment and boat extraction to occur without blocking the Ward's Ferry Bridge roadway. Further discussion of this take-out facility is provided in Exhibit E to the amendment to the Final License Application (AFLA) and functional design drawings are provided in Exhibit F of this AFLA.
ARTA-DLA-02	ARTA	2	The proposed solutions describe a single, 10 foot wide access road…. Such minimal improvements, while feasible, do not address the needs that were identified in the focus groups and are unacceptable solutions.	The Districts assert that classifying a $1 million expenditure for the benefit of whitewater boaters as "minimal" is unfortunate and uncalled for. The improvements proposed for the Ward's Ferry whitewater boating take-out contained in the AFLA strike a balance between costs, boater fee, site challenges, and primary purpose of the site.
ARTA-DLA-03	ARTA	2	We would like to see the site developed to include the following basic elements: • Water's edge access for multiple, simultaneous groups. As explained during the focus group meetings and site visits, as many as eight groups utilize the Ward's Ferry take-out at the same time. Multi-lane boat ramps with turnarounds are necessary to meet that level of use. Both sides of the reservoir/river may need to be developed. A single, ten-foot wide dead-end road is inadequate. • Two graded foot trails from the bridge to the reservoir/river. Some of the vehicular demands on the take-out can be reduced and the safety of pedestrians can be increased by providing good foot trails. Kayakers and commercial guests would use this to walk from the river to the bridge. • Toilet facilities. The current vault toilet is better than nothing, but is a far cry from the toilet facilities that have been built at other recreational sites within the project. We would like the Ward's Ferry site to be brought up to the standards of the other Don Pedro recreation sites. • Secure parking. It is currently unsafe to leave unattended vehicles at Ward's Ferry. We have had our commercial vehicles stolen and vandalized in the past. Overnight use of the Tuolumne Rive has been reduced because of the inability to leave a vehicle overnight at Ward's Ferry. There is also inadequate space to park, especially if the site is developed to make it more useable. We would like to see more parking spaces mad available and for better security to be provided either on-site or nearby. • Reliable communication. Currently, there is limited or no emergency communication available from the take-out. The County Sheriff, BLM, USFS, and other law enforcement agencies do not regularly	Accommodating eight groups at once is completely infeasible at the Ward's Ferry site. Having eight groups running the river all at the exact same time would seem to be an overload for the river, and to be contrary to the wilderness experience desired. To the extent that the "pile-up" is a result of the current methods of egress, the proposed improvements will greatly improve the efficiency of river egress. Reducing vandalism is a role for local law enforcement. Providing cell phone service is not the responsibility of the Districts. For further response, see response to ARTA-DLA-1.

[1] On August 18, 2017, the California Department of Fish and Wildlife (CDFW) provided comments on the La Grange Hydroelectric Project (FERC Project No. 14581) Draft License Application (DLA). Several of CDFW's comments pertained to the Don Pedro Project. The Districts prepared a response to all comments received on the La Grange Hydroelectric Project DLA, including CDFW's comments pertaining to the Don Pedro Project. This response document is attached to the La Grange Hydroelectric Project Final License Application, as filed with FERC in October 2017.

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			patrol the area because of the communication shortcomings. Cell phone service is unavailable. We would like the Districts to explore installing a repeater station that would provide better communication options for the take-out.	
AW-DLA-01	American Whitewater	4	• Conduct monitoring of users and user groups over the life of the license. • Accommodate both commercial and private whitewater boaters through the construction of gated boat ramps on both sides of the river that extend down to the low water mark and will withstand the scouring of fluctuating river flow. Boat ramps should be at least 20 feet wide. • Provide graded footpaths on both sides of the river that extend down to the low water mark. • Construct toilet facilities that are in working condition and are open to the public during the whitewater recreation season. • Construct a shower and change room like those offered at other Don Pedro Recreation Area facilities. • Provide access to potable water. • Construct additional secure parking area at Ward's Ferry Bridge or construct an alternative restroom and parking facility nearby Ward's Ferry, Deer Creek or Deer Flat and provide shuttle transportation. • Construct an unobstructed turn around for boater shuttles at Ward's Ferry Bridge or at alternative parking facility. • Erect a radio repeater and/or cell tower for use by law enforcement, managing agencies, DPRA and individual cell phone. • Fund recreation payment agreements to provide resources for a coordinated security patrol and presence by BLM, USFS and DPRA.	The extent of and potential for continuing vandalism at this remote site adds to the challenges of any site design. Gated roads, showers/change rooms akin to those at other Don Pedro recreations sites would be subjected to regular vandalism, and very expensive to continually maintain and repair. For other responses, see response to ARTA-DLA-01 and 03. Vandalism, and its prevention, is a matter for local law enforcement.
AW-DLA-02	American Whitewater	5	Hence AW concurs with the National Park Service analysis of the USR RR-03 survey question, "Would you return at this cfs level?" which identifies 200 cfs as the lowest boatable flow. AW recommends that the FLA should consider flow release at a minimum of 200 cfs for boating on the lower Tuolumne during the April-November paddling season.	The Districts note that 200 cfs and 175 cfs were judged to be equally boatable by an overwhelming majority of participants (TID/MID 2013a). More than half of the boaters who participated in the study also reported that 150 cfs was boatable. The Districts' flow proposal to provide boatable flows in the lower Tuolumne River is as follows: (1) April 1 – May 31: ≥ 200 cfs from RM 52 to RM 0 in all years, (2) June 1 – June 30: 200 cfs from RM 52 – RM 25.7 in all years; 100 – 200 cfs from RM 25.5 – RM 0 in W, AN, and BN years; 75 cfs from RM 25.5 – RM 0 in D and C years, (3) July 1 – October 15: ≥ 300 cfs from RM 52 to RM 25.7 in all years; 150 – 200 cfs from RM 25.7 – RM 0 in W, AN, BN years; 75 – 200 cfs from RM 25.7 – RM 0 in D years; 75 cfs from RM 25.7 – RM 0 in C years.
BLM-DLA-01	BLM	3	BLM believes the Districts should have included PM&Es in the DLA.	Comment noted.
BLM-DLA-02	BLM	4	Consultation Group Measure: This measure would define a consultation group that would cover the portion of the Project upstream of the Don Pedro Powerhouse.	The Districts have incorporated consultation with agencies into management plans proposed in the AFLA.
BLM-DLA-03	BLM	4	Anadromous Fish License Opener Measure: This measure would focus on options for reopening the FERC license in the event that anadromous fish are reintroduced upstream of the Don Pedro Dam.	FERC policy governs license reopener conditions. The Districts do not agree that the recommended anadromous fish reopener is justified for the Don Pedro Hydroelectric Project.
BLM-DLA-04	BLM	4	Aquatic Water Resource Plan: We expect to see at least the following addressed in this plan: reservoir fish, western pond turtle, riparian	As described in the AFLA, resource studies do not indicate Project effects on the reservoir resources noted by the BLM. Therefore, there is no need for the

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			vegetation, water temperature, and water quality.	Aquatic Resource Plan recommended for the reservoir. The Districts have proposed a Terrestrial Resources Management Plan for the Don Pedro Project.
BLM-DLA-05	BLM	4	Recreation Facilities Plan: This plan will include at the very minimum Licensee contact, Annual Recreation Coordination Meeting, Review of Recreation Developments, Recreation Survey and Monitoring, General Measures for all Recreational Sites, Vegetation Management in Recreation Sites, Recreation Operation, Maintenance, Administration, and Recreation costs, and Recreation Plan Revision.	The Districts have provided a Recreation Resource Management Plan (RRMP) with the AFLA and will continue to consult with the BLM regarding the RRMP.
BLM-DLA-06	BLM	4	BLM wants all campgrounds, access roads, toilet facilities, trails, signs, waste treatment facilities, dispersed toilet facilities, roads, dirt or paved listed and identified on a GIS map, as well as providing the GIS shapefiles per the current FERC guidance that are in or adjacent to the project boundary that are on BLM land.	On June 6, 2014, the Districts provided GIS shapefiles for the requested features as well as Exhibit G shapefiles.
BLM-DLA-07	BLM	5	BLM expects all sites to be up to federal, state, and country codes, and meets all ADA requirements. BLM expects to discuss with Licensee's annual project construction projects, repair, replacement, and maintenance of facilities on BLM lands.	An approach to providing ADA accessible recreation is described in the Recreation Resource Management Plan.
BLM-DLA-08	BLM	5	Fire Management Plan: Licensee's will develop a Fire Management Plan that will include pile burning, campfires, notification and written approval by BLM Authorized Officer and other BLM Fire Staff for all Burn plans, season of use, reporting of all project fires to the BLM, and procedures that the licensee will have to abide by while working on BLM land.	The Districts have prepared a Fire Prevention and Response Plan, which is provided in the AFLA. The Districts also comply with state air quality regulations for prescribed burns of accumulated wood collected in the reservoir.
BLM-DLA-09	BLM	5	Terrestrial Invasive Species Management Plan: This plan will cover how the licensee will monitor, report and eradicate terrestrial invasive species of plants on BLM lands.	The Terrestrial Resources Management Plan submitted with the AFLA discusses noxious weed management on BLM lands.
BLM-DLA-10	BLM	5	Aquatic Invasive Species Management Plan: The scope of this plan will include public education and outreach, monitoring, and actions if they are discovered.	An Aquatic Invasive Species Management Plan is provided in the AFLA.
BLM-DLA-11	BLM	5	Transportation Plan. BLM has not received any information on project roads that cross BLM land including dirt, gravel, and paved roads need to be identified and a condition and maintenance schedule will need to be developed.	On June 6, 2014, the Districts provided GIS shapefiles for project features as well as Exhibit G shapefiles to the BLM. The Districts currently conduct maintenance on existing roads within the Project Boundary, with emphasis on the 14.25 miles of roads within Project developed recreation areas. Under the new license, the Districts propose to annually notify the BLM of the location and type of these road maintenance projects, and to convene a meeting to confer on project details if requested by the BLM.
BLM-DLA-12	BLM	5	Large Woody Debris Management Plan: The BLM notices that the Licensees' use a log boom contraption to capture the large woody material and burns it on barren soil during fall and winter months. BLM is concerned that the Licensees' may be burning on the BLM land which requires a burn plan authorized by BLM. BLM desires a condition that allows large woody debris to pass through the dam and pass through La Grange powerhouse so that it moves downstream where there is a deficiency of large woody debris material rather than burning it in place.	Consistent with study schedules approved by FERC through the ILP's study plan determinations, the Districts conducted a study of LWD in the reservoir and downstream of La Grange Diversion Dam. These studies demonstrate that wood collected in the reservoir is not of sufficient size to serve as habitat in the lower Tuolumne River. The wood that does occur in the lower Tuolumne River is partially or wholly outside the wetted channel much of the time, which, coupled with its small size relative to the width of the channel, creates a condition in which wood does not provide significant cover for fish, which in turn limits its value as protection from avian and aquatic predators. Adding small woody material from the reservoir to the lower river would result in little or no improvement in habitat for fish. In addition, the wood is collected near

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				the upper end of the reservoir in order to limit its being a public safety hazard for recreationists using the reservoir. .
BLM-DLA-13	BLM	5	Visual Resource Plan: This plan will discuss the visual resource that have been studied and any future recommendations to remedy visual impacts.	Based on the results of the Visual Quality Study Report (TID/MID 2013g), the Districts determined that no visual resource measures are necessary.
BLM-DLA-14	BLM	6	In Exhibit E, please provide a higher resolution map clearly identifying the project facilities. Figure 1.0-1 on page 1-2; Figures 3.9-1 on page 3-177, same for Figures 3.9-2, 3.9-3, 3.9-4, and Figure 3.9-5 on page 3-187.	On June 6, 2014, the Districts provided GIS shapefiles with facility locations to the BLM.
BLM-DLA-15	BLM	6	Please provide Exhibit F&G maps and GIS shapefiles per the current FERC guidance	The AFLA contains Exhibit F and G, and corresponding shapefiles, consistent with FERC guidelines.
BLM-DLA-16	BLM	6	Facilities and road maintenance: There should be no application of herbicides on BLM lands unless specific stipulations are met. BLM needs to have all roadways used by the Licensees' the public, or other authorized users, identified that are on BLM land that are both within and outside the project boundary.	On BLM lands, herbicides will only be applied in full compliance with BLM standards. The Districts have provided a Terrestrial Resources Management Plan with the AFLA which addresses procedures for consultation regarding herbicide use and other vegetation management activities on BLM land.
BLM-DLA-17	BLM	6-7	Recreation Area Maintenance: There should be no application of herbicides on BLM lands unless specific stipulations are met, and will be included in the Terrestrial Invasive Species Management Plan. Burro (sic) Blasting may require additional authorizations.	See response to BLM-DLA-16.
BLM-DLA-18	BLM	8	BLM fully expects the Districts to build and maintain a whitewater boating takeout at Wards Ferry.	The Ward's Ferry Bridge is the first means of public access to the Tuolumne River below the designated Wild & Scenic river segment. The major factors limiting the usefulness of the Ward's Ferry site are the physical site constraints. This is not a Project effect. Nevertheless, the Districts are proposing to design and construct improvements at Ward's Ferry to improve public safety during river-egress. Licensees are allowed to recover their costs associated with providing recreation-related facilities. While the Districts propose to construct this facility, the Districts would not be responsible for the long-term operation or maintenance of the facility as it would not be a Project facility.
BLM-DLA-19	BLM	8	Law enforcement needs to be able to communicate outside the canyon at the take-out site. Having higher frequency patrols in the Wards Ferry Takeout Area will be necessary to enforce rules and regulation, protecting facility improvements from vandalism at the site, and providing safety for the users.	Neither the DPRA, nor the Don Pedro Project, nor local law enforcement can prevent vandalism at the Ward's Ferry site. There are no fences or facilities that can be made completely safe from vandalism. The best approach is for local law enforcement to include the location on their regular patrols. Cell phone coverage is not the Districts' responsibility.
BLM-DLA-20	BLM	9	The number of boaters that are being reported by the USFS over the years has some serious flaws that can be attributed to various reasons: listed in document pp. 9-10.	The Districts note that USFS provided quantitative annual use estimates to the relicensing record. Nationally, participation in all types of kayaking (recreational, sea, and whitewater) has increased since 2010, with the majority of participants engaging in recreational (i.e., not whitewater) kayaking. Participation in whitewater rafting has been steady since 2010 according to the Coleman Company, Inc. and the Outdoor Foundation (2013). See also response to CG-DLA-27.
BLM-DLA-21	BLM	10	Licensees and agencies need to agree on a take-out design that meets everyone's needs. BLM looks forward in working with the Licensees' and relicensing participants on the Wards Ferry takeout design, and the resource issues that will provide for a safe boating takeout facility, and a safe user experience.	See above responses. The Districts are proposing to design and construct improvements at the Ward's Ferry site as presented in the AFLA. .
BLM-	BLM	10	The Vegetation Management Plan should include the following:	The Terrestrial Resources Management Plan, provided with the AFLA,

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DLA-22			Revegetation Guidelines and Criteria, Revegetation Methods, Revegetation Monitoring and Consultation, VELB Management, General Vegetation Management for Facilities, Recreation Sites and Hazard Trees, Annual Consultation and Rare Plant Resurvey Requirements, and Sensitive Areas Protection including Special-status Plants mitigation.	includes vegetation management measures
BLM-DLA-23	BLM	13	BLM agrees with the need to submit a Bald Eagle Management Plan as the licensees have suggested they will do in the FLA. This plan should include the following sections: Nest Surveys, Nest buffers (physical and temporal), Mitigation against disturbances, Annual awareness training, Annual consultation meeting, Reporting, Plan revisions	The Terrestrial Resources Management Plan, provided with the AFLA, includes measures relevant to bald eagles.
BLM-DLA-24	BLM	13	BLM is concerned with potential and existing disturbances for two endangered plant species: Layne's ragwort and California vervain. Mitigations for impacts such as dispersed recreation near plants, noxious weed occurrences and cattle grazing will be addressed in the Vegetation Management Plan and Recreation Plan for those occurrences on BLM lands	The Terrestrial Resources Management Plan provided with the AFLA covers these items.
BLM-DLA-25	BLM	14	Facility Capacity: Wards Ferry needs substantial improvements to support the current demand, and improved safety on par with other launch site facilities located within the project.	See above responses. The site conditions at Ward's Ferry are completely different than those at other DPRA facilities, and the fundamental purpose and use of the Ward's Ferry take-out is different than other DPRA recreation sites. These factors lead to a substantially different design, a design also intended to not impose high fees on users.
BLM-DLA-26	BLM	14	User conflicts occur at most take-out facilities and should be looked at as a challenge in the design rather than a reason not to make critical safety improvements	Infrequent (i.e., peaky) use by whitewater boaters at Ward's Ferry challenges site design for this location due to the potential for other users to crowd and overwhelm the site. This point has been considered in the current site planning and design.
BLM-DLA-27	BLM	15	The estimate of 695k - 760k is too low, and estimates need to be re-analyzed by an independent engineering company. The Wards Ferry site has old bridge abutments that will be part of the project. These abutments were originally built on 1875. The cultural resource reports that would evaluate the significance of the abutments are not complete, so the impacts to the cost of this project are not known.	The Districts have modified the layout and configuration based on comments provided by relicensing participants. Updated cost estimates are provided in the AFLA.
BLM-DLA-28	BLM	15	Blue Oak Campground: BLM will ask the licensee to upgrade the sites and facilities that are on the BLM to fully accessible…. BLM also should be provided any permitted uses DPRA allows on BLM land.	The Districts will work with BLM to assess which, if any, public use facilities on BLM land may be upgraded to improve accessibility. The Recreation Resource Management Plan addresses coordination with the BLM for activities that occur on BLM land.
BLM-DLA-29	BLM	15	Please provide GIS shapefile maps for all structures located on or adjacent to BLM lands that are within the Project Boundary (i.e. Sewage Dump Station).	On June 6, 2014, the Districts provided GIS shapefiles with structure locations to the BLM.
BLM-DLA-30	BLM	15	Trails and trail safety need to be evaluated at Ward's Ferry Bridge.	See responses to Tuol Co-Water-DLA-6.
BLM-DLA-31	BLM	16	The BLM disagrees with the evaluation of the toilet at Wards Ferry as being in "good condition" as it is not open year round and blocks public access the river left side.	The vault toilet building does not block pedestrian access to the river left shoreline. The facility condition assessment was intended to assess the physical condition of facilities, not hours or seasons of operation.
BLM-DLA-32	BLM	17	The BLM hopes the Districts will not ignore the inventory above Turnback Creek which is within the APE at the terminus of the	Within one year of license issuance and implementation of the Historic Properties Management Plan, assuming field conditions are safe for all field

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			Mohican Mine trail terminus. If the Licensee refuses to do this inventory then the BLM needs to meet with the consultants in the field and verify for ourselves that it is too dangerous to inventory.	personnel, the portion of the APE along the mainstem of the Tuolumne River, above Turnback Creek, will be investigated for cultural resources.
CDFW-DLA-01	CDFW	pg. 1	The Districts describe how they began construction on the original Don Pedro Project in 1919 and, with subsequent enlargement in 1930, were issued a license by the Federal Power Commission. In the 1950s the Districts sought to further expand their water rights and storage capacity at Don Pedro and undertook a licensing process for a new dam. In 1964 the Commission issued a 50-year license to the Districts for the operation of the "new" Don Pedro (Commission Project No. 2299). CDFW is concerned that the DLA characterizes this much larger new development as beneficial to the aquatic resources of the Tuolumne River.	Section 4.0 of Exhibit E discusses all cumulative effects on the lower Tuolumne River, including a discussion of benefits of cooler water and minimum flows provided under the current license conditions.
CDFW-DLA-02	CDFW	pg. 2	As a general comment, some sections provide comprehensive descriptions and analyses; however, other sections, such as the direct impacts of the Project on Water and Fish and Aquatic Resources, are uneven and incomplete with significant Project effects omitted from the analysis.	The Districts are seeking a new license only for the continued generation of hydroelectric power at the Project. Hydroelectric power is generated at the Don Pedro Hydroelectric Project using flows released for other purposes. Irrigation, municipal, and industrial water deliveries, and high-flow releases are pre-scheduled based on forecasted demands and actual projected inflow and then released through the powerhouse up to its hydraulic capacity. Scheduling of these releases is adjusted, when consistent with water supply requirements, to release flows for hydroelectric energy generation with a preference for on-peak power demand rather than off-peak hours. However, any effect on flows in the reach of the Tuolumne River between Don Pedro Dam and La Grange Diversion Dam is not transferred downstream to the lower river, because flow management at and downstream of La Grange Diversion Dam reflects diversions and releases made in association with unrelated and non-interdependent actions, e.g., providing water for irrigation and M&I uses, aquatic resource protection, storage and releases for flood management, and to provide a water bank that CCSF may use to help manage the water supply from its Hetch Hetchy system while meeting the senior water rights of the Districts. The effects of the overall Don Pedro Project's primary purposes are addressed in the Cumulative Effects section (Section 4.0) of the AFLA, because they are not part of the Proposed Action. Hydroelectric generation at the Don Pedro Project cannot impact aquatic resources in the lower Tuolumne River, because the flows released into the lower Tuolumne River are not linked to power production and, absent power production at the Don Pedro Dam, the flow release schedule, including flows to the lower Tuolumne River, would remain the same as it is under existing conditions, i.e., driven by uses other than hydroelectric power production.
CDFW-DLA-03	CDFW	pg. 2	Given the voluminous administrative record, the failure to identify: 1) Project impacts on water and fish and aquatic resources; or 2) appropriate PM&E measures represents a serious deficiency in the DLA.	In the AFLA, the Districts discuss the direct effects of the Proposed Action on water and aquatic resources. These, however, are limited to minor effects on depth and velocity in the La Grange headpond and the Districts' proposed aquatic resource enhancement measures. Regarding direct and indirect effects of the overall Project on the lower river, see the response to CDFW DLA-02.
CDFW-DLA-04	CDFW	pg. 3	…CDFW could not find any discussion of the role Project facilities and operations play in contributing to the impaired water temperatures in this Water Resources section. Instead, the Districts conclude that under existing base case conditions, water temperatures in the "directly	See the Assessment of Don Pedro Project Operations to Meet EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards (Appendix A to this response document). Also, see response to CDFW DLA-02 and DLA-03.

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			affected reach" downstream of the Project meet the Central Valley Region Water Quality Control Board (CVRWQCB) 1998 Basin Plan (Basin Plan) water temperature objective and do not directly affect any designated beneficial uses (page 3-60). The only direct Project impact on water temperature that the DLA acknowledges is the annual stratification of water stored within the Don Pedro Reservoir and the associated ability to release cooler than normal water to the Tuolumne River during the late summer and early fall. This is an extremely narrow interpretation of what constitutes a directly impacted reach, though there is no clear description of how the Districts determined the geographic extent of Project effects within the Environmental Analysis section of the DLA... To assist the Districts as they proceed in this relicensing with assessing water temperature objectives and Project impacts to designated beneficial uses, CDFW is providing the following excerpt from the United States Environmental Protection Agency (EPA) Region 9 October 11, 2011 "Additions to California's 2008-2010 303(d) List." In order to evaluate whether the 'Cold Freshwater Habitat (COLD),' 'Migration of Aquatic Organisms (MIGR),' and 'Spawning, Reproduction, and/or Early Development (SPWN)' uses associated with salmon and steelhead are being implemented, EPA looked at two lines of evidence. First EPA utilized the EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards, EPA 910-B-03-002 (2003) ('EPA Region 10 Guidance'), and its supporting Technical Issue Papers to evaluate temperature data against appropriate benchmarks. The EPA Region 10 Guidance, its supporting Technical Issue Papers and related material, is available at www.epa.gov/r10earth/temperature.htm. Second, EPA evaluated the available information on historic Chinook salmon and Steelhead trout populations and the recent population declines in fall-run Chinook salmon. The subject reaches of the San Joaquin, Merced, Stanislaus, and Tuolumne rivers historically sustained vast salmon and trout populations, of which three runs are now extirpated and the remaining populations show negative population trends. (EPA 2011, page 21)	
CDFW-DLA-05	CDFW	pg. 4	This EPA analysis [EPA 2011, page 21] underlying the 303(d) listing for water temperature contradicts the blanket assertion in the DLA that water temperature objectives are met and no designated uses are directly affected by the Project.	See the Appendix A to this response document. Also, see response to CDFW DLA-02 and DL-03.
CDFW-DLA-06	CDFW	pg. 4-5	As an example of direct Project impacts on water temperature and beneficial uses, please refer to Figure 1, Tuolumne Spring Flow and Temperature…. It is clear that under the relatively low base flow release (early 2012 was classified as a Dry Water year type), water temperatures rapidly rose to above the EPA benchmark for Chinook salmon juvenile rearing of 16 degrees Celsius (C). Then when flows released from the Project increased to 2,000 cubic feet per second (cfs) for the three-day study pulse period, water temperatures dramatically dropped and were suitable for juvenile salmon outmigration all the	See Appendix A to this response document. Also, see response to CDFW DLA-02 and DL-03.

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			way down to the lower monitoring station, on 3 miles from the mouth of the Tuolumne River... This secondary pulse resulted in similar water temperature improvements at the intermediate monitoring station, though the smaller volume was unable to carry the temperature benefit all the way to the confluence.	
CDFW-DLA-07	CDFW	pg. 5	The Districts only acknowledge adverse Project impacts on water temperature in the lower Tuolumne River in the cumulative impacts section 4.3.2. CDFW does not consider Project impacts on water temperature to be solely cumulative but also direct and indirect and appropriate for consideration within an environmental analysis.	Direct impacts of the Don Pedro Hydroelectric Project are minor and limited to the reach between Don Pedro Dam and La Grange Diversion Dam. Also, see response to CDFW DLA-02. Nevertheless, comparison of with- and without-dams temperatures reveals that for some distance downstream of La Grange Diversion Dam, water is cooler during summer than it would be in the absence of dams (see information from Jayasundara et al. (2017) in Section 3.4 of Exhibit E of the AFLA). Immediately below Don Pedro Dam (RM 54), with-dams average 7DADM temperatures are relatively cool year-round, with little variability. With-dams 7DADM temperatures are much cooler than without-dams temperatures in summer but are slightly warmer from November through February. With-dams temperatures during summer rise significantly with increasing distance downstream of the Project Boundary due to ambient air temperatures. Under base-case conditions, by RM 46, summer 7DADM with-dams temperatures have climbed back to 20°C, very close to the 7DADM temperatures experienced above Don Pedro Reservoir. However, this is still 5°C below without-dam conditions. By RM 40 (near Roberts Ferry Bridge), average with-dam 7DADM temperatures in July reach 22°C. By RM 34, thermal equilibrium has largely been restored under with-dams conditions, i.e., the highest 7DADM temperatures in summer are around 24°C, very close to the 7DADM without-dams conditions. From this point downstream to the confluence with the San Joaquin River, with-dam 7DADM summer temperatures exceed without-dam temperatures by 2 to 3°C. Please see Appendix A.
CDFW-DLA-08	CDFW	pg. 6	By omitting discussion of Project impacts on water quantity and quality in this section, the DLA does a disservice to readers attempting to understand Project effects and develop appropriate mitigation measures. In contrast, several other factors that have a much less direct nexus with Project facilities and operations (e.g. redd superimposition and predation) receive lengthy discussion within the environmental analysis portion of the DLA. CDFW is concerned with the uneven presentation, especially because potential PM&E measures to address impaired water temperature and support beneficial uses are entirely absent.	See response to CDFW DLA-02 and DL-03. Also, see Appendix A.
CDFW-DLA-09	CDFW	pg. 6	Even though the Districts' construction and operation of both Don Pedro Projects was one of the most significant impacts on Tuolumne River anadromous fish distribution in the past 100 years, the Project's role in the decline of anadromous fish populations is never directly mentioned. Given the stated purpose of Exhibit E, this is a significant oversight and needs to be addressed.	The Districts' AFLA fully discusses the direct impacts of the Proposed Action, as well as cumulative effects of all actions in the lower Tuolumne River.
CDFW-DLA-10	CDFW	pg. 6-7	Surveys conducted by James Houk (CDFW, retired) at the Don Pedro Reservoir from 1998 through 2003 found that Sacramento sucker, green sunfish, and common carp were all part of the fisheries composition of the lake during that period (see Houk, 2002 and	A reference to species identified by Houk has been added to the AFLA (see Section 3.5.2 of Exhibit E of the AFLA).

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			2003).... In general, CDFW concurs with the DLA conclusions that the Black Bass and Salmonid populations in Don Pedro Reservoir are in good condition and that the reservoir provides a variety of angling opportunities. The reservoir fluctuation levels during the bass nesting season under current operations are typically stable enough to ensure acceptable levels of survival for the warm water fish populations. In contrast, the cold water species within the reservoir depend on consistent hatchery stocking to persist.	
CDFW-DLA-11	CDFW	pg. 7	Because the bottleneck hypotheses are based on limited data and modeling tools that lack peer review, the disproportionate emphasis is not warranted. The corresponding section of Exhibit E in the FLA should emphasize documented impacts (direct and indirect), of continued Project operations on the fish species within the lower Tuolumne River as well as proposed measures to address these impacts.	Sections 3.5 and 4.0 of the AFLA address direct, indirect, and cumulative effects of the wide range of actions that have affected, affect, and will continue to affect anadromous and resident fish, and other aquatic biota, in the lower Tuolumne River. As part of their Proposed Action, the Districts have developed a suite of flow-related and non-flow-related measures aimed at enhancing conditions for aquatic biota, fall-run Chinook and *O. mykiss* in particular, relative to existing baseline conditions.
CDFW-DLA-12	CDFW	pg. 7	The DLA sites an average estimate of 44% redd superimposition and 20% egg mortality within the study area between RM 48.8 to RM 51.6 (page 3-83). This presentation implies a fairly significant impact; however, the support for this statement comes from a 1992 report prepared for the Districts by EA Engineering (Districts 1992a), as well as McBain & Trush's Habitat Restoration Plan for the Lower Tuolumne River Corridor prepared in 2000. CDFW has already noted in a letter filed with the Commission that the 1992 study conclusions rely on data collected in 1988 and 1989 from a total of 5 riffles, representing an extremely dated and small sample.	The TID/MID (1992b) superimposition studies summarized in the PAD and Synthesis Study (TID/MID 2013d) included redd excavation results confirming that disruption of the egg pocket area results in high rates of egg mortality. Emergence trapping was used to estimate the cited egg mortality estimates. In addition, the estimate of fall-run Chinook redd superimposition based on surveys conducted during the 2012-2013 spawning season (TID/MID 2013e) was 15.2 percent of redds observed (99 of 653). There was no evidence of *O. mykiss* redd superimposition during the 2012–2013 survey period (see Section 3.5.4 of Exhibit E of the AFLA for results of spawning surveys). However, the 2012/2013 redd mapping surveys were not designed specifically as a redd superimposition study, but were intended to verify that redd superimposition was or was not occurring at current escapement levels. Fall-run Chinook redd superimposition occurs in the lower river and varies from year to year depending on escapement levels.
CDFW-DLA-13	CDFW	pg. 8	In the interest of a balanced analysis the FLA should address other potential limiting factors for this life stage, such as elevated water temperature and loss of access to spawning habitat in the upper Tuolumne River Watershed.	The Districts have conducted a comprehensive suite of studies and literature reviews to characterize the effects of the full range of factors contributing to effects on anadromous fish (see Sections 3.5 and 4.0 of the AFLA).
CDFW-DLA-14	CDFW	pg. 8	The District's study found a much smaller effect than past superimposition reports: "during the 2012/2013 sampling season, a measureable degree of redd superimposition was identified in 15.2 percent (99 of 653 total) of Chinook salmon redds" (page 3-85). This revised and better documented estimate should be the starting point for future discussions of redd superimposition.	The 2012/2013 redd mapping surveys were not designed specifically as a redd superimposition study, but were intended to verify that redd superimposition was or was not occurring at current escapement levels. The TRCh model does not rely upon the historical superimposition study results as the basis for its redd superimposition estimates. Instead, redd superimposition is based upon egg pocket area estimates, spawning gravel preferences and a random probability of redd placement within suitable areas.
CDFW-DLA-15	CDFW	pg. 8	It is worth noting that while approximately 15% of redd superimposition occurred, this result says nothing about what percentage of mortality, if any, occurred for those eggs contained within redds where superimposition took place. It is important to further note that nothing definitive regarding actual egg mortality can be concluded from redd superimposition studies conducted to data other than that redd superimposition is not a substantially occurring event in the lower Tuolumne River	The TID/MID (1992b) superimposition studies summarized in the PAD and Synthesis Study (TID/MID 2013d) included redd excavation results confirming that disruption of the egg pocket area results in high rates of egg mortality. Emergence trapping was used to estimate the cited egg mortality estimates. The 2012 Redd Mapping Study (TID/MID 2013e) documented observations of apparent redd superimposition, but was not designed to provide additional mortality estimates. Fall-run Chinook redd superimposition occurs in the lower river and varies from year to year depending on escapement levels.

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CDFW-DLA-16	CDFW	pg. 9	In contrast to the prominently featured (though inconclusive) issue of redd superimposition, only one sentence summarizes three different analyses of flow impacts on Chinook spawning habitat and briefly refers to Table 3.5-10, without any further discussion (page 3-85). This presentation minimizes both the amount and weight of information available regarding the relationship of flow and Chinook spawning habitat in the Tuolumne River.	The relationship between flow and spawning habitat is well explored as part of the IFIM study (Stillwater Sciences 2013, 2015) and is addressed in Section 3.5 of Exhibit E of the AFLA, including analysis of the effects of the Districts' proposed flow-related enhancement measures designed to benefit fall-run Chinook and *O. mykiss*.
CDFW-DLA-17	CDFW	pg. 9	Options to mitigate the impacts of the Project on instream flow timing, volume and temperature during the spawning and incubation life stage should be addressed in the FLA. At a minimum, potential changes in Project facilities (e.g. water temperature control devices) and operations (e.g. flows that increase the amount of suitable and accessible spawning habitat) should be thoroughly analyzed.	The Districts have completed an in-depth analysis of flow-habitat relationships under a range of scenarios for fall-run Chinook and *O. mykiss*, including an eWUA assessment for over-summering *O. mykiss* (Stillwater Sciences 2017). Pertinent results of these analyses are summarized in sections 3.5 and 4.0 of the AFLA as well as appended to the AFLA. Based on these analyses, the Districts have developed a suite of flow-related measures for the lower river to enhance conditions for aquatic biota, fall-run Chinook and *O. mykiss* in particular, relative to existing baseline conditions.
CDFW-DLA-18	CDFW	pg. 10	While both studies found predatory fish species inhabiting the lower Tuolumne River, the linkage to Project facilities and operations is not clearly addressed. CDFW has already filed numerous comments on the limitations of the 2012 predation study, particularly the poorly supported extrapolation from data collected under low flow/high temperature conditions to generalized estimates of predation impacts, regardless of Project operations.	There is no linkage to predator species being present in the lower Tuolumne River and Don Pedro Project operations. Since being introduced by CDFW, these species have spread throughout the San Joaquin and Sacramento River basins. Although flow surely influences predation rates, other actions within the basin, particularly in-channel aggregate mining have likely contributed more strongly to the persistence of introduced predators (black bass in particular), the primary predators of fall-run Chinook smolts in the lower Tuolumne River. Sand and gravel mined directly from the active river channel created large, in-channel pits now referred to as Special Run Pools (SRPs). These SRPs are as much as 400 ft wide and 35 ft deep, occupying 23 percent of the channel length in the gravel-bedded reach of the lower Tuolumne River, and are characterized by much lower water velocities and greater depths than those found in river reaches that were not mined. Black and striped bass predation on juvenile salmon in the lower Tuolumne River is a significant cause of mortality of juvenile salmon, even if the predation rate cannot be estimated within narrow confidence intervals. The Districts, as directed by FERC, consulted with CDFW, USFWS, NMFS, and other relicensing participants to design a follow-up predation study to be conducted in 2014. The study plan filed with FERC in September 2013 was approved in October 2013, with an added requirement that the Districts must provide a 30 day review period of the draft study report. The Districts requested a one year extension to conduct the study in 2015 due to permitting and unprecedented drought conditions. However, as noted in the Districts' June 28, 2016 letter to the Commission, CDFW refused to issue an amended scientific collector permit to allow the Districts to conduct electrofishing of non-native predators in the lower Tuolumne River, and CDFW formally denied the Districts' request for hatchery smolts needed to perform the study.
CDFW-DLA-19	CDFW	pg. 10	CDFW reiterates the fundamental concern that to gain a more precise understanding of predator-prey interactions research must encompass the full range of hydrologic conditions.	The 2012 Predation Study (TID/MID 2013c) was completed in accordance with the FERC-approved study plan. The report confirms that the poor survival of smolts on the Tuolumne River as repeatedly seen in the RST results is likely a function of predation by bass species. The additional predation study design developed in collaboration with relicensing participants, including CDFW, and approved by FERC in October 2013, provides for multiple

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				sampling events. Instream flows would be expected to vary over the course of the study. The Districts requested a one year extension to conduct the study in 2015 due to permitting and unprecedented drought conditions in 2014. However, as noted in the Districts' June 28, 2016 letter to the Commission, CDFW refused to issue an amended scientific collector permit to allow the Districts to conduct electrofishing of non-native predators in the lower Tuolumne River, and CDFW formally denied the Districts' request for hatchery smolts needed to perform the study.
CDFW-DLA-20	CDFW	pg. 10	The study plan states that variation in flow and temperature affects the composition and distribution of both predatory fish and juvenile salmon. This begs the question of whether future Project license conditions can be designed to reduce predation-related mortality of out-migrant salmon.	Largemouth bass, smallmouth bass, and striped bass are not native to the Tuolumne River. Management of these species, and their impacts to native species such as juvenile fall-run Chinook salmon, should not be attributed to Project operations, nor should their presence in the lower Tuolumne River. The Districts are confident that, as stated by CDFW, "future Project license conditions can be designed to reduce predation-related mortality of out-migrant salmon." As part of the Proposed Action, the Districts have formulated the Predator Control and Suppression Plan for the Lower Tuolumne River (appended to Exhibit E of the AFLA), which if implemented would include installation of a barrier weir at RM 25.7 and a series of measures aimed directly at reducing the abundance of non-native predators, i.e., (1) striped bass isolation, collection, and possibly relocation before and during the fall-run Chinook outmigration period, (2) promotion of black bass and striped bass derbies and reward-based angling to reduce the abundance of these predators, and (3) seeking and advocating for changes to current fishing regulations for the lower Tuolumne River to increase fishing pressure on, and harvest of, black and striped bass, thereby reducing their numbers. Taken together, these measures would substantially reduce predation rates on fall-run Chinook outmigrants, which would translate into a significant increase in outmigrant survival. In addition, the Districts propose to conduct gravel cleaning (to improve spawning gravel quality) to coincide with the May pulse flows to aid fall-run Chinook smolts by providing increased turbidity to reduce predator sight-feeding effectiveness during the outmigration period.
CDFW-DLA-21	CDFW	pg. 11	Besides this one study that collected few predators and observed a predation rate of zero, the other Tuolumne River predation studies have been conducted under low flow and warm water temperature conditions (Districts 1992b and 2013c). While the low flow/warm water sampling constrain improved capture rates of predatory species, it did not significantly advance the understanding of predator-prey relationships under a full range of flow and temperature conditions.	The 2012 Predation Study built upon knowledge gained from previous investigations, and is the most comprehensive study of predation conducted in the lower Tuolumne River to date. Analyses of survival between the Waterford and Grayson RSTs, and CWT mark-recapture studies conducted over a larger range of hydrology, have provided information to understand flow-survival relationships and context for interpretation of results from predation investigations. The TRCh population model (TID/MID 2017a) confirms that smolt survival in the lower Tuolumne River is moderately sensitive to flows, and demonstrates that, based on Tuolumne River site-specific data, smolt production is much more strongly correlated to predation levels. From 2007 through 2013, which represent a range of water-year types, the smolt survival index (i.e., fish passing the Waterford RST / fish passing the Grayson RST) averaged 9.5 percent, and ranged from 2.7 percent to 28 percent. Even at the high end of the range, survival rates for fall-run Chinook are low, suggesting that predation rates are high under a range of flows.
CDFW-DLA-22	CDFW	pg. 12	We highlight this finding here as it does not appear in the December 2013 Report's Discussion and Findings Section, which simply noted	The Updated Study Report was filed after the Draft License Application, and additional information is included in the AFLA. The 2012 Predation Study

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			that tagging results showed overlap in predator and smolt habitat use at all three flows (Districts 2013c, p. 6-12).	(TID/MID 2013c) was not designed to estimate fall-run Chinook smolt survival, but does provide an indication of the relative survival of juvenile Chinook salmon under varying flows. A relationship between flow and survival was suggested, but data from RSTs also suggest that the timing and duration of flow events are important variables influencing juvenile outmigrant survival.
CDFW-DLA-23	CDFW	pg. 12	CDFW also notes that the December 2013 Report's Discussion and Findings Section repeats an assumption from an early version of the report that, based on differences in rotary screw trap (RST) data, "it is plausible that the overwhelming majority of Chinook salmon mortality in most years could be attributed to predation" (Districts 2013c, p. 6-12). CDFW has mentioned this previously at meetings, but again takes this opportunity to reiterate that the loss of fish between RST locations cannot automatically be attributed to predation.	The statement in the 2013 report (TID/MID 2013c) is based on a comparison of estimated losses due to predation rate and independent estimation of losses of smolts between the Waterford and Grayson RSTs. It was estimated that the majority of losses between the RSTs during 2012 can be explained by the observed predation rates and predator abundance. CDFW presents no data to demonstrate that any other factors, including temperature gradients and flows, are sufficient to explain the high rates of smolt losses between the two RSTs.
CDFW-DLA-24	CDFW	pg. 13	Given the drought situation in 2014, CDFW does not anticipate supplemental information regarding project effects on predator-prey relationships being filed in the near future.	The Districts requested, and FERC granted, an extension on the second year Predation Study (which was to be implemented in 2015). However, as noted in the Districts' June 28, 2016 letter to the Commission, CDFW refused to issue an amended scientific collector permit to allow the Districts to conduct electrofishing of non-native predators in the lower Tuolumne River, and CDFW formally denied the Districts' request for hatchery smolts needed to perform the study.
CDFW-DLA-25	CDFW	pg. 13	While consumption by a predatory species could be the fate of many juvenile salmon, the purpose of the DLA is to inform readers how the Project contributes to this outcome and how potential PM&E measures could address this issue.	There is no linkage to predator species being present in the lower Tuolumne River and Don Pedro Project operations. Since being introduced by CDFW, these species have spread throughout the San Joaquin and Sacramento River basins. Although flow surely influences predation rates, other actions within the basin, particularly in-channel aggregate mining have likely contributed more strongly to the persistence of the black and striped bass, the primary predators of fall-run Chinook smolts in the lower Tuolumne River. Sand and gravel mined directly from the active river channel created large, in-channel pits now referred to as Special Run Pools (SRPs). These SRPs are as much as 400 ft wide and 35 ft deep, occupying 23 percent of the channel length in the gravel-bedded reach of the lower Tuolumne River, and are characterized by much lower water velocities and greater depths than those found in river reaches that were not mined. Black and striped bass predation on juvenile salmon in the lower Tuolumne River is a significant cause of mortality of juvenile salmon, even if the predation rate cannot be estimated within narrow confidence intervals. Also, as explained in the response to CDFW DLA-20, the Districts have identified a set of measures that would greatly reduce predator abundance, which would translate into greater fall-run Chinook survival rates in the lower river.
CDFW-DLA-26	CDFW	pg. 13	Project manipulation of spring flows prevents encroachment onto the floodplain with the frequency and duration that would occur if the Project were not in place. This is a direct consequence of the capacity of the Don Pedro Project, which allows the Districts to capture and reshape 116% of the annual runoff in the Tuolumne River watershed (Natural Heritage Institute 2003). As the Districts note in the General Description of the Tuolumne River Basin and Don Pedro Project section of Exhibit E, runoff in the foothills coincides with the rainy	Although the Districts recognize that irrigation water uses of Don Pedro Reservoir limit the unimpaired flows that would provide floodplain inundation and water temperature benefits, use of pre-Project conditions as an environmental baseline is inappropriate in FERC's environmental analysis. The Districts have characterized the cumulative effects of irrigation, municipal, and industrial water uses in the lower Tuolumne River (see response to CDFW DLA-02). Also, the Districts conducted a Lower Tuolumne River Floodplain Hydraulic Assessment (TID/MID 2017b) to simulate the interaction between

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			season (December through March), while runoff from the upper basin occurs during snow melt (April to July) (page 3-3). As indicated by the flows of the registered at the U.S. Geological Survey (USGS) gages on the major tributaries flowing into the Project (112776900, 11278400, 11282000). From 1975 through 2012, the months of may and June consistently had some of the highest mean monthly flows of the year, reflecting the contribution of snowmelt (DLA, Exhibit E, pages 3-23 through 3-25). Based on the USGS gage data, the monthly inflow into the Project during May and June is between 3,400 and 3,600 cfs; however, the mean monthly outflow to the lower Tuolumne River below La Grange in May and June is between 1,900 and 1,400 cfs. This mean monthly reduction of between 1,500 to 2,200 cfs translates into significantly reduced floodplain inundation during the rearing and outmigration life stage. By reducing floodplain inundation, Project operations reduce the ability of juvenile salmon to evade predators and undergo accelerated growth via access to higher quality food sources.	flow in the main channel and the floodplain along the lower river. Results of the evaluation confirm that only a portion of the inundated floodplain area at a given flow provides suitable habitat for fall-run Chinook and *O. mykiss* fry and juveniles, and there is longitudinal variability in the extent of floodplain inundation at a given flow. However, TRCh (TID/MID 2017a) indicates that increased duration of floodplain access for juvenile salmonids is not closely correlated with increases in smolt productivity in the lower Tuolumne River. Also, several reaches of the lower Tuolumne River with pool habitats inhabited by predator species lack adjacent floodplain habitats (McBain & Trush 2000), so the probability of encounter between predators and juvenile salmonids remains high in these reaches regardless of flow. In addition, in the reach extending from RM 51.7–40.0, where most salmonids occur, the majority of floodplain habitat is located in disturbed areas formerly overlain by dredger tailings (McBain & Trush 2000). These areas were associated with the highest frequency of stranding and entrapment of juvenile fall-run Chinook salmon in historical surveys (1990–1992, 1994–1996, 1999–2000) at flows between 1,100–3,100 cfs (TID/MID 2001). Although TRCh modeling results for the base case show that smolt productivity is consistently higher in years with increased spring discharge at La Grange Diversion Dam, the TRCh modeling results indicate that reduced water temperatures associated with extended flood control releases generally result in lower growth rates and later emigration by Chinook salmon smolts, which calls into question CDFW's assertion that increased floodplain inundation would result in higher juvenile salmonid growth rates. Sensitivity testing associated with the TRCh shows that reductions in fry and juvenile rearing density parameters used in the model are not accompanied by reductions in subsequent smolt productivity. For the highest run sizes evaluated (10,000 female spawners), the resulting fry and juvenile production is shown to be insufficient to fully saturate available rearing habitat under current conditions. The implication of the low sensitivity to fry and juvenile rearing density is that increases in potential rearing habitat area resulting from measures recommended to improve access to potential floodplain rearing areas, such as floodplain re-contouring (McBain & Trush 2000) as well as extended high flows to maintain floodplain inundation (Mesick 2009), would not result in large increases in subsequent smolt productivity on the basis of relieving any rearing habitat limitation. Also, increases in modeled food availability at in-channel and overbank locations are not accompanied by increased smolt productivity (TID/MID 2017a). This is consistent with materials reviewed as part of the Synthesis Study (TID/MID 2013d), which indicate that adequate food resources exist for juvenile fall-run Chinook salmon in the main channel of the lower Tuolumne River.
CDFW-DLA-27	CDFW	pg. 14	Finally, in addition to reducing floodplain inundation frequency and duration, Project storage of spring flood flows also contributes to higher water temperatures during the out migration time frame.	Extensive monitoring data summarized as part of the Synthesis Study (TID/MID 2013d) as well as modeling results suggest that water temperatures remain suitable for Chinook salmon smolt emigration during the overwhelming majority of the emigration period. Even so, the Districts are proposing to implement springtime outmigration baseflows and pulse flows that would maintain favorable water temperatures for outmigrating Chinook (see Section 3.5.4 of Exhibit E of the AFLA). Implementing the proposed flows would improve habitat relative to baseline conditions.

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CDFW-DLA-28	CDFW	pg. 14	As noted previously in the water resources section, this increase in temperature increases predator activity and physiological stress on young salmon.	While the Districts agree that the majority of salmonid predators in the Tuolumne River are warm-water adapted species, extensive monitoring data summarized as part of the Synthesis Study (TID/MID 2013d) as well as modeling results suggest that the majority of Chinook salmon smolts emigrate from the Tuolumne River at water temperatures well below those considered stressful. Striped bass have been observed throughout the full reach of the lower Tuolumne River over a large range in water temperatures (also see response to CDFW DLA-27 regarding proposed measures).
CDFW-DLA-29	CDFW	pg. 14	While the Districts conclude that this section with a brief acknowledgment that the Pulse Flow Study (Stillwater 2012) showed both increased rearing habitat with increased floodplain inundation and that spring pulse flows during April and May improve out-migrant survival, there is no corresponding proposal to provide PM&E measures to increase floodplain rearing habitat or improve out migrant survival. Again, the omission of both Project effects and appropriate mitigation is a reoccurring flaw in the DLA and should be addressed in the FLA.	In addition to the Districts' review of the USFWS/CDFW/ NMFS Draft "Limiting Factor" analysis (Mesick et al 2008), subsequent analyses presented in the Synthesis Study (TID/MID 2013d) and Chinook population model study (TID/MID 2017d) do not support a conclusion that juvenile rearing habitat is limiting Chinook salmon smolt production or that increases in floodplain rearing opportunities will result in measurable population benefits. The Districts conducted a Lower Tuolumne River Floodplain Hydraulic Assessment (TID/MID 2017b) to simulate the interaction between flow in the main channel and the floodplain in the lower river (see response to comment CDFW DLA-26). Regarding measures to improve salmonid rearing and fall-run Chinook outmigration success, the Districts have proposed a range of flow and non-flow related measures to improve conditions for fall-run Chinook and *O. mykiss* throughout their respective life histories, as described in Section 3.5 of Exhibit E.
CDFW-DLA-30	CDFW	pg. 14	CDFW considers the existing scientific literature on factors impacting Chinook salmon populations to support the significant role of both floodplain rearing habitat and water temperature, as well as the relatively minor role of redd superimposition. This existing information directly contradicts preliminary findings of the W&AR-06 Model.	The Districts do not dispute the results of Central Valley floodplain rearing studies on other rivers and have reviewed this information in the Synthesis Study (W&AR-05) as well as including floodplain rearing for juvenile salmonids in the TRCh (TID/MID 2017a) and TROm (TID/MID 2017d) model development. Because of differing opinions on the role and functionality of floodplain habitats for salmonid rearing in the lower Tuolumne River, these models were specifically designed to allow for testing of the relative sensitivity of floodplain and in-channel habitat availability. All results suggest that while high flows may confer outmigration survival benefits as well as extending cool water conditions into May and early June of years with extended flood control releases, Chinook salmon smolt production is relatively insensitive to floodplain habitat availability in the Tuolumne River. Direct comparisons of the floodplain conditions on the Tuolumne River with other rivers are not supportable due to the vast differences in floodplain development, gravel mining, and urban development. The Districts conducted a Lower Tuolumne River Floodplain Hydraulic Assessment (TID/MID 2017b) to simulate the interaction between flow in the main channel and the floodplain in the lower river (see response to comment CDFW DLA-26).
CDFW-DLA-31	CDFW	pg. 15	CDFW reiterates its recommendation that a formal peer review be conducted of the underlying model assumptions and structure.	Peer review of the TRCh and TROm models was not recommended or included in the December 2011 FERC Study Plan Determination. However, the modeling approach and model structure were described to stakeholders in detail during a series of public workshops, and a graphical user interface and training in use of the models was provided.
CDFW-DLA-32	CDFW	pg. 15	The characterization that this modeling effort is the product of "substantial involvement of interested parties in accordance with a Workshop Consultation Process used to obtain critical input at key	The Districts appreciate the participation of CDFW and other relicensing participants in the five Workshops associated with the TRCh and TROm model development. Because of comments related to "flow" and "temperature" as

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			model development stages" (DLA, page 3-81), fails to convey the lack of consensus on model structure, not to mention absence of a concurrence with preliminary findings.	limiting factors made well in advance of study completion, substantial effort has been applied to modify the models to consider movement and growth on the basis of temperature and flow. Nevertheless, the Districts are unaware of any specific comments related to lack of consensus on model structure referenced in this CDFW comment.
CDFW-DLA-33	CDFW	pg. 16	Even as a place holder, three sentences to sum up Project impacts and proposed environmental measures on a project receiving over a dozen formal comment letters from CDFW alone since 2011 does not represent a good faith effort on the path of the Districts.	The Districts have accurately described the impacts of continued hydroelectric power generation and the suite of proposed measures that would improve conditions for fall-run Chinook and *O. mykiss*, along with aquatic biota generally (see the response to comment CDFW DLA-02). Taken together the continuance of hydroelectric generation and the proposed enhancement measures constitute the Proposed Action being assessed for relicensing. The impacts of the independent and non-interrelated primary purposes of the Don Pedro Project are also addressed, along with a wide range of other actions in and outside the basin, in the Cumulative Effects section of Exhibit E of the AFLA.
CDFW-DLA-34	CDFW	pg. 17	The Socioeconomic report conclusion that, "any changes in the Project operations which reduce historical water supplies will have important effects on the many uses of Project water" (page 9-1), does not appear to acknowledge the existing precipitation and water supply variability within the Tuolumne River watershed.	The Socioeconomics Study (TID/MID 2014) utilizes the existing long record of historical water supply presented in W&AR-02 (TID/MID 2017e) which includes high flow years and drought years; it is accurate to state the Don Pedro Project allows for a high degree of reliability in water deliveries to M&I users and agriculture.
CDFW-DLA-35	CDFW	pg. 17	Respective agricultural revenues appear to be affected by commodity prices as well as water supply, weather, and other factors. Specifically, based on CDFW's analysis of the crop report data provided by Stanislaus and Merced counties, between 2000 and 2010, annual variation in total agricultural revenue ranged from a 6% decrease to a 32% increase. Individual variation among different crops was far greater than this. ... CDFW recommends that any future interpretation of socioeconomic impacts of new operational scenarios include comparisons across different water year types to begin to represent the actual range of effects from changes to the Project.	Agreed. The alternatives analysis will be considering various water year types. Also we agree that the prices and the crop yields may vary. For the alternatives analysis we will be using static crop prices (and yields) in order to isolate any impact that a change in operation has to irrigation water supplies.
CDFW-DLA-36	CDFW	pg. 17-18	The Southern Delta Water Quality (SED) looked at the impacts of requiring releases of 20%, 40%, and 60% of the unimpaired flow regime in the three main San Joaquin River tributaries during the February through June timeframe. The SED relied on some of the same modeling tools, namely the Statewide Agricultural Model (SWAP) and Impact Analysis for Planning (IMPLAN), to perform the socioeconomic analysis. For parties interested in predicted consequences of potential changes in operational scenarios, these analyses are informative. CDFW provided comments on the SED in March 2013 and, given the similarities in modeling tools, reiterates some of the comments, below: • With a stepwise modeling approach it is important to remember there is increasing uncertainty with each successive model, both because they build on each other, and because they increasingly incorporate more moving parts. The agricultural production and revenue model is subject to considerable uncertainties, especially since agriculture can be (and regularly is) subject to significant external factors outside the model.	The comments provided are not specific to the Districts' analysis completed for the Socioeconomics Study (TID/MID 2014). However, in TID/MID 2014, the Districts have added additional information to section 5.1.5, Model Limitations [of SWAP]. Also, please note that the IMPLAN fix-factors limitation is called out in section 6.2.5, Limitation of I-O Models.

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			• IMPLAN, is a regional economic model that allows users to quickly develop economic evaluations using simplistic assumptions. For example, the model assumes fixed factors of production and assumes that producers (e.g. farmers) are unable to adjust in any way to changing water supply, prices, or other inputs. As a result, IMPLN overstates ripple effects on the regional economy from changes in agricultural revenue (e.g. the fertilizer company, the farm laborer, and all the items they buy at local businesses, as well as the local sales taxes they pay, etc.) • IMPLAN modeling results are most relevant to the short term. In the long term, which could be as short as five years, farmers adapt, employ new technologies, and shift crops in ways that dampen the impacts.	
CDFW-DLA-37	CDFW	pg. 18-19	The Districts put responsibility for direct impacts on the water and aquatic resources of the lower Tuolumne River squarely on another Districts' facility, namely La Grange.... CDFW considers the ability of Don Pedro Reservoir to capture and store for subsequent diversion or release as required by the Commission, close to two million acre feet (AF) of the Tuolumne River, a very substantial and direct Project impact. From CDFW's perspective, the quantity and quality of winter in the lower Tuolumne River below La Grange Dam is under the *direct* control of the Don Pedro Project.	The action being considered by FERC is the issuance of a new license to the Districts to continue generation of hydropower at Don Pedro. The impacts that CDFW refers to are acknowledged by the Districts, but they are not part of the Proposed Action. They are independent and non-interrelated actions, no different from other actions carried out in the basin (see response to comment CDFW DLA-02 and greater detail in sections 3 and 4 of Exhibit E of the AFLA). In the absence of hydropower generation, the Don Pedro Project would be operated in essentially the same manner as it is presently.
CDFW-DLA-38	CDFW	pg. 19	The "no changes" approach to LGP serves to reinforce CDFW's concern regarding the Districts' failure to identify Don Pedro Project impacts (direct, indirect, or cumulative) or develop any appropriate PM&E measures for water and for fish and aquatic resources. CDFW recommends the Don Pedro FLA clearly articulate which of the Districts' hydroelectric projects on the lower Tuolumne River will address ongoing impacts to water and fish and aquatic resources, because currently neither one is proposing to do so.	Comment noted. Section 4.0 of Exhibit E of the AFLA discusses all the major factors contributing to cumulative effects on fish and aquatic resources of the lower Tuolumne River. The primary purposes of providing water for agricultural and M&I uses, flood protection, and CCSF's water bank are not connected to *either* hydroelectric facility. If the powerhouses for both projects were decommissioned, operations related to the primary purposes of the overall projects would continue, including large-scale diversions and impediments to potential upstream fish passage. This rationale, and the basis for it, is explained in Exhibit E and noted in numerous locations where this distinction is made in the context of direct, indirect, and cumulative impacts. It is not a question of which project to attach impacts to, but rather which uses. Flow-related effects in the lower river are linked to uses that are independent of the hydroelectric facilities and, as a result, outside the context of the FERC process (see response to CDFW DLA-02 and multiple places in Exhibit E). Regardless, the Districts have developed a suite of flow-related and non-flow-related measures for the lower river aimed at enhancing conditions for aquatic biota, fall-run Chinook and *O. mykiss* in particular, relative to existing baseline conditions (see Exhibit E, Section 3.5.4).
CDFW-DLA-39	CDFW	pg. 20	CDFW urges the Districts to take advantage of the expertise and recommendations provided by not only CDFW but also our fellow state and federal resource agencies to produce an FLA that fulfills the requirements of 19 CFR Section 5.18(b).	The Districts have completed 18 workshops regarding relicensing studies in addition to the required ILP meetings, and appreciate the participation of CDFW and other state and federal agencies during the ILP process. The Districts actively sought input and involvement of all interested parties, and have either incorporated comments provided or explained the rationale for not doing so.
CDFW-DLA-40	CDFW	pg. 21	The current Project license was originally structured to provide flows and habitat supporting Chinook salmon production that averaged	Methodological issues have been previously identified that show the underlying historical baseline population estimates for the AFRP "doubling

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			40,000 fish returning to spawn. This goal was based upon the best information available at that time. Unfortunately, the current trend of the Chinook salmon does not reflect anything like the desired condition envisioned by the Commission when issuing the license in 1964. Instead, the fall-run Chinook salmon production escapement trend has been significantly downward as illustrated in Figure 4 (reproduced from Marston 2007).	goal" and other population targets have unquantifiable bias and uncertainty (Newman and Hankin 2004). The effects of a wide variety of actions and conditions are affecting fall-run Chinook in the lower Tuolumne River. The effects to fall-run Chinook salmon from various flow and non-flow factors are thoroughly evaluated in the AFLA. The Districts' Preferred Plan, as described in the AFLA, is projected to more than double current in-river fall-run Chinook smolt production.
CDFW-DLA-41	CDFW	pg. 27	CDFW recommends that in the FLA the Districts not only acknowledge Project effects (direct, indirect, and cumulative) on this "master" variable but develop appropriate PM&E measures.	See responses to CDFW DLA-02 and DLA-38.
CDFW-DLA-42	CDFW	pg. 27	A project impact assessment that is missing from the DLA concerns blocked access to historic anadromous fish habitat. CDFW, pursuant to Fish and Game Code Section 5930, has determined that the La Grange and New Don Pedro Dam complex, in their present condition, is impeding upstream migration of salmon and steelhead. To offset this production loss, the Districts should consider how naturally produced salmon and steelhead populations can be augmented with hatchery production from a new hatchery located in the lower Tuolumne River The Districts would fund the construction, and CDFW operation, of a hatchery with production goals to be determined during the relicensing process.	The Don Pedro Project is not a barrier to any anadromous fish population. Even so, as part of their suite of measures, the Districts are proposing to fund a fall-run Chinook salmon supplementation program, which would improve Chinook smolt production in critically dry years. The Districts propose to build, in cooperation with CDFW, in the general vicinity of the current location of the CDFW offices below La Grange Diversion Dam, a fall-run Chinook restoration hatchery to be operated by CDFW. The Districts would pay for hatchery construction and O&M for the first 20 years of operation, after which the success of the hatchery would be evaluated. The hatchery is not intended to be a permanent facility. The weir described previously (see response to CDFW DLA-20) would allow for the collection of fall-run Chinook broodstock. The proposed supplementation program, like state and federal programs, would be implemented in accordance with procedures that prevent or minimize adverse impacts on the fitness, size, abundance, run-timing, and distribution of wild fish.
CDFW-DLA-43	CDFW	pg. 27	New license conditions addressing Project impacts to water quality and quantity have yet to be proposed, much less finalized. This is a serious omission.	For the reasons outlined in the response to CDFW DLA-02, hydroelectric power generation is not the cause of water quality impacts, so no strictly water quality-related measures have been proposed by the Districts. However, enhancement measures aimed at benefitting aquatic biota, fall-run Chinook and *O. mykiss* particularly, would have effects on water temperature, as described in Section 3.5.4 of Exhibit E. Also, some of the proposed aquatic resource measures could influence turbidity over the short term, as explained in Section 3.4.3 of Exhibit E.
CDFW-DLA-44	CDFW	pg. 27	CDFW looks forward to working with other relicensing parties to develop appropriate water and aquatic resource PM&E measures prior to submission of the FLA.	Comment noted. We appreciate CDFW's intent to collaborate with all relicensing participants, including the licensees.
CDFW-DLA-37	CDFW	pg. 18-19	The Districts put responsibility for direct impacts on the water and aquatic resources of the lower Tuolumne River squarely on another Districts' facility, namely La Grange.... CDFW considers the ability of Don Pedro Reservoir to capture and store for subsequent diversion or release as required by the Commission, close to two million acre feet (AF) of the Tuolumne River, a very substantial and direct Project impact. From CDFW's perspective, the quantity and quality of winter in the lower Tuolumne River below La Grange Dam is under the *direct* control of the Don Pedro Project.	The action being considered by FERC is the issuance of a new license to the Districts to continue generation of hydropower at Don Pedro. The impacts that CDFW refers to are acknowledged by the Districts, but they are not part of the Proposed Action. They are independent and non-interrelated actions, no different from other actions carried out in the basin (see response to comment CDFW DLA-02 and greater detail in sections 3 and 4 of Exhibit E.) Absent hydropower generation, the Don Pedro Project would be operated in essentially the same manner as it is presently.
CG-DLA-01	Conversation Groups (CG)	1	We disagree with the Districts' omission of PM&Es from the DLA. We recommend PM&E measures the Districts should consider in preparing the FLA, but focus our comments on whether there is	The Districts have proposed a suite of flow-related and non-flow-related measures aimed at enhancing conditions in the lower Tuolumne River for aquatic biota, fall-run Chinook and *O. mykiss* in particular, relative to existing

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			adequate information in the DLA and USR to support findings regarding the extent and significance of project effects on beneficial uses.	baseline conditions (see Exhibit E, Section 3.5.4).
CG-DLA-02	CG	2	Pursuant to 18 C.F.R § 5.15(F), we also request that the Districts provide, or that the Office of Energy Project (OEP) directs the Districts to provide, additional information prior to filing the FLA so that the application provides an adequate basis for OEP's environmental analysis (see 18 C.F.R. § 38.03) and development and study of alternatives. There is good cause for the additional information requests. As stated above, the Districts' DLA and USR Meeting Summary make findings that we dispute.	The Districts have conducted an extensive array of studies, both before and as part of the FERC relicensing of the Don Pedro Hydroelectric Project. Based on these studies, the Districts have proposed a suite of flow-related and non-flow-related measures aimed at enhancing conditions in the lower Tuolumne River for aquatic biota, fall-run Chinook and *O. mykiss* in particular, relative to existing baseline conditions (see Exhibit E, Section 3.5.4).
CG-DLA-03	CG	2	Additional information is needed to evaluate project effects on beneficial uses of the Tuolumne River.	See Appendix A to this response document. See response to CG DLA-02.
CG-DLA-04	CG	3	The Districts should propose modifications to the Technical Advisory Committee process protocols to make it an effective forum for resolving technical disputes.	The Districts are willing to discuss the TAC process protocols.
CG-DLA-05	CG	3	Additional information is needed to evaluate and mitigate project effects on groundwater storage: More information is needed to understand project effects on groundwater hydrology. The FLA should provide updated groundwater data that includes 2008 to present. It should use existing information to quantify the extent of groundwater overdraft, including any variations by location. If the FLA finds instream flow improvements at the project may reduce groundwater recharge, it should evaluate measures to mitigate that impact. Such measures may include construction of recharge facilities, reduction of groundwater pumping within the Districts, and management of out-of-District groundwater pumping."	The Socioeconomic Study quantifies the value of the Don Pedro Project to the local and regional economy under baseline conditions. Socioeconomic models were also developed which will aid the assessment of effects on the local and regional economy resulting from changes to those baseline conditions. Similar requests for consideration of alternatives dealing with non-hydropower purposes of the project have already been addressed by FERC in its SD2. To the extent these requests for "additional analysis" are a request to study "other measures that could offset reductions in water deliveries" or reducing irrigation, FERC has already addressed the relevance of such measures to the Don Pedro Project relicensing when it stated in the SD2 that "…alternatives that address the consumptive use of water in the Tuolumne River through construction of new structures or methods designed to alter or reduce consumptive use of water … are alternative mitigation strategies that could not replace the Don Pedro hydroelectric project. As such, these recommended alternatives do not satisfy the NEPA purpose and scope for the proposed action and are not reasonable alternatives for the NEPA analysis."
CG-DLA-06	CG	4	Additional information is needed to evaluate and mitigate project effects on fall-run Chinook Salmon.	This request for "additional information" gathering is a new study request that does not meet the requirements of the ILP. The CGs requests for additional information are addressed in the Districts' response to comments on the USR, filed with FERC on March 28, 2014.
CG-DLA-07	CG	4	Salmon studies needed to develop PM&Es are incomplete.	The Districts have conducted an extensive array of studies, both before and as part of the FERC relicensing of the Don Pedro Hydroelectric Project. Based on these studies, the Districts have proposed a suite of flow-related and non-flow-related measures aimed at enhancing conditions in the lower Tuolumne River for aquatic biota, fall-run Chinook and *O. mykiss* in particular, relative to existing baseline conditions (see Exhibit E, Section 3.5.4).
CG-DLA-08	CG	5	Additional information is needed to support the DLA's finding that project effects on spawning habitat are limiting potential increases in the population of Tuolumne River Salmon. ...the data in the DLA and USR indicate that project effects on spawning habitat are also limiting escapement. ...First, the project appears to limit flows suitable for spawning (to 70-80% of max WUA)...Second, the project affects the	To provide habitat for fall-run Chinook spawning, the Districts propose to provide the following minimum instream flows for the October 15 – December 31 spawning period: 275 cfs (BN, AN, and W water years), 225 cfs (D water years), and 200 cfs (C water years). IFIM study results (Stillwater Sciences 2013) indicate that flows of 275 cfs, 225 cfs, and 200 cfs provide 100, 93, and 89 percent, respectively, of the maximum WUA for Chinook spawning in the

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			availability of suitable spawning gravel.	lower Tuolumne River. Although studies of spawning habitat indicate sufficient spawning gravels to accommodate between about 50,000 and 60,000 fall-run Chinook between RM 52 and RM 23 (TID/MID 2013f), improvements provided by operational flows (6,000-7,000 cfs) and non-flow measures such as gravel augmentation and gravel cleaning would increase the quality and abundance of spawning gravels in the primary spawning reach located upstream of RM 45.
CG-DLA-09	CG	7	Additional information is needed to support the Districts' finding that project effects on rearing habitat are not limiting the success of outmigration.	TRCh modeling results show that rearing habitat is not limiting smolt productivity under current conditions, consistent with findings of the Synthesis Study (TID/MID 2013d). Sensitivity testing shows that reductions in fry and juvenile rearing density parameters used in the model are not accompanied by reductions in subsequent smolt productivity. For the highest run sizes evaluated (10,000 female spawners), the resulting fry and juvenile production is shown to be insufficient to fully saturate available rearing habitat under current conditions. Nevertheless, the Districts have agreed as part of their Proposed Action to provide flows aimed at enhancing fall-run Chinook rearing habitat. The Districts propose to provide the following minimum instream flows for the period of March 1–April 15: (1) 250 cfs (BN, AN, and W water years), (2) 225 cfs (D water years), and 200 cfs (C water years). IFIM study results (Stillwater Sciences 2013) indicate that the flows proposed by the Districts would provide between 90 and 97 percent of the maximum available WUA for juvenile Chinook salmon.
CG-DLA-10	CG	9	The FLA should consider flow increases to improve juvenile rearing habitat. Such flow improvements could include flows to improve juvenile rearing in-channel and to improve the regularity, frequency, and duration of floodplain inundation. The FLA should consider flow pulses in February and March to stimulate downstream migration of juvenile Chinook in the fry and par life stages to diversify the life history strategies of Tuolumne River Chinook. The FLA should consider flow pulses in April and May in order to stimulate outmigration of Chinook in the smolt stage. For all flow pulses, the FLA should consider both long pulses (or simply higher base flows) and short term pulses to stimulate short-term outmigration events.	As noted in the previous comment response (CG DLA-09), the Districts are proposing to release flows aimed at enhancing juvenile Chinook rearing habitat. In addition, the Districts are proposing Chinook outmigration baseflows from April 16 – May 31, which would maintain favorable water temperatures during this period (see Exhibit E, Section 3.5.4). The Districts are also proposing pulse flows from April 16 – May 31 to encourage smolt outmigration and increase survival during periods when large numbers of parr- or smolt-size fish are occurring in the river. Displacing Chinook fry and small *O. mykiss* downstream during the period recommended by CG could expose them to an increased rate of predation. As explained in the Districts' response to CDFW DLA-26, there is no compelling evidence that increases in overbank flow would result in increases in smolt production in the lower Tuolumne River.
CG-DLA-11	CG	9	The FLA should consider post-licensing implementation of a Chinook Salmon Outmigration Study, similar to the studies proposed by the Districts, USFWS, and Conservation Groups for inclusion in the first and second years of the Study Plan but not adopted by OEP. The study is appropriate because there is inadequate understanding-of short-term or long-term flow management actions that may induce downstream migration.	The CG appears to be proposing an adaptive management approach to obtain the additional information identified in its comment letter. Relying on "adaptive management" to address inadequate information is not an appropriate license condition and would result in complete uncertainty in what such a license condition might eventually entail. Having undefined, research-oriented conditions in a FERC license puts the licensee in the untenable position of having to determine whether or not to accept the new license when the cost and feasibility of the license conditions are not discernible. The appropriate time to develop sufficient information to inform the development of appropriate license conditions is during the pre-filing process. Adaptive management is not intended to be an open-ended, undefined process of experimentation. Adaptive management is employed when there has already been substantial effort to narrow the field of options and to test a limited number of well-developed

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				alternatives to choose one that would be best adapted to the specific project and resource circumstances.
CG-DLA-12	CG	9	In addition, the FLA should consider measures that would complete the channel restoration projects that were previously recommended by the TAC, or alternative projects that are identified in collaboration with resource agencies and Conservation Groups	Although the Districts are not proposing physical restoration of channel geometry via contouring or equivalent means, the Districts' proposal includes a number of measures aimed at improving physical habitat conditions downstream of La Grange Diversion Dam: (1) to improve gravel conditions, the Districts propose to conduct gravel (i.e., coarse sediment) augmentation from RM 52 to RM 39 over a 10-year period following issuance of a new license, (2) flows ranging from 6,000-7,000 cfs would be released to mobilize gravel and fines, which would reduce fine sediment storage in the low-flow channel and in spawning gravels, increase fine sediment storage on floodplains, and possibly influence lateral channel migration and bar formation, (3) a five-year program of experimental gravel cleaning to expand the availability of high quality spawning gravel, and (4) boulder placement between RM 42 and 50 to provide favorable microhabitats for *O. mykiss* and increase structural and hydraulic complexity, which could improve spawning habitat for fall-run Chinook and *O. mykiss* as localized scour displaces fines from gravel beds.
CG-DLA-13	CG	9	The DLA does not contain adequate information to support a finding that predation is a limiting factor that can be successfully addressed with non-flow measures.	See responses to comments CDFW DLA-19 and DLA-20.
CG-DLA-15	CG	13	The DLA and supporting documents do not accurately characterize the overall condition of *O. mykiss* in the lower Tuolumne River.	The AFLA, the empirical studies and modeling conducted as part of relicensing, and the numerous studies and monitoring reports generated prior to relicensing together provide a comprehensive evaluation of *O. mykiss* in the lower Tuolumne River (see Section 3.5.4 of Exhibit E). As noted in numerous submittals and discussed in the Synthesis Study (TID/MID 2013d), *O. mykiss* was practically non-existent in the lower Tuolumne River prior to 1996, with no more than three fish observed in summer snorkel surveys between 1987 and 1995. In contrast, much larger numbers have been documented since the implementation of increased summertime minimum flows since 1996. The increases in relative abundance and evidence of increased downstream habitat use since 1996 are a clear indication of improved conditions for *O. mykiss*.
CG-DLA-16	CG	14	The DLA documents poor conditions for *O. mykiss* in-river rearing in the lower Tuolumne River.	Although the DLA identifies several habitat conditions that may be limiting to the in-river rearing life stage, the AFLA also provides evidence that the resident *O. mykiss* population in the lower Tuolumne River is healthy and self-sustaining (See response to CG-DLA-15 above). The Districts have conducted an extensive array of studies, both before and as part of the FERC relicensing of the Don Pedro Hydroelectric Project. Based on these studies, the Districts have proposed a suite of flow-related and non-flow-related measures aimed at enhancing conditions for *O. mykiss* in the lower Tuolumne River relative to existing baseline conditions (see Exhibit E, Section 3.5.4).
CG-DLA-17	CG	16	The *O. mykiss* Population Model Study Report (W&AR-10), see Fig. 5.1-2, 5.1-3, 5.1-4, takes the number from 2008-2011 snorkel surveys (cited above) and uses then to calibrate the model. The snorkel survey found very low numbers of *O. mykiss* in dry years 2008 and 2009, s1ightly higher numbers in average water year 2010, and an order of magnitude greater numbers observed in wet year 2011. However, the Population Model predicts only a quarter of the fish that were observed in wet year 2011.	The comment indicates a misunderstanding of the use of the snorkel survey information as calibration data instead of validation data as it was used in the TROm model development (USR W&AR-10). Model calibration relied upon adjustments of growth rates and background mortality parameters to match the observed size and age structure documented in the Scale Collection Study (W&AR-20 2013b). The TROm model report provides a discussion on the use of the snorkel survey population estimates, and the limitations of comparing single year model results to snorkel survey counts made under high flow

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				conditions during 2011.
CG-DLA-18	CG	17	The Districts acknowledge that current operation of the project, their default proposed action, limits thermally available habitat for both juvenile and adult *O. mykiss*, and limits availability of desired depth and velocity of adult *O. mykiss*.	Water temperatures for over-summering *O. mykiss* are generally below identified mortality thresholds upstream of Roberts Ferry Bridge (RM 39.5) in "above normal" and "wet" years, and corresponding estimates of juvenile productivity are relatively high in comparison to juvenile productivity evaluated in drier years. These results are consistent with summaries of historical monitoring data provided in the Synthesis Study (TID/MID 2013d), which show reduced *O. mykiss* abundance and a reduced extent of habitat use downstream of La Grange Diversion Dam (RM 52.2) in "dry" years. However, investigation of *O. mykiss* thermal performance (i.e., the "swim tunnel" study) (Farrell 2017) showed that wild *O. mykiss* from the lower Tuolumne River can maintain 95 percent of peak aerobic capacity over a temperature range of 17.8 °C to 24.6 °C, and all fish tested could maintain sufficient aerobic capacity to properly digest a meal at temperatures up to 23 °C. Video analysis of *O. mykiss* swimming activity in the Tuolumne River indicates that fish at ambient water temperatures have an excess aerobic capacity well beyond that needed to swim and maintain station against the river current in their usual habitat. Results of the study support the hypothesis that the thermal performance of wild *O. mykiss* from the Tuolumne River represents an exception to that expected based on the 18 °C 7DADM criterion set out by EPA (2003) for Pacific Northwest *O. mykiss* (Farrell 2017). Given that lower Tuolumne River *O. mykiss* can maintain 95 percent of peak aerobic capacity at temperatures up to 24.6 °C, a more reasonable upper performance limit is likely to be 22 °C, rather than the established 18 °C. Results from a CDFW (2014) drought stressor monitoring case study are consistent with the general findings of the thermal performance study (i.e., that *O. mykiss* in California tolerate temperatures greater than 18 °C). From May through October 2014, 453 juvenile steelhead were caught in the lower American River, and a portion of these fish were PIT tagged. Average monthly water temperature in the river from July through September 2014 was 20 °C (68 °F), and the maximum observed temperature during this period was 22.8 °C (73 °F). Growth rates of recaptured fish were high (1.23-1.38 mm/day), but CDFW reports that "there were no visible signs of stress in the captured fish." The Districts are proposing to implement a flow regime under the new license that would benefit *O. mykiss* in the lower river by improving physical (hydraulic) habitat and temperature in the lower river. Flows would be released to balance hydraulic and thermal habitat needs of *O. mykiss* fry from June 1 – 30 and juveniles from July 1 – October 15 (see Section 3.5.4 of Exhibit E for details on flow magnitudes by water year type and their effects on habitat availability and temperature suitability).
CG-DLA-19	CG	17	However, the Yoshiyama Memo suggests that juveniles should be managed preferentially over adults: Adult *O. mykiss* that occur in the Tuolumne River during summer and early fall are presumably resident rainbow trout and are not listed (protected). Hence, flow-related efforts to accommodate those adults should be subordinate to any flow measures needed to protect juvenile *O. mykiss*. Those juveniles may include individuals of the anadromous (steelhead) life-history type and, furthermore, represent the future spawning stock that potentially	The Districts are not aware of the specific "competing evidence in the record" that CDFW refers to. The Yoshiyama memo is simply referring to a strategy that should enhance ESA-listed steelhead populations. The Districts are proposing a flow regime for the lower river to enhance habitat conditions in summer and early fall for *O. mykiss* fry and juveniles (see response to CG DLA-18). Even so, it is likely that few, if any, of the juvenile *O. mykiss* in a given year under existing conditions are "individuals of the anadromous (steelhead) life-history type," as stated by the CGs. The causes for the

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			may produce anadromous individuals. Yoshiyama Memo, pp. 4-5. We do not believe this is justified biologically, legally, or as policy. There is competing evidence in the record that recommends against such an approach.	expression of anadromous or resident life-histories in *O. mykiss* occupying the lower Tuolumne River is poorly understood (TID/MID 2017d), and there is no empirical evidence of a self-sustaining "run" or population of steelhead in the lower river (TID/MID 2013d). Zimmerman et al. (2008) examined the otolith chemistry of 147 *O. mykiss* from the lower Tuolumne River. Results indicated that only one of these fish was a steelhead (had displayed anadromy) and eight were spawned by a steelhead (i.e., of anadromous maternal origin). Of the eight *O. mykiss* with an anadromous parent, the range of age classes indicated that not all of them were spawned at the same time (i.e., not all of them originated from the same parent). Parental origin of these fish was unknown due to historical planting operations and straying of steelhead. Also, as discussed by Yoshiyama and Moyle (2012), poor migration survival along the migratory pathway (e.g., lower San Joaquin River and south Delta) of any juveniles that do smolt would result in a low probability of their returning to spawn. Narum et al. (2008) and Satterthwaite et al. (2010) suggested that reduced smolt survival through the Delta was the greatest management concern, if the goal was to preserve or enhance expression of anadromy among Central Valley *O. mykiss* populations.
CG-DLA-20	CG	18	Considering the thermal benefits of flows 300 cfs to all life stages and the physical habitat benefits to adult *O. mykiss* choosing a flow requirement of 150 cfs over 300 cfs to achieve a seven percent increase in modeled habitat for juveniles, based on a juveniles-first rational, is not warranted.	Using the results of prior IFIM studies conducted by USFWS and CDFW, the Yoshiyama and Moyle (2012) memorandum reference to these studies does, however, illustrate a tradeoff in WUA and suitable temperatures for over-summering juveniles vs. adult *O. mykiss*. Based on the ample available evidence, the Districts are proposing a flow regime for the lower river to enhance habitat conditions in summer and early fall for *O. mykiss* fry and juveniles, which balances physical (hydraulic) habitat availability and temperature suitability (see response to CG DLA-18).
CG-DLA-21	CG	18	In the interim, we do not believe that the thermal targets suggested by the Yoshiyama Memo are adequate: Water temperatures of 64.5-68°F appear to represent an adequate target-range for practicable flow management in maintaining steelhead-rainbow trout (*O. mykiss*) during the warmer seasons. Those temperatures are not optimal, but they are not expected to be so highly stressful to the trout as to cause substantial mortalities and significantly impair population viability. Yoshiyama Memo, p. 4. If adopted as management criteria, these targets would maintain the current degraded condition of the lower Tuolumne *O. mykiss* fishery. In 2005, the Conservation Groups called for increased summer flows to support both resident and anadromous *O. mykiss*. See Motion to Intervene ¶¶ 44-49. The current constriction of thermally suitable summer habitat in the lower Tuolumne, down to one to four miles in half of all water years, will not allow the Tuolumne River to reach the critical mass sufficient to support a consistent *O. mykiss* fishery.	See response to CG DLA-18
CG-DLA-22	CG	18	The causes of an anadromous life-history of Tuolumne River *O. mykiss* are not well understood.	The probability of *O. mykiss* smolting has been shown to vary with water temperature, with fish held in cold thermal regimes more likely to mature in freshwater than fish held in warm thermal regimes (Sloat 2013). These findings relate to both fish size (larger fish tend to survive at higher rates in the ocean than do smaller fish) as well as fat stores (fish with higher lipid content

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				have higher energy reserves required for sexual maturation). Fish held in warm thermal regimes have higher rates of smolting because they are able to grow to larger total sizes but have lower body lipid stores than fish held in cold thermal regimes (Sloat 2013). McMillan et al. (2012) found that higher body lipid stores were significantly correlated with an increased probability of maturation in freshwater. In other words, if a juvenile *O. mykiss* has sufficient lipid reserves to allow maturation in freshwater, there is no need for it to undergo smoltification and migrate to the ocean to gain sufficient lipid stores to mature (TID/MID 2017d). In some instances, decreased survival associated with downstream migration to and through the Delta and ocean rearing may not be offset by increased size (fecundity) of adult steelhead relative to resident *O. mykiss*. It appears that increased summer flows in the lower Tuolumne River since 1996 have resulted in large increases in the abundance of resident rainbow trout, and there is no evidence that environmental conditions support a steelhead run (TID/MID 2017d). The low numbers of anadromous *O. mykiss* adults entering the Tuolumne River (Zimmerman et al. 2008) suggest that increased cold water releases from the Project during summer reduce the probability of smoltification (TID/MID 2017d). However, as discussed by Yoshiyama and Moyle (2012), poor migration survival along the migratory pathway (e.g., lower San Joaquin River and south Delta) of any juveniles that do smolt would result in a low probability of their returning to spawn. Narum et al. (2008) and Satterthwaite et al. (2010) suggested that reduced smolt survival through the Delta was the greatest management concern, if the goal was to preserve or enhance expression of anadromy among Central Valley *O. mykiss* populations. Obviously, the Districts have no control over the fate of any smolts that leave the Tuolumne River.
CG-DLA-23	CG	20	Recommendations: The FLA should include measures to stabilize and increase the *O. mykiss* population in the lower Tuolumne River. Whether this may reduce the likelihood of anadromy is a second order question. Low flows prior to 1996 certainly did not increase the steelhead population. *O. mykiss* juveniles that survive oversummering in the Tuolumne River are 100% more likely to adopt an anadromous life history than *O. mykiss* juveniles that do not survive oversummering.	The Districts are proposing to implement a flow regime under the new license that would benefit *O. mykiss* in the lower river by improving physical (hydraulic) habitat and temperature in the lower river. Flows would be released to balance hydraulic and thermal habitat needs of *O. mykiss* fry from June 1 – 30 and juveniles from July 1 – October 15 (see Section 3.5.4 of Exhibit E for details on flow magnitudes by water year type and their effects on habitat availability and temperature suitability).
CG-DLA-24	CG	20	The data reported in the DLA indicate that oversummering conditions are the primary limiting factor for *O. mykiss* in the lower Tuolumne River. The FLA should evaluate increasing summer flows to 300 cfs in all years. The water cost of increased summer flow could be mitigated in significant part by completion of the Infiltration Galley/Turlock Area Drinking Water Project at Geer Road (River Mile 26).	The Districts are proposing to implement a flow regime under the new license that would benefit *O. mykiss* in the lower river by improving physical (hydraulic) habitat and temperature in the lower river. Flows would be released to balance hydraulic and thermal habitat needs of *O. mykiss* fry from June 1 – 30 and juveniles from July 1 – October 15 (see Section 3.5.4 of Exhibit E for details on flow magnitudes by water year type and their effects on habitat availability and temperature suitability). The Districts are proposing to provide an instream flow of 350 cfs (as measured at the La Grange gage) upstream of RM 25.7 from July 1–October 15 of Wet, Above Normal, and Below Normal water year types to benefit *O. mykiss* juvenile rearing. During Dry and Critical water years, flow at the La Grange gage would be reduced to 300 cfs. A flow of 350 cfs would maintain temperatures below 18 °C at RM 43 until daily maximum air temperatures exceed 105 °F (40.6 °C) (see Exhibit E, Section 3.5.4). Downstream of RM 25.5 (i.e., downstream of the infiltration

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				galleries) instream flows during this period would be 150 cfs during Wet, Above Normal, and Below Normal water years and 75 cfs in Dry and Critical years.
CG-DLA-25	CG	20	The FLA should propose measures to improve the physical habitat conditions in each of these categories.	See response to comment CG DLA-24.
CG-DLA-26	CG	20	Additional information is needed to evaluate and mitigate project effects on whitewater recreation.	The major factors impacting the Ward's Ferry site are the physical site constraints. This is not a Project effect. Nevertheless, as part of their proposed suite of enhancement measures, the Districts propose to construct a deck on river left upstream of Ward's Ferry Bridge that is large enough to accommodate two to three truck cranes, thereby eliminating the need for truck cranes on the bridge, which is the current practice of the commercial rafting companies (i.e., the companies position truck cranes on the bridge to lift the rafts and equipment out of the river at Ward's Ferry, which creates road blockages, traffic, and congestion problems at Ward's Ferry Bridge).
CG-DLA-27	CG	21	The DLA does not estimate future demand for whitewater recreation.	A review of the literature cited by the Conservation Groups (CDBW 2009) reveals that the noted projected use increase is for all non-motorized boating activities taken together; whitewater boating is not projected separately from other types of non-motorized boating. Other statistics in the same report indicate that whitewater kayaks comprise 10 percent of all kayak types in California (page ES-3) and that annual commercial whitewater rafting participation numbers through 2006 on six Central Valley Region Rivers (including the Tuolumne) vary from year-to-year, with the highest participation occurring in 1990, 1995, 1998, and 2000 on the various reported reaches (page D-17). The Districts also note that Conservation Groups opine that use will increase if the take-out site is improved without providing any evidence to support the opinion. The Districts believe whitewater boating use is driven by flows and the nature of the whitewater resource, not the condition of take-out (or put-in) locations. Even so, the Districts propose to construct a deck on river left upstream of Ward's Ferry Bridge that is large enough to accommodate two to three truck cranes, thereby eliminating the need for truck cranes on the bridge, which is the current practice of the commercial rafting companies (i.e., the companies position truck cranes on the bridge to lift the rafts and equipment out of the river at Wards Ferry, which creates road blockages, traffic, and congestion problems at Ward's Ferry Bridge).
CG-DLA-28	CG	21	The DLA considers improvements to the whitewater not to other related take-out facilities.	See response to CG-DLA-27.
CG-DLA-29	CG	24	The DLA does not resolve the lowest boatable flow.	The Districts' Lowest Boatable Flow Study (TID/MID 2013a) found that flows above 175 cfs on the lower Tuolumne River were considered to be boatable with non-motorized craft. The Districts proposed release schedule would result in flows $\geq$ 200 cfs between RM 52 and RM 25.7 during the entire boating season (i.e., April 1 – October 31) in all water-year types. Downstream of RM 25.7 (i.e., downstream of the infiltration galleries), flows would range from 75 – 300 cfs during the boating season, depending on water-year type. The proposal also includes short periods during holidays when the infiltration galleries would be shut off, resulting in larger flows downstream of RM 25.7 (see Section 3.9 of Exhibit E).
CG-DLA-31	CG	33	The FLA should propose measures to mitigate the direct and cumulative effects of project operations for all purposes.	As explained in the response to CDFW DLA-02, the Proposed Action, i.e., continuing to generate hydroelectric power, does not result in direct effects on

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				the lower Tuolumne River, and the Districts proposed enhancement measures would result in a net benefit. As a result, the contribution of the Proposed Action to cumulative effects would be a positive one (see Section 4.0 of Exhibit E).
CG-DLA-32	CG	35	The DLA does not include sufficient information regarding other in-basin actions to evaluate the Project's cumulative effects.	The AFLA includes a comprehensive identification of in-basin and out-of-basin actions that contribute to cumulative impacts on resource values.
CG-DLA-33	CG	39	The final license application should describe the specific basis for and findings of consistency with comprehensive plans.	The Districts have included a review of qualified Comprehensive Plans in Section 6.0 of Exhibit E of the AFLA.
FERC-DLA-01	FERC	pg. 2	Pursuant to section 5.22 of the Commission's regulations, the Commission may find that the Final License Application (FLA) is not ready for environmental analysis until the results of all studies are filed. These studies shall be completed and filed either with the final license application or consistent with the schedule outlined in the draft license application or any Commission- approved schedule change.	All the relicensing studies are now complete and are filed with or prior to the AFLA. The Districts note that FERC previously directed the Districts to consult with CDFW, USFWS, NMFS, and other relicensing participants to design a follow-up predation study to be conducted in 2014. The study plan filed with FERC in September 2013 was approved in October 2013, with an added requirement that the Districts must provide a 30 day review period of the draft study report. The Districts requested a one year extension to conduct the study in 2015 due to permitting and unprecedented drought conditions. However, as noted in the Districts' June 28, 2016 letter to the Commission, CDFW refused to issue an amended scientific collector permit to allow the Districts to conduct electrofishing of non-native predators in the lower Tuolumne River, and CDFW formally denied the Districts' request for hatchery smolts needed to perform the study.
FERC-DLA-02	FERC	pg. 2	We expect that the FLA will provide, by resource area, any proposed new environmental measures, including but not limited to, changes in project design or operations, and to address the environmental effects of your proposed PM&E measures, as required by section 5.18(b)(5)(ii)(c) of the Commission regulations.	The Districts have proposed a suite of resource enhancement measures as described in Exhibit E of the AFLA.
FERC-DLA-03	FERC	pg. 2	For the resource areas with incomplete studies the FLA must include a detailed schedule for completing the studies and for proposing environmental protection or enhancement measures, or changes in project design or operations as mitigation, and to address the environmental effects of the proposed measures.	All the relicensing studies are now complete and are filed with the AFLA (see response to FERC DLA-01). The Districts have proposed a suite of resource enhancement measures as described in Exhibit E of the AFLA.
FERC-DLA-04	FERC	Appendix A pg.1	Please ensure that all acronyms and abbreviations are defined in the FLA.	The Districts have included a comprehensive acronym list at the beginning of each Exhibit.
FERC-DLA-05	FERC	Appendix A pg.1	We expect that the FLA will include results of temperature model runs using the EPA (2003) criteria over the range of water year classifications determined by the California State Water Board's San Joaquin Basin Water Supply Index and the California Water Resources Department April 1 San Joaquin Valley unimpaired runoff forecast. In addition, the results of the temperature model runs using EPA (2003) criteria should be used as input to the W&AR-6, Chinook Salmon Population Model and in the W&AR-10, *O. mykiss* Population Study for all salmonid life stages included in the models.	See Appendix A to this response document.
FERC-DLA-06	FERC	Appendix A pg.1	In pre-filing meetings, the resource agencies have suggested that increased flows in February and March would improve out-migrant success for juvenile Chinook that leave the Tuolumne River as fry. In section 3.5.4.1.2 you say that increased flows could improve out-migrant survival of juvenile Chinook salmon smolts in April and May	To provide habitat for fall-run Chinook fry rearing, the Districts propose to provide the following minimum instream flows for the period of January 1–February 28/29: (1) 225 cfs (BN, AN, and W water years), (2) 200 cfs (D water years), and 175 cfs (C water years). Fall-run Chinook juvenile rearing flows would also be provided from March 1 – April 15 (see Exhibit E, Section 3.4.5).

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			but you do not address fry. We expect the FLA to provide a detailed analysis of increased flows in February and March to improve survival of juvenile Chinook that leave the Tuolumne River as fry.	Encouraging Chinook to migrate downstream as fry could result in adverse rather than beneficial effects. Many Chinook salmon do leave the upper reaches of the lower Tuolumne River as fry (TID/MID 2013cd. However, fry that migrate out of the Tuolumne River basin account for only a small percentage (< 5 percent) of the adult Chinook escapement (TID/MID 2016), because fish that outmigrate at a smaller size exhibit lower survival rates. Higher flows during early fry rearing promote downstream movement of fry into areas with higher densities of predatory fish species (TID/MID 2013d, 2017a). Predation rates on juvenile Chinook in the lower Tuolumne River are high, which is a primary factor driving their low survival.
FERC-DLA-07	FERC	Appendix A pg.2	The plan included in the FLA should include details sufficient for understanding how nests would be protected and access would be restricted, and descriptions of how employees would be trained. Methodologies and sources of training materials should be thoroughly cited.	Details of the proposed measures are included in the Terrestrial Resources Management Plan submitted with the AFLA.
FERC-DLA-08	FERC	Appendix A pg.2	The management plan included in the FLA contains details sufficient for understanding how the bat roost would be protected.	Proposed measures for protecting the pallid bat roost are incorporated in the Terrestrial Resources Management Plan submitted with the AFLA.
FERC-DLA-09	FERC	Appendix A pg.2	Therefore, the proposed Vegetation Management Plan included in the FLA should minimally include the following information: 1) all proposed BMPs, including citations; 2) adequate descriptions of the proposed chemical and mechanical methods for controlling noxious weeds, including frequency and timing; and 3) a complete list of the proposed measures to protect state- and federally-listed plants, including a discussion of how each species would be protected by the measures, relative to project effects. This information is necessary for our environmental analysis on the proposed measures and management plans included in the FLA.	These details are included in the Terrestrial Resources Management Plan submitted with the AFLA.
NMFSb-DLA-01	NMFS	Pg. 1	NMFS notes the complete absence of any PM&E measures related to aquatic habitat, flow and temperature regimes, and channel conditions in the lower Tuolumne River. This is despite the obvious, appreciable Project effects and influences: 1) It completely terminates the upstream supply of coarse sediment and large wood by entrapment in Don Pedro Reservoir; 2) It fundamentally alters the frequency, magnitude, and timing of the natural hydrograph (see figures below); 3) It directly, indirectly, and cumulatively impacts water temperatures in the lower river. Therefore, it is astonishing that PM&E measures related to flow, water temperature, sediment, wood, and/or aquatic habitat were not identified as resource areas warranting PM&E proposals in the DLA (with additional details on the measures expected to be provided in the Final License Application).	As explained in the response to comment CDFW DLA-02, and in more detail in Exhibit E of this AFLA, the Districts are seeking a new license only for the continued generation of hydroelectric power at the Project and implementation of a suite of resource enhancement measures. Hydroelectric power is generated at the Don Pedro Hydroelectric Project using flows released for other purposes, and as a result cannot impact aquatic resources in the lower Tuolumne River, because the flows released into the lower Tuolumne River are not linked to power production and, absent power production at the Don Pedro Dam, the flow release schedule, including flows to the lower Tuolumne River, would remain the same as it is under existing conditions, i.e., driven by uses other than hydroelectric power production. Nevertheless, the Districts have conducted an extensive array of studies of the Don Pedro Project, both before and as part of the FERC relicensing. Based on these studies, the Districts have proposed a suite of flow-related and non-flow-related measures aimed at enhancing conditions in the lower Tuolumne River for aquatic biota, fall-run Chinook and *O. mykiss* in particular, relative to existing baseline conditions (see Exhibit E, Section 3.5.4).
NMFSb-DLA-02	NMFS	Pg. 2	While the Districts commit to using these tools to analyze to "evaluate a range of alternative operational scenarios" (p. 5-3), they do not propose to use these tools to develop measures intended to mitigate for the Project's impacts to aquatic habitat and their physical processes	The Districts have conducted an in-depth analysis of potential flow scenarios, as appended to Exhibit E of this AFLA.

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			and inputs (e.g., water, sediment, and wood) that are prerequisite for proper function and condition.	
NMFSb-DLA-03	NMFS	Pg. 2	FERC should not issue a Notice of Project Ready for Environmental Analysis and go forward with its National Environmental Policy Act (NEPA) review, or its Endangered Species Act (ESA) or and Magnuson Stevens Fishery Conservation and Management Act (MSA) consultations without a complete Project evaluation and ILP information record. A solid and complete body of information should be assembled, made available, and reviewed by ILP participants before FERC determines the Project is ready for environmental analysis.	Agreed. The Districts believe that a solid and complete body of information has now been assembled and made available to relicensing participants.
NMFSb-DLA-04	NMFS	Pg. 2-3	Although the "base case" may represent current Project operations and therefore represent what a "no action" alternative under NEPA might be, this does not mean it can be assumed, without analysis, that the existing Project facilities and operations exert no effects at the present time; the effects of the baseline must be evaluated and, if no effects on a resource are demonstrated, then can it be assumed there are no effects of the "no action" alternative. It also does not mean that, if the "base case" were to become the chosen alternative for a new license, these ongoing effects would not require measures to protection, mitigate, or enhance affected resources, especially with respect to water quantity.	Regarding the effects of hydroelectric power generation, see response to comment CDFW DLA-02. Effects associated with the Districts' proposed resource measures would enhance resource values relative to baseline conditions, as explained in Sections 3 and 4 of Exhibit E of this AFLA.
NMFSb-DLA-05	NMFS	Pg. 3	NMFS does not agree with the Districts' assessment of the Project's effects on beneficial uses, especially regarding the Project's effects on cold water salmonid habitat in the lower Tuolumne River. To claim that the Don Pedro Project only has a direct effect on water temperatures, exerted only in the short reach from Don Pedro Dam to La Grange, is untenable. The regulations of the Council on Environmental Quality for conducting a NEPA review refer to environmental impacts that may be "(1) direct; (2) indirect; (3) cumulative." "Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.	The referenced CEQ regulations are completely in accord with the Districts' identification of direct, indirect, and cumulative effects as discussed in the AFLA. The Districts question whether NMFS understands the definition of the Proposed Action. The Don Pedro Project's primary purposes, which are the driving force behind water storage and flow regulation, are independent and non-interrelated actions. These actions would persist even if the hydroelectric facilities were decommissioned, and as such the Districts are not seeking a license from the Commission to allow those actions to go forward. The Proposed Action is narrowly defined as continuation of existing hydroelectric power generation (see response to CDFW DLA-02)–which provides a range of societal benefits, especially considering the effects of climate change–and a suite of resource measures aimed at enhancing conditions, particularly for fall-run Chinook and *O. mykiss*, in the lower Tuolumne River.
NMFSb-DLA-06	NMFS	Pg. 4	The Project's effects on ESA-listed Central Valley steelhead or its critical habitat will be also be considered and evaluated during ESA consultation, according to the regulations (50 CFR § 402), including the relevant effect and action area definitions: "Action area means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." "Effects of the action refers to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, that will be added to the environmental baseline." (50 CFR § 402.02).	As noted in the response to the previous comment, the action being considered by FERC is the issuance of a new license to the Districts to continue generation of hydropower at Don Pedro. Absent hydropower generation, the Don Pedro Project would be operated in essentially the same manner as it is presently.
NMFSb-DLA-07	NMFS	Pg. 4-5	With regard to temperature impairment in the lower Tuolumne River, we refer the Licensees and the Commission to Exhibit DFG-4, filed September 11, 2009, in the Administrative Law Judge (ALJ) Proceeding (FERC Project Nos. 2299-065 and 2299-053); this	Comment noted. Additional analysis of water quality in the lower Tuolumne River is added to Section 3.4, 3.5, and 4.0 of the AFLA. See response to CDFW DLA-02 for a characterization of what constitutes the Proposed Action and the range of its effects. See response to comment GD DLA-18 re: *O.*

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			document is the direct testimony of Dr. Andrew Gordus, a Water Quality Biologist with the California Department of Fish and Wildlife (formerly Department of Fish and Game), and describes how elevated water temperatures in the lower Tuolumne River during critical life stages of the California Central Valley fall-run Chinook salmon (*Oncorhynchus tshawytscha*) and the California Central Valley steelhead (*O. mykiss*) are a significant factor in their declines. The testimony presents a summary, based on nine years (1998 through 2006) of instream temperature measurements, of the total number of weeks of temperature impairment for anadromous Chinook salmon and Central Valley steelhead using the Tuolumne River. Its Table 1 summary indicates that river temperatures for adult Chinook salmon migration were impaired in 53 of 72 weeks (74%); for Chinook spawning were impaired in 63 of 99 weeks (64%); for Chinook smoltification were impaired in 74 of 126 weeks (59%); and for Central Valley steelhead summer rearing were impaired in 65 of 126 weeks (52%). This information, along with additional temperature information filed in this ILP, clearly suggests the untenable position of the Licensees regarding the Project's effects on downstream thermal water quality conditions.	*mykiss* temperature tolerance in the lower Tuolumne River. See response to CDFW DLA-26 regarding temperatures during the fall-run Chinook smolt outmigration period. See Section 3.4 of Exhibit E of this AFLA for an assessment of the longitudinal effect of the overall Don Pedro Project on water temperatures in the lower river compared to a without-dams scenario.
NMFSb-DLA-08	NMFS	Pg. 5	The presence and operation of the Project's Don Pedro Reservoir completely interrupts sediment and LWD flow continuity from upstream to downstream areas; these interruptions are the reason little LWD is currently found in the lower Tuolumne River. Given adequate supplies from upstream, LWD of all sizes would be stored in overbank areas of the lower river as flows receded from the floodplain, and also in log jams within the channel. These accumulations of LWD in the depositional lower Tuolumne River have been severely curtailed as a result of the Project, and the resulting effects include degraded aquatic habitat complexity, including for anadromous fishes. The Project's hydrological effects (decreased frequency, magnitude and inundation of overbank areas) also contribute to the lack of LWD and the degraded habitat complexity in the Tuolumne River, and are discussed further below.	Consistent with study schedules approved by FERC through the ILP's study plan determinations, the Districts conducted a study of LWD in the reservoir and downstream of La Grange Diversion Dam (TID/MID 2017c). These studies demonstrate that wood collected in the reservoir is not of sufficient size to serve as habitat in the lower Tuolumne River. The wood that does occur in the lower Tuolumne River is partially or wholly outside the wetted channel much of the time, which, coupled with its small size relative to the width of the channel, creates a condition in which wood does not provide significant cover for fish, which in turn limits its value as protection from avian and aquatic predators. Adding small woody material from the reservoir to the lower river would result in little or no improvement in habitat for fish.
NMFSb-DLA-09	NMFS	Pg. 6	Page 3-78: "The distributions of native and non-native fishes are influenced by water temperature and velocity, which vary by location, season, and in response to flow." Comment: The discussion that follows this statement de-emphasizes the influence of river temperatures on this distribution. We note that the abundances of non-native, warm water species are also greatly influenced by current, baseline river temperatures, regardless of which entity first introduced these species, or how they were introduced.	The Districts agree that predation is a significant issue related to the survival of fall-run Chinook smolts. While it may be unimportant which entity first introduced non-native predators as sportfish, to assert that it now falls to the Districts to "fix" the problem by using the water resource it has developed at great expense to try to "redistribute" non-native predators introduced by others goes against any rational notion of what is appropriate or justifiable. Moreover, as part of its suite of resource measures, the Districts have proposed a robust predator removal program (see response to CDFW DLA-20), which, if executed according to plan, would be expected to reduce the numbers of non-native piscivores dramatically, without having to use flow to achieve that purpose. This in turn would translate into increased survival of outmigrating Chinook smolts. Another factor that merits mention is that comparison of with- and without-dams temperatures reveals that for some distance downstream of La Grange Diversion Dam, water is cooler during summer than

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				it would be in the absence of dams (see information from Jayasundara et al. (2017) in Section 3.4 of Exhibit E of the AFLA). Immediately below Don Pedro Dam (RM 54), with-dams 7DADM temperatures are relatively cool year-round, with little variability. With-dams 7DADM temperatures are much cooler than without-dams temperatures in summer but are slightly warmer from November through February. With-dams temperatures during summer rise significantly with increasing distance downstream of the Project Boundary due to ambient air temperatures. Under base-case conditions, by RM 46, summer 7DADM temperatures have climbed back to 20°C, very close to the 7DADM temperatures experienced above Don Pedro Reservoir. However, this is still 5°C below without-dam conditions. By RM 40 (near Roberts Ferry Bridge), average with-dam 7DADM temperatures in July reach 22°C. By RM 34, thermal equilibrium has largely been restored under with-dams conditions, i.e., the highest 7DADM temperatures in summer are around 24°C, very close to the 7DADM without-dams conditions. From this point downstream to the confluence with the San Joaquin River, with-dam 7DADM summer temperatures exceed without-dam temperatures by 2 to 3°C.
NMFSb-DLA-10	NMFS	Pg. 6-7	Under low flows there can be no overbank habitat available to avoid predators. The text above suggests that under higher flows there may be pools with high predation risk, and that have no adjacent floodplain habitat available to avoid predation. The text suggests the 2014 Predation Study will further investigate the predation risk in the larger pools where predation may remain high even under higher flows. It is unclear how the results of such study can be fairly interpreted without examining the reach-wide, overall predation risk in greater detail as a function of flow – including in pools with adjacent floodplain habitats and in pools that lack adjacent floodplain habitats. We also note that a defensible Predation Study design must consider factors such as river temperatures and turbidities in the areas investigated, which can be expected to vary with flow (but not always in a linear way, or uniformly within pools and floodplains). River temperatures would be expected to influence the abundances of warm water predators and their consumption rates, and turbidities could affect predation success. If the results of a defensible Predation Study suggest or confirm that predation on juvenile salmonids is likely due under existing Project operations, the information should be used to develop PM&E measures for the Project to reduce the predation effects. Since the predation effects are currently under ongoing investigation (the 2014 Predation Study results are not yet available) the Commission should not press forward to its NEPA analysis until the information is obtained, reviewed, and discussed in detail.	The Districts conducted a Lower Tuolumne River Floodplain Hydraulic Assessment (TID/MID 2017b) to simulate the interaction between flow in the main channel and the floodplain in the lower river. Results of this analysis confirm that only a portion of the inundated floodplain area at a given flow provides suitable habitat for fall-run Chinook and *O. mykiss* fry and juveniles, and there is longitudinal variability in the extent of floodplain inundation at a given flow. However, TRCh (TID/MID 2017a) indicates that increased duration of floodplain access for juvenile salmonids is not closely correlated with increases in smolt productivity in the lower Tuolumne River. Also, several reaches of the lower Tuolumne River with pool habitats inhabited by predator species lack adjacent floodplain habitats (McBain & Trush 2000), so the probability of encounter between predators and juvenile salmonids remains high in these reaches regardless of flow. In addition, in the reach extending from RM 51.7–40.0, where most salmonids occur, the majority of floodplain habitat is located in disturbed areas formerly overlain by dredger tailings (McBain & Trush 2000). These areas were associated with the highest frequency of stranding and entrapment of juvenile fall-run Chinook salmon in historical surveys (1990–1992, 1994–1996, 1999–2000) at flows between 1,100–3,100 cfs (TID/MID 2001). Although TRCh modeling results for the base case show that smolt productivity is consistently higher in years with increased spring discharge at La Grange Diversion Dam, the TRCh modeling results indicate that reduced water temperatures associated with extended flood control releases generally result in lower growth rates and later emigration by Chinook salmon smolts, which calls into question CDFW's assertion that increased floodplain inundation would result in higher juvenile salmonid growth rates. Sensitivity testing associated with the TRCh shows that reductions in fry and juvenile rearing density parameters used in the model are not accompanied by reductions in subsequent smolt productivity. For the highest run sizes evaluated (10,000 female spawners), the resulting fry and juvenile production is shown to be insufficient to fully saturate available rearing habitat under current conditions. The implication of the low sensitivity

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				to fry and juvenile rearing density is that changes in in-channel rearing habitat area through measures recommended to improve access to potential floodplain rearing areas, such as floodplain re-contouring (McBain & Trush 2000) as well as extended high flows to maintain floodplain inundation (Mesick 2009), will not result in large increases in subsequent smolt productivity on the basis of relieving any rearing habitat limitation. Also, increases in food availability at in-channel and overbank locations are not accompanied by increased smolt productivity (TID/MID 2017a). This is consistent with materials reviewed as part of the Synthesis Study (TID/MID 2013d), which indicate that adequate food resources exist for juvenile fall-run Chinook salmon in the main channel of the lower Tuolumne River. The Districts agree that continued study of predation risk would have provided helpful information going forward. However, as noted in the Districts' June 28, 2016 letter to the Commission, CDFW refused to issue an amended scientific collector permit to allow the Districts to conduct electrofishing of non-native predators in the lower Tuolumne River, and CDFW formally denied the Districts' request for hatchery smolts needed to perform the study. Nevertheless, the Districts' proposed predator control and suppression program would address the problem of introduced piscivores without the need to adjust flows for that purpose (see response to CDFW DLA-20).
NMFSb-DLA-11a	NMFS	Pg. 11	Anadromous salmonids in the Tuolumne River have adapted to the natural hydrograph typical of watersheds in the Sierra Nevada, which includes a pronounced snowmelt peak followed by flow recession in the spring - hydrologic conditions that would have frequently inundated overbank floodplain areas. Therefore, it is expected that juvenile salmonids are more successful in completing the out-migration portion of their lifecycle under years with higher spring flows, which more closely resemble a natural hydrograph. The major environmental effects of the Don Pedro Project include the reduction in magnitude, frequency, and duration of winter and spring flows in the lower Tuolumne River.	NMFS states that the "major environmental effects of the Don Pedro Project include the reduction in magnitude, frequency, and duration of winter and spring flows in the lower Tuolumne River." NMFS is comparing the current operations of the Don Pedro Project to a "without dam" or "pre-project" condition. Under FERC policy and regulations, as upheld by the courts, such a comparison to pre-project conditions is not useful for consideration of potential protection, mitigation, and enhancement (PM&E) measures and relies on speculation. Many conditions of the Tuolumne River are different now than pre-European settlement, including the extensive destruction of the river's physical habitat and floodplain encroachment due to gravel and gold mining and urban development. The introduction of non-native predator species has completely changed the survival probability of fry and juvenile fall-run Chinook. Not every year was a wet year historically, and numerous periods of droughts and low flows occurred. If EPA (2003) temperature benchmarks were applied to the Tuolumne River, under "without dam" conditions all the accessible reaches of the Tuolumne River would be determined to be unsuitable for anadromous salmonids (TID/MID 2017f). Selective comparisons to pre-project conditions are not useful for the development of potential PM&E measures. A further assessment of the EPA (2003) temperature benchmarks is provided in Appendix A to this response to DLA comments.
NMFSb-DLA-11b	NMFS	Pg. 11	Despite the clear alterations illustrated above, the poor condition of salmonid habitat and population condition in the lower Tuolumne River, and the obvious linkages between the two, the Licensees propose no measures in the DLA to mitigate for the strongly Project-influenced hydrologic alterations. There are no proposed measures for mitigating for the snowmelt peak flow reductions or the truncation of spring recession flows. NMFS hopes the Districts will include new	See response to comment CDFW DLA-02 for an understanding of the relative effects of the Don Pedro Project's primary purposes and the effects of the Proposed Action. Sections 3.5 and 4.0 of the AFLA address direct, indirect, and cumulative effects of the wide range of actions that have affected, affect, and will continue to affect anadromous and resident fish, and other aquatic biota, in the lower Tuolumne River. As part of their Proposed Action, the Districts have developed a suite of flow-related and non-flow-related measures

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			environmental measures in the Final License Application that enhance flow conditions to promote greater juvenile anadromous fish survival during fry rearing and smolt outmigration.	aimed at enhancing conditions for aquatic biota, fall-run Chinook and *O. mykiss* in particular, relative to existing baseline conditions.
NMFSb-DLA-12	NMFS	Pg. 11	Chinook salmon redd dewatering was observed below the La Grange Dam on November 4, 2008 by CFDW personnel. The dewatering of up to seven redds was described in a memo dated August 19, 2009 from CDFW, which NMFS filed with FERC on June 10, 2011 as part of Enclosure H. The August 19, 2009 memo also states that stranding had been observed in the vicinity of La Grange Dam and powerhouse in years prior to 2008 and fish rescues had to be performed. As such, the dismissal of stranding of fish and/or de-watering of redds in the lower Tuolumne River as negligible is inappropriate and contrary to observations as recent as 2008.	Resource agencies have raised this concern previously. They refer to a single instance in 40 years of operations where the La Grange powerhouse experienced a forced outage and limited flows downstream occurred. The record before FERC fully covers this instance. The Districts immediately made changes to the sluice gate system which prevents this from occurring again. At NMFS' request the Districts analyzed USGS gage records to examine the occurrence of rapid changes in stage below La Grange powerhouse. The results, filed with NMFS and FERC, showed that using 15-minute USGS data, the river stage change is less than four inches up or down 99.9 percent of the time (TID/MID 2013h).
NMFSb-DLA-13	NMFS	Pg. 12	It is surprising that the Districts have not proposed any new environmental measures in the DLA to mitigate for these Project effects. NMFS is looking forward to the Districts including new environmental measures in the Final License Application which will increase the frequency and duration of overbank areas which are currently negatively affecting salmonids and other species.	Now that all the relicensing studies are complete, the Districts can fully assess the cumulative effects to these resources and the costs and benefits of potential PM&E measures intended to enhance the resources of the lower Tuolumne River. See response to comment CDFW DLA-02 for an understanding of the relative effects of the Don Pedro Project's primary purposes and the effects of the Proposed Action. Sections 3.5 and 4.0 of the AFLA address direct, indirect, and cumulative effects of the wide range of actions that have affected, affect, and will continue to affect anadromous and resident fish, and other aquatic biota, in the lower Tuolumne River. As part of their Proposed Action, the Districts have developed a suite of flow-related and non-flow-related measures aimed at enhancing conditions for aquatic biota, fall-run Chinook and *O. mykiss* in particular, relative to existing baseline conditions. It is important to note that these measures do not constitute mitigation, because, as explained in the response to CDFW DLA-02, hydroelectric power generation is not influencing the lower river flow regime, which is driven by the Project's primary purposes of providing an irrigation and M&I water supply and coordinating with the ACOE on flood control. The measures are enhancements that will improve conditions for aquatic biota relative to the existing baseline.
NMFSb-DLA-14	NMFS	Pg. 12	NMFS disagrees with several aspects of the discussion of the Chinook Salmon Population Model, the *O. mykiss* Population Model, and the studies and literature that pertains to their development, application and preliminary conclusions. We have also noted during this ILP the repeated objections and comments of the California Department of Fish and Wildlife to the assumptions, modeling, and preliminary conclusions of the Districts.	The Districts followed a detailed consultation process for development of the W&AR-06 and -10 models (TID/MID 2017a, 2017c) and have received few written or verbal comments conveying the "repeated objections" referred to by NMFS. Numerous opportunities were provided for agency participation, which have been documented. Generally, there has been a lack of substantive agency participation throughout the process, particularly where NMFS is concerned.
NMFSb-DLA-15	NMFS	Pg. 12	NMFS recommends FERC staff discuss with the Districts and ILP participants the action of obtaining independent (outside) expert review of the Chinook salmon and *O. mykiss* models, and supporting information.	FERC previously addressed this request in the December 2011 Study Plan Determination, which states that "establishment of a scientific review panel and any associated cost is not necessary, as participation by experienced biologists from NMFS, FWS, CDFG, the Conservation Groups, and Commission staff would ensure a rigorous scientific review ...." To the extent that this is a request for a study modification, the request should have been accompanied by a description of its conformance with the ILP regulations. Because this request does not conform to ILP regulations, it should not be accepted.
NMFSb-DLA-16	NMFS	Pg. 12	With expert assistance, improved model designs could be achieved, and then implemented. The reviews would be considered by FERC	The Districts held five separate Workshops on model development and provided extensive materials for review prior to the Workshops, then provided

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			and others when license terms and conditions are contemplated and developed for the new license; they would also be valuable in future Endangered Species Act consultation.	30 to 45 days for comment after each Workshop. The Districts requested the advice of resource agencies at each Workshop. It is disappointing that NMFS chooses now to criticize the process and results. The Districts have made the models fully available for agency review and comment, as well as having conducted a detailed consultation process during development of the models. We are not aware of exactly what parts of either model NMFS has objections to.
NMFSb-DLA-17	NMFS	Pg. 13	Please see NMFS' comments (filed February 26, 2014) on the Districts' Updated Study Report filed in this ILP, including about the results of Study W&AR-10, *Oncorhynchus mykiss* Population Study (Enclosure A, p. 7-13), and the Memorandum of Yoshiyama and Moyle (2012) (Enclosure A, pp. 14-22). We will not repeat those comments here.	Comments were addressed in the Districts' response to USR comments, filed with FERC on March 28, 2014.
NMFSb-DLA-18	NMFS	Pg. 13/14	As stated above, the current lack of significant LWD in the lower Tuolumne River is a result of project operations, indicates the existing baseline condition, and does not reflect the natural state of the river. The DLA contains no Project actions or PM&E measures to mitigate Project effects or enhance LWD conditions. The Districts should include such PM&E measures in the Final License Application, to mitigate for these negative effects and enhance conditions for anadromous salmonids and other species.	There are numerous aspects of the lower Tuolumne river that do "not reflect the natural state of the river "The extent of LWD in the reservoir and lower Tuolumne River was extensively studied (TID/MID 2017c in particular). Consistent with study schedules approved by FERC through the ILP's study plan determinations, the Districts conducted a study of LWD in the reservoir and downstream of La Grange Diversion Dam. These studies demonstrate that wood collected in the reservoir is not of sufficient size to serve as habitat in the lower Tuolumne River. The wood that does occur in the lower Tuolumne River is partially or wholly outside the wetted channel much of the time, which, coupled with its small size relative to the width of the channel, creates a condition in which wood does not provide significant cover for fish, which in turn limits its value as protection from avian and aquatic predators. Adding small woody material from the reservoir to the lower river would result in little or no improvement in habitat for fish.
NMFSb-DLA-19	NMFS	Pg. 14	As stated above, the operations of the Project, including reservoir operations and in stream flow releases to meet FERC requirements are the major drivers of water temperatures in lower Tuolumne River. The Districts have the ability to lower water temperatures in the summer months by releasing more water from Don Pedro Reservoir above what is needed for agricultural diversions at La Grange Dam. NMFS is looking forward to Districts' including new environmental measures in the Final License Application which will extend the length of river that is thermally suitable for *O. mykiss* rearing.	As explained in the response to CDFW-02, operations related to the Project's primary purposes (water supply and flood protection) are not part of the Proposed Action under consideration for relicensing by FERC. Nevertheless, the Districts have proposed a suite of flow-related and non-flow-related measures aimed at enhancing conditions in the lower Tuolumne River for aquatic biota, fall-run Chinook and *O. mykiss* in particular, relative to existing baseline conditions (see Exhibit E, Section 3.5.4). The proposal includes flows that would benefit *O. mykiss* in the lower river by improving physical (hydraulic) habitat and temperature. Flows would be released to balance hydraulic and thermal habitat needs of *O. mykiss* fry from June 1 – 30 and juveniles from July 1 – October 15 (see Section 3.5.4 of Exhibit E for details on flow magnitudes by water year type and their effects on habitat availability and temperature suitability). The Districts are proposing to provide an instream flow of 350 cfs (as measured at the La Grange gage) upstream of RM 25.7 from July 1–October 15 of Wet, Above Normal, and Below Normal water year types to benefit *O. mykiss* juvenile rearing. During Dry and Critical water years, flow at the La Grange gage would be reduced to 300 cfs. A flow of 350 cfs would maintain temperatures below 18 °C at RM 43 until daily maximum air temperatures exceed 105°F (40.6°C) (see Exhibit E, Section 3.5.4). Downstream of RM 25.5 (i.e., downstream of the infiltration galleries) instream flows during this period would be 150 cfs during Wet, Above Normal, and

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				Below Normal water years and 75 cfs in Dry and Critical years.
NMFSb-DLA-20	NMFS	Pg. 14	Page 4-7: "Therefore, Don Pedro operations contribute to cumulative effects in the lower Tuolumne River by storing water which is then scheduled for release; however, under base line conditions, the direct effects to resources in the lower Tuolumne River are due to the diversion of water from the river at La Grange Dam, and not the operations of Don Pedro Project. From 1971 to 2012, the average annual water diversion at La Grange Dam to the Districts canals has been approximately 900,000 AF. " Comment: The statement above does not consider the indirect effects of the Don Pedro Project on downstream hydrology. The regulations of the Council on Environmental Quality for conducting a NEPA review refer to environmental impacts that may be "(1) direct; (2) indirect; (3) cumulative."	The specific action being considered by FERC is the issuance of a new license to the Districts to continue generation of hydropower at Don Pedro. Absent hydropower generation, the Don Pedro Project would be operated in essentially the same manner as it is presently. To the extent that NMFS' comment is a comparison of Project operations to pre-project conditions, please see response to NMFSb-DLA-11a.
NMFSb-DLA-21	NMFS	pg. 16	The design (e.g. depth) and operation of the Project's intake to the New Don Pedro Powerhouse, and operation of the Don Pedro Reservoir directly affect the temperature of the water released to the lower Tuolumne River. Therefore, the operation of the Don Pedro Project directly affects water quantity and quality in the lower river (as well as indirectly and cumulatively, in areas farther downstream of the Project).	The Don Pedro Project operations is one of the factors contributing to cumulative effects to resources of the lower Tuolumne River. However, the hydropower operations, the "action" being considered in this AFLA, do not contribute to direct or cumulative effects to the lower Tuolumne River. See response to CDFW DLA-02 and sections 3.5 and 4 of Exhibit E of the AFLA for more detailed explanation.
NMFSb-DLA-22	NMFS	pg. 16	NMFS disagrees that the Don Pedro Project has had a positive effect (cumulative, direct or otherwise) on flows in the lower Tuolumne River. Flows in the lower Tuolumne are highly altered from the natural hydrograph that native salmonids have adapted to over millennia in the Tuolumne River basin. Please see our comments above in response to DLA p. 3-88, concerning the Project's influence on downstream hydrologic conditions. These include reference to Exhibit NMF-4, filed September 11, 2009, in the ALJ Proceeding (FERC Project Nos. 2299-065 and 2299-053); this document describes the vast alterations of the lower Tuolumne River flow regime since the completion of the Don Pedro Project in 1971, and also graphically demonstrates these changes. The graphics plots overlay the average unimpaired flows at La Grange, the regulated flows at La Grange, and the Don Pedro Project license-required (Article 37) minimum flows, so the changes can be clearly evaluated.	NMFS is again referring to its prior statement that the "major environmental effects of the Don Pedro Project include the reduction in magnitude, frequency, and duration of winter and spring flows in the lower Tuolumne River." NMFS is comparing the current operations of the Don Pedro Project to a "without dam" or "pre-project" condition. Under FERC policy and regulations, as upheld by the courts, such a comparison to pre-project conditions is not useful for consideration of potential PM&E measures and relies on speculation. Many conditions of the Tuolumne River are different now than pre-European settlement, including the extensive destruction of the river's physical habitat and floodplain encroachment due to gravel and gold mining and urban development, and the operation of the Hetchy Hetchy project by CCSF. The introduction of non-native predator species has completely changed the survival probability of fall-run Chinook smolts. Also, as explained numerous times, the operation of the overall Project, namely its primary purposes of water supply and flood control, are not part of the Proposed Action. The effects of these actions, which are independent of hydroelectric power generation, are not subject to relicensing, and as such mitigation for the effects of the primary purposes (which are acknowledged in Section 4 of Exhibit E) is inappropriate in the context of these proceedings.
NMFSb-DLA-24	NMFS	pg. 17	In the seventeen water years (WY) analyzed (1997 to 2013) the historical record at La Grange gage indicates there were 379 days with flow in excess of 5,000 and the computed unimpaired record indicates there would have been 1,122 days of flow in excess of 5,000 cfs if not for the cumulative effects of river regulation. This represents a decrease of 743 days (slightly more than 2 years) that exceeded 5,000 cfs under historical conditions since 1997 (post-FERC amendment to	See response to NMFSb-DLA-22.

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			flows) than what would have occurred under the unimpaired, or about a 66% decreases from unimpaired to observed. Furthermore, in the computed unimpaired period at La Grange from WY 1997 to 2013 every water year had at least 12 days with flow in excess of 5,000 cfs (WY 998 had the most with 137 days above 5,000 cfs), but in the observed historical record 9 out of the 17 years analyzed had zero days of flow in excess of 5,000 cfs. Clearly a more robust, unbiased analysis of the Project's impacts to the high flow regime of the Tuolumne River is warranted. NMFS noted that a more robust high flow analysis would include far more than a simple discussion of the frequency of flows in excess of 5,000 cfs.	
NMFSb-DLA-25	NMFS	pg. 17	Page 4-72: "These changes in hydrology have had both immediate impacts on habitat conditions for salmonids and other native aquatic organisms as well as introduced piscivore species (e. g., depth, velocity, water temperature) and longer-term impacts on aquatic habitat characteristics due to changes in flow magnitude and timing, flood frequency, sediment supply, transport, and channel morphology. Comment: "In general NMFS agrees with the above statement as it pertains to the direct effects of the Don Pedro Project, which are large in scale and negatively influence the status of anadromous fish populations in the Tuolumne and San Joaquin River basins. As discussed above, indirect and cumulative effects also occur, and are not discountable. NMFS is disappointed to find no new environmental measures in the DLA to mitigate these many negative effects of the Don Pedro Project.	See response to NMFSb-DLA-22. Also please see Appendix B to this response document for a discussion regarding cumulative effects analyses. The referenced discussion on page 4-72 is not a discussion of Don Pedro Hydroelectric Project effects. The ACOE acquired 340,000 AF of flood control storage in Don Pedro Reservoir and issued a Flood Control Manual for guiding flood control operations. To the extent NMFS is suggesting changes in flood control operations, the ACOE will need to be consulted. Throughout the process, the Districts have offered to run any scenario requested by relicensing participants.
NMFSb-DLA-26	NMFS	pg. 18	In the DLA, the Licensees misrepresent the dynamics of LWD transport and deposition within lower-gradient, valley-bottom rivers, such as the lower Tuolumne River. Lower-gradient rivers tend to be sinuous with extensive meander bends and often bifurcate into multiple channels with large mid-channel bars and islands. LWD in these lower gradient rivers that is transported by fluvial mechanisms into the reaches often deposits at channel bends, mid-channel bars and islands, and overbank surfaces, including floodplains.	The commenter stated, as a prelude to the comment in the column to the left, that *"The DLA repeatedly states that entrapment of wood in Don Pedro Reservoir has minimal impact on channel form and aquatic habitat in the lower Tuolumne River because 'it appears that the majority of it would pass through the lower river during high flows if it were not trapped in the reservoir'. This statement is unfounded and is not based on anything other than the observation that the length of wood found in Don Pedro Reservoir is less than the channel bankfull width of the lower river."* The commenter is incorrect in stating that this conclusion is unfounded. The W&AR-12 report assessed the contribution of LWD in forming habitat in the Lower Tuolumne River based on comparisons of LWD and instream habitat data that were collected in the field. Page 5-9 of the W&AR-12 report states "The majority of the LWD observed during the survey was completely or partially out of the wetted channel, deposited by previous high flows, and provided minimal habitat value for *O. mykiss*. Approximately 62 pieces (31 percent) of the LWD observed were in 12 accumulations of two to eight pieces. At least seven of these accumulations were made up of between five and eight pieces of wood. One of the accumulations was a cluster of four key pieces. The relatively small size of the wood in the accumulations limited their influence on habitat forming processes." In response to the comment in the column to the left, the W&AR-12 study did not "misrepresent" the dynamics of wood transport and deposition within lower-gradient, valley bottom rivers. Not all rivers, especially those in a highly managed condition, like the lower Tuolumne River, fit the classic form

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				referenced by the commenter. The lower Tuolumne River, within the W&AR-12 study reach, does have some sinuous meanders, but also has reaches confined by bedrock, cliffs, levees, and other resistant geomorphic features that inhibit meandering. The W&AR-12 report stated that the majority of the wood surveyed was completely or partially out of the wetted channel, which indicates deposition. The study also stated that an unknown amount of LWD, if it was not trapped behind Don Pedro Reservoir, would deposit as single pieces, add to existing wood accumulations, or initiate small jams. However, based on peer-reviewed literature, there is a well established relationship between LWD piece size, transport and deposition tendencies, and channel width, so the width of the Tuolumne River relative to the size of LWD is highly relevant.
NMFSb-DLA-27	NMFS	pg. 19	See NMFS' comments above to Page 3-88 regarding stranding/redd dewatering in the lower Tuolumne River.	See corresponding response.
NMFSb-DLA-28	NMFS	pg. 19	See NMFS' comments above to Page 4-74 regarding the District's claims that historically LWD would not have deposited in the lower 52 miles of the Tuolumne River. The only way LWD from the upper watershed would not have provided structure and habitat in the lower river would be if it ubiquitously transported the entire length (52 miles) in one flow event, without ever depositing in the reach for a period of time. Historically, the majority of LWD would not have simply transported the entire 52 miles given the opportunities for its deposition in the lower gradient reaches, on channel bars and islands, meander bends, and on the floodplains that are often accessed during higher flows of the magnitude required to mobilize larger pieces of LWD in the first place.	See corresponding response.
NMFSb-DLA-29	NMFS	pg. 19	Please see our comments above in response to DLA p. 3-60, concerning the Project's influence on downstream thermal conditions.	See corresponding response.
NMFSb-DLA-30	NMFS	pg. 20	Please see our comments above in response to DLA p. 3-60, concerning the Project's influence on downstream thermal conditions.	Comment regarding p. 4-79 of DLA noted.
NMFSb-DLA-31	NMFS	pg.21	Even if one were to accept that increased numbers and densities of juvenile *O. mykiss* have occurred since 1996, the baseline condition of the *O. mykiss* population in the lower Tuolumne River prior to 1996 was very poor. Thus, any relative comparisons should be qualified by the poor 1996 baseline condition. We believe the current overall population numbers of *O. mykiss* remain low, but agree they would improve under higher flows that improve thermal (and other) downstream conditions, and also from improved LWD and substrate conditions.	There are no recognized population goals for *O. mykiss* on the Tuolumne River established by resource agencies. See the response to NMFSb-DLA-19 and Section 3.5 of Exhibit E for an explanation of the Districts proposed flow and non-flow related measures aimed at enhancing physical habitat (hydraulic) and temperature conditions for *O. mykiss* in the lower Tuolumne River.
NMFS-DLA-01	NMFS	1-6	The increased smolt productivity generally reflects increased smolt survival during emigration at higher flows. As discussed in the Synthesis Study (W&AR-05), these results are generally consistent with historical information showing increased juvenile passage at the Grayson (RM 5.2) RST in years with larger flood control releases as well as observations of increased spawning escapement 3 years later." The modeling results are consistent with the interim measures proposed by the resource agencies during the 2009 Administrative Law Judge proceeding, which were based largely on the historical information noted above. NMFS is interested in implementation	As noted in the responses to USR comments, relying on "adaptive management" to address inadequate information is not an appropriate license condition and would result in complete uncertainty as to what such a license condition might eventually entail. Over 200 studies of the aquatic resources of the lower Tuolumne River provide a rich empirical database to inform the development of PM&E measures. Based on this empirical data, the Districts' Preferred Plan contains specific flow and non-flow measures which will improve in-river production of native salmonids. The Districts' Preferred Plan includes a well-designed adaptive management approach to optimizing the timing and duration of spring pulse flows (see Adaptive Management of Pulse

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			experiments under adaptive management, accompanied by monitoring capable of discerning the outcomes of that experimentation and that is used to re-adjust the action(s).	Flow Timing for the Benefit of Chinook Salmon in the Lower Tuolumne River).
NMFS-DLA-02	NMFS	1-6	In closing, NMFS disagrees with what seems to be a persistent notion (in the near absence of experimental support) that little or nothing can be done to benefit Central Valley steelhead, in the Tuolumne River and elsewhere. We suggest modeling and field experimentation (with adaptive management) to better understand how Tuolumne River management actions could improve its Central Valley steelhead, and we note the nexus between most of these actions and the Don Pedro Hydroelectric Project and related La Grange Dam and Hydroelectric Project	While the Districts do not assert that little or nothing can be done to benefit Central Valley steelhead, the prevailing scientific evidence indicates that downstream factors are far more important than river factors in influencing smolt-to-adult survival and driving the selection of an anadromous vs. resident life history (see March 28, 2014 Response to USR Comments, [III] Districts' Response to Technical Study Comments, [1] Comments on the Yoshiyama and Moyle Memorandum). Because Project operations have no plausible linkage to conditions affecting this portion of Central Valley steelhead life history, the primary focus of information reviews and population modeling conducted as part of relicensing has been for the freshwater residency period in the Tuolumne River itself. Also, please see the response to CDFW DLA-02, which defines the scope of the Proposed Action. The "nexus" referred to by NMFS in the column to the left is to the Project's primary purposes of water supply and flood control, which are independent of the Proposed Action. As such, the effects of the primary purposes are not relevant in the context of FERC relicensing, which obviates the nexus referred to by NMFS.
NMFS-DLA-03	NMFS	1-6	FERC should not move to formal NEPA analysis or ESA consultation until all ILP participants' concerns with this study have been addressed.	Comment noted.
RHH-DLA-01	Restore Hetch Hetchy	pg.2	Given the importance of the upstream operations, the cumulative impacts associated with those operations should be accounted for fully-both positive and negative- and alternatives to mitigate negative impacts considered.	Hetch Hetchy operations are not a part of the Don Pedro Hydroelectric Project.
RHH-DLA-02	Restore Hetch Hetchy	pg.2	The current DLA is inadequate because it attempts to define the Project purpose in an impermissibly narrow manner that would foreclose consideration of reasonable alternatives.	The Proposed Action is issuance of a new license for the Don Pedro Hydroelectric Project (see response to CDFW DLA-02).
RHH-DLA-03	Restore Hetch Hetchy	pg.2	The DLA skims over the negative environmental impacts associated with the Hetch Hetchy System's operations while trumpeting its positive impacts. The DLA fails to propose any reasonable alternatives.	Neither the Districts nor FERC are required to analyze alternatives for the Hetch Hetchy System's operations, which are owned and operated by CCSF.
RHH-DLA-04	Restore Hetch Hetchy	pg.3	The DLA now identifies four purposes served by the Project, one of which is to provide a water bank to CCSF consistent with the requirements of the Raker Act and agreements with CCSF. This newly defined project purpose is impermissibly narrow. Defining the project purpose as fulfilling the Districts' current contractual obligations with CCSF artificially truncates the NEPA analysis. It leaves no room for the consideration of reasonable alternatives. And such alternatives exist.	The Districts are only responsible for operations of the Don Pedro Project. Further, the Proposed Action is continuation of hydropower generation at the Don Pedro Project (see response to CDFW DLA-02).
RHH-DLA-05	Restore Hetch Hetchy	pg.4	CCSF's decision that the water banking arrangement was the most financially advantageous option at the time should not curtail the Commission's environmental analysis now. It is possible that the analysis will show that the current arrangement will continue to be preferable going forward. That possibility, however, does not eliminate the need to examine reasonable alternatives. The purpose of NEPA is to test whether a preferable alternative exists.	The Districts are not obligated to analyze alternatives to the CCSF system.

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RHH-DLA-06	Restore Hetch Hetchy	pg.4	The DLA's description of the cumulative impacts associated with the Hetch Hetchy System falls short of the detailed description required by section 5.18(b)(2) because it fails to adequately qualify or quantify the Hetch Hetchy System's impacts.	See Appendix B to this response document for a discussion on the scope of NEPA consideration of cumulative effects.
RHH-DLA-07	Restore Hetch Hetchy	pg.5	The DLA fails to adequately address the cumulative impacts hydropower production by omitting CCSF's upstream hydropower production from its water balance model.	RHH previously provided similar comments on the ISR. FERC addressed the scope of the Operations Model in its May 2013 Determination on Requests for New Studies and Study Modifications.
RHH-DLA-08	Restore Hetch Hetchy	pg.6	The DLA's discussion of compliance with license articles is incomplete because it fails to discuss compliance with the FERC approved water banking arrangement with CCSF.	The Districts are in full compliance with all existing license terms and conditions.
RHH-DLA-09	Restore Hetch Hetchy	pg.7	The DLA should be revised to reflect the correct size of the water bank. Section 1.1 of Appendix B-4 states that the water bank can hold up to 570,000 acre-feet. The amount can actually be up to 740,000 acre-feet at the end of the snow melt season. Therefore, the final application should be revised accordingly.	Under the current FERC license, the maximum amount allowed in the water bank account is 570,000 AF year round, except that the account may increase by up to 170,000 AF during the times when encroachment into flood control space is allowed and encroachment occurs. Because such encroachment is intermittent and temporary CCSF does not consider the 170,000 AF to be dependable yield for water supply.
SWRCB-DLA-01	SWRCB	Cover Letter	State Water Board staff requests that the Commission outline how the study report consultation process will occur for each pending study or a delay in the deadline for submittal of the FLA until after the USR consultation process is complete for each required study.	All the relicensing studies are now complete.
SWRCB-DLA-02	SWRCB	3	Don Pedro Reservoir is the largest impoundment of water on the Tuolumne River. It has greatly altered the natural hydrograph of the Tuolumne River and is a major contributor to elevated summer water temperatures. A discussion of the temperature impairments facing the Tuolumne River, and how the Project influences those impairments will be required in the water quality certification application when submitted to the State Water Board.	The Districts agree that the natural hydrograph of the Tuolumne River has been altered. The entire natural environment of the lower Tuolumne River has been extensively and perhaps irrevocably altered through a host of factors, including in-channel mining of substrates for gold and gravel, levee construction, urban and agricultural encroachment, gravel mining of the floodplain, riparian diversions, agricultural runoff, and the introduction of multiple non-native fish species that prey on salmonids. Regardless, the SWRCB's characterization of the effects of Don Pedro Reservoir on temperatures in the lower Tuolumne River is oversimplified and, as a result, not fully accurate. Comparison of with- and without-dams temperatures reveals that for some distance downstream of La Grange Diversion Dam, water is cooler during summer than it would be in the absence of dams (see information from Jayasundara et al. (2017) in Section 3.4 of Exhibit E of this AFLA). Immediately below Don Pedro Dam (RM 54), with-dams 7DADM temperatures are relatively cool year-round, with little variability. With-dams 7DADM temperatures are much cooler than without-dams temperatures in summer but are slightly warmer from November through February. With-dams temperatures during summer rise significantly with increasing distance downstream of the Project Boundary. Under base-case conditions, by RM 46, summer 7DADM temperatures have climbed back to 20°C, very close to the 7DADM temperatures experienced above Don Pedro Reservoir. However, this is still 5°C below without-dam conditions. By RM 40 (near Roberts Ferry Bridge), average with-dam 7DADM temperatures in July reach 22°C. By RM 34, thermal equilibrium has largely been restored under with-dams conditions, i.e., the highest 7DADM temperatures in summer are around 24°C, very close to the 7DADM without-dams conditions. From this point downstream to the confluence with the San Joaquin River, with-dam 7DADM summer temperatures exceed without-dam temperatures by 2 to 3°C. See also the appended *Assessment of Don Pedro*

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				Operations To Meet EPA Region 10 Guidance For Pacific Northwest State and Tribal Temperature Water Quality Standards
Tuol Co-Water-DLA-01	TCWA	2	It is recommended that the shoulders of the roadway be paved as the road approaches the bridge from both the north and south. In some cases, for safety purposes, parking stops may be appropriate.	Maintenance and improvements of county roads is the responsibility of the County.
Tuol Co-Water-DLA-02	TCWA	2	The current whitewater boat takeout practice of parking a truck on the Wards Ferry Road bridge and using a crane type apparatus to lift the boats to the bridge deck is unsafe due to the bridge being reduced to one lane. A more traditional takeout method is needed-construct a boat ramp on the north side of the bridge down to the river.	The current whitewater boat takeout practice is not a project effect. Nevertheless, as part of their proposed suite of enhancement measures, the Districts have proposed to design and construct a new take out on river left upstream of Ward's Ferry Bridge that is large enough to accommodate two to three truck cranes, thereby eliminating the need for truck cranes on the bridge, which is the current practice of the commercial rafting companies (i.e., the companies position truck cranes on the bridge to lift the rafts and equipment out of the river at Ward's Ferry, which creates road blockages, traffic, and congestion problems at Ward's Ferry Bridge).
Tuol Co-Water-DLA-03	TCWA	2	This walking path should be improved to accommodate fishermen and other recreationalists such as kayakers needing a safe pathway to carry out their boats.	The Districts, using DPRA staff, have previously constructed pedestrian trail improvements on river left upstream of the Ward's Ferry Bridge. The Districts are willing to discuss the need for, and benefits of, similar improvements on river right.
Tuol Co-Water-DLA-04	TCWA	2	The County would like to explore coordinated public safety patrol requirements	As FERC has consistently stated, licensees are not responsible for law enforcement or public safety services on project lands and waters, let alone on lands adjacent to licensed projects. Local law enforcement should include the location on their regular patrols.
Tuol Co-Water-DLA-05	TCWA	2	A law enforcement communications solution should be researched and implemented. This may entail locating and installing a radio tower and repeaters.	Radio communication coverage is not the Districts' responsibility, nor is any other public safety service.
Tuol Co-Water-DLA-06	TCWA	2	The current Don Pedro FERC relicensing process is a prime opportunity to remedy the current takeout site's myriad problems.	As part of their proposed suite of enhancement measures, the Districts have proposed to design and construct a new take out on river left upstream of Ward's Ferry Bridge. Please see Exhibits E and F to the AFLA for details.
USFS-DLA-01	USFS	1	We request that FERC designate the Stanislaus National Forest as a cooperating agency for the environmental review and relicensing process performed for each project along the Tuolumne River or Lake Don Pedro.	The comment is a request to FERC. The USFS comments on the USR study meeting have been addressed in the Districts' Response to Comments on the USR, filed with FERC on March 28, 2014.
USFWS-DLA -01	USFWS	2	The Service recommends that the Districts coordinate with the Service regarding their responsibilities under the BGEPA and MBTA for the bald eagle to address potential Project effects.	The Districts welcome input from the USFWS regarding their responsibilities under the BGEPA and MBTA. A Terrestrial Resources Management Plan, which includes measures for managing bald eagles, is provided with the AFLA.
USFWS-DLA -02	USFWS	15	IFIM - June 2012 Final Report for the Lower Tuolumne River Instream Flow Studies: Pulse Flow Study Report and the April 2013 Final Report for the Lower Tuolumne River Instream Flow Study . ...The results of the two final reports, along with the upcoming results of the floodplain hydraulic assessment study, should be integrated to evaluate the overall habitat requirements for anadromous salmonids in the Tuolumne River.	All studies have been completed and have been integrated into the AFLA.
USFWS-DLA -03	USFWS	15	Based on our review of the two final reports, we would propose the following flow requirements (justification for the Service's flow recommendations is contained in Enclosures 6 and 7) to support anadromous salmonids in the Tuolumne River:	The Districts modeled the USFWS's flow proposal, the results of which are appended to Exhibit E of the AFLA. A summary comparison of all modeled flow scenarios is provided in Section 5 of Exhibit E.

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USFWS-DLA -04	USFWS	15	Base flows to improve the quantity, suitability, and consistency (including thermal conditions) of the aquatic habitat for all stages of steelhead: Year-round minimum flow of 275 cfs, during all water year (WY) types. In addition, release the greater of the year-round minimum flow (275 cfs) or the flow required to maintain stream water temperatures of 18° C or less from the LaGrange Powerhouse (RM 52) downstream to Robert's Ferry Bridge (RM 40) or 60% of unimpaired flows whichever is greater.	The Districts have conducted an extensive array of studies, both before and as part of the FERC relicensing of the Don Pedro Hydroelectric Project. Based on these studies, the Districts have proposed a suite of flow-related and non-flow-related measures aimed at enhancing conditions in the lower Tuolumne River for aquatic biota, fall-run Chinook and *O. mykiss* in particular, relative to existing baseline conditions (see Exhibit E, Section 3.5.4 for an explanation of the proposed flows and an analysis of the physical (hydraulic) and temperature benefits associated with them). The proposal involves providing base flows between 175 and 350 cfs, depending on season and water-year type, from RM 52 – 25.7. The proposal also includes spring pulse flows to facilitate fall-run Chinook outmigration. Also, please see Appendix A to this response document.
USFWS-DLA -05	USFWS	15	Fall flows to improve the migration habitat, including thermal conditions, for adult fall-run Chinook salmon and steelhead, and thereby promote successful immigration: During all WY types, from September 1 through October 31, release the greater of the 275 cfs minimum base flow, or the flow required to maintain stream water temperatures of 18° C or less from the LaGrange Powerhouse (RM 52) to the San Joaquin River confluence (RM 0). In addition, release a flow of 1,200 cfs for 10 days in mid-October, with the timing of release coordinated with releases from the Merced and Stanislaus Rivers, and the San Joaquin Restoration Program.	For the period identified by the USFWS (Sep 1 – Oct 31), the Districts flow proposal includes the following baseflows for the reach between RM 52 and RM 25.7: (1) 275 – 350 during Wet, Above Normal and Below Normal water years, (2) 225 – 300 cfs in Dry years, and (3) 200 – 300 cfs in Critical years. Lower flows are at times proposed for the reach from RM 25.7 – RM 0 (see Section 3.5.4 for analysis of the flows' habitat benefits). Although the Districts' proposal includes springtime pulse flows to facilitate fall-run Chinook outmigration, no pulse flows are proposed for the fall. Also, please see Appendix A to this response document.
USFWS-DLA -06	USFWS	15	Spawning flows to improve the habitat (including thermal conditions) for spawning, egg incubation, and alevin stages of fall-run Chinook salmon and steelhead: During all WY types, from October 15 through February 15, release the greater of the 275 cfs minimum base flow, the 1,200 cfs mid-October immigration flow, or the flow requires to maintain stream water temperatures of 13 •C or less from the LaGrange Powerhouse (RM 52) to Robert's Ferry Bridge (RM40).	For the period identified by the USFWS (Oct 15 – Feb 15), the Districts flow proposal includes the following baseflows for the reach between RM 52 and RM 0: (1) 225 – 275 during Wet, Above Normal and Below Normal water years, (2) 200 – 225 cfs in Dry years, and (3) 175 – 200 cfs in Critical years. Lower flows are proposed for the reach from RM 25.7 – RM 0 (see Section 3.5.4 for analysis of the flows' habitat benefits). The USFWS requests "or the flow required to maintain stream water temperatures of 13°C or less from the LaGrange Powerhouse (RM 52) to Robert's Ferry Bridge (RM 40)" for October 15 – February 15. However, under existing conditions average 7DADM temperatures at RM 40 are already at or below 13 °C from mid-November through mid-February (see Section 3.4 of Exhibit E), and on October 15, water temperatures in the river without the dams in place (Jayasundara et al. 2017) would be about 18°C. At RM 51.5, without-dams water temperatures would be significantly warmer than existing water temperatures during nearly all of the last two weeks of October. Also, please see Appendix A to this response document.
USFWS-DLA -07	USFWS	15	Winter flow releases to improve the migration habitat for adult steelhead, and to inundate floodplain habitats to promote the survival, growth, and development (rearing) of juvenile fall-run Chinook salmon and steelhead: Release 3,000 cfs between February 1 and March 15, with the frequency and duration of the releases defined by WY type as follows: Critical and Dry WYs: A single, 2-day release in late February. Below Normal and Above Normal WYs: A single, 14-day continuous release, or two continuous 7-day releases, one in February and one in March; Wet WY: Releases in any multiples of continuous 7-day releases adding to 21 days.	To facilitate fall-run Chinook outmigration, the Districts are proposing to allocate the following volumes of water for pulse flow releases from April 16 – May 31: 150,000 ac-ft (AN and W water years), 100,000 ac-ft (BN water years), 75,000 ac-ft (D water years), 35,000 ac-ft (initial C water year), and 11,000 ac-ft (sequential C water years). Displacing Chinook fry and small *O. mykiss* downstream during the period recommended by USFWS could expose them to an increased rate of predation. It is also unclear to what degree centrarchids that prey on juvenile salmonids could themselves access inundated floodplain areas. The pulse flows proposed by the Districts would facilitate downstream movement when fish are larger and their survival rates are higher.

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				The Tuolumne River Chinook Salmon Otolith Study (TID/MID 2016) indicated that the vast majority of adult Chinook returning to the Tuolumne River had emigrated as parr or smolts, corroborating the notion that there is a survival advantage for fish emigrating at larger sizes. For more detail regarding the value of floodplain inundation in the lower Tuolumne River, see the Districts' response to CDFW-DLA-26. Finally, the USFWS states that its proposed flows would benefit steelhead. However, the causes for the expression of anadromous or resident life-histories in *O. mykiss* occupying the lower Tuolumne River is poorly understood (TID/MID 2017d), and there is no empirical evidence of a self-sustaining "run" or population of steelhead in the lower river (TID/MID 2013d). Zimmerman et al. (2008) examined the otolith chemistry of 147 *O. mykiss* from the lower Tuolumne River. Results indicated that only one of these fish was a steelhead (had displayed anadromy) and eight were spawned by a steelhead (i.e., of anadromous maternal origin).
USFWS-DLA -08	USFWS	15	Spring flow releases to improve the migration habitat for adult steelhead, inundate floodplain habitats, and improve thermal conditions to promote rearing and downstream migrations of juvenile fall-run Chinook salmon and steelhead smolts: Critical and Dry WYs: From March 20 through April 20, release the greater of the 275 cfs minimum base flow or the flow required to maintain stream water temperatures of 15° C or less from the LaGrange Powerhouse (RM 52) to the San Joaquin River confluence (RM 0). Below Normal WY: From March 20 through April 30, release the greater of the 275 cfs minimum base flow or the flow required to maintain stream water temperatures of 15° C or less from the LaGrange Powerhouse (RM 52) to the San Joaquin River confluence (RM 0). Above Normal and Wet WYs: From March 20 through May 15, release the greater of the 275 cfs minimum base flow or the flow required to maintain stream water temperatures of 15° C or less from the LaGrange Powerhouse (RM 52) to the San Joaquin River confluence (RM 0).	The USFWS requests flows aimed at maintaining lower river water temperatures below 15°C from March 20 to as late as May 15. Under existing conditions, average 7DADM water temperatures from March through earl/mid-May are between 12 and 15°C as far downstream as RM 34. With regard to flows for inundating floodplains see the Districts' response to USFWS DLA-07 and to CDFW-DLA-26.
USFWS-DLA -09	USFWS	15	The Study fails to meet the stated purpose to determine the instream flows necessary to maximize fall-run Chinook salmon and *O. mykiss* production and survival throughout their various life stages. Smoltification and the survival of juvenile migrants are highly dependent on water temperatures in the lower Tuolumne River (Mesick 2012) and fall pulse flows are needed to minimize straying by migrating adults (Marston et al. 2012). Neither of these life history stages was considered in the Study. Flows needed to meet USEP A (2003) water temperature targets for smoltification and outmigrant survival in the river below Modesto as well as adult attraction (Marston et al. 2012) should be assessed.	The USFWS repeats their previous comment on the draft instream flow report from 2013. Pursuant to the requirements of the FERC Order and FERC-approved study plan, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #1) of the Final Report, dated April 26, 2013. An effective habitat analysis for *O. mykiss* was completed, per the FERC-approved study plan, and filed by August 2014. The Instream Flow Study is one of several study investigations that are relevant to determining instream flows for salmon and *O. mykiss*. The Districts have proposed a suite of flow- and non-flow-related measures that address all life stages of fall-run Chinook and *O. mykiss* fry and juveniles in particular. As noted in the response to USFWS comment DLA-07, *O. mykiss* in the lower Tuolumne River express almost exclusively a resident life-history.
USFWS-DLA -10	USFWS	17	The one-dimension (1-D) methodology is not robust and can lead to errors in interpretation. Additionally, the Service is concerned that the one-flow velocity calibration also leads to errors in interpretation. For example, the *O. mykiss* Adult Depth and Velocity Criteria listed in	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were

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			Appendix E are lower than our understanding of optimal depth and velocities in rivers of similar size (e.g., Yuba River) (USFWS 2010a, USFWS 2010b, USFWS 2010c); the *O. mykiss* spawning velocity and depth curves described in Appendix E are lower than the Service's understanding of habitat use collected (USFWSa); and the HSC developed for the *O. mykiss* fry and juveniles are much lower than what is acceptable to the Service. A more accurate methodology would be provided by the HSC developed by the Service for the Yuba River (USFWS 2010a and 2010b) or an equivalent source.	addressed in Appendix K (reply #6) of the Final Report, dated April 26, 2013. Habitat suitability criteria were developed collaboratively (and generally with consensus) through a series of workshops with USFWS and other agencies and NGOs, per the FERC-approved study plan. The hydraulic model was similarly reviewed and calibrated, and its use endorsed by the involved resource agencies.
USFWS-DLA -11	USFWS	Sec. 2.4 Calibration Flows pg. 8	The range of flows used in this study is inadequate, because it does not consider a wide range of flows similar to the pattern of the natural hydrograph. The Service recommends a higher range be used (i.e., 300 cfs, 400 cfs, 600 cfs, 1,000 cfs, 1,500 cfs, 2,000 cfs, and 5,0'00 cfs). This range would give a better idea of how fish respond to higher flows similar to the magnitude of the natural hydrograph.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #7) of the Final Report, dated April 26, 2013. All flow ranges for the study complied with the FERC-approved study plan and were established with consensus of other resource agencies.
USFWS-DLA -12	USFWS	Sec. 2.5 Hydraulic Data Collection pg. 9	However, the results of the IFIM and Pulse Flow studies should be integrated to include consideration of inundation of the floodplain to allow for maximum production and survival of salmonids.	The instream flow studies were separated into an in-channel 1-D PHABSIM study, which evaluated flow from 50-1,200 cfs, and a 2-D PHABSIM pulse flow study, which evaluated spring pulse flows between 1,000 and 5,000 cfs and fall pulse flows of up to 1,500 cfs, as specified in the FERC Order. The two studies address somewhat different questions, and the results are included in the AFLA in Section 3.5.4. The Districts also conducted a lower Tuolumne River Floodplain Hydraulic Assessment (TID/MID 2017b) to supplement the 2-D modeling described above and the USFWS (2008) assessment of floodplain inundation (i.e., Flow-Overbank Inundation Relationship for Potential Fall-Run Chinook Salmon and Steelhead/Rainbow Trout Juvenile Outmigration Habitat in the Tuolumne River). The goal of the floodplain hydraulic assessment was to develop a hydraulic model to simulate the interaction between flow in the main channel and floodplain habitat availability from La Grange Diversion Dam (RM 52.2) to the confluence with the San Joaquin River.
USFWS-DLA -13	USFWS	Sec. 2.6 Substrate and Cover Data pg. 10 and 11	The use of the modified Wentworth Scale for substrate is acceptable, but the cover categories utilized are not acceptable.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #9) of the Final Report, dated April 26, 2013.
USFWS-DLA -14	USFWS	Table 9 Hydraulic Calibration Results pg.13	Table 9 should give Beta values for Log-Log transects, so that it can be evaluated whether they fall within the FWS standard range of 2.0 to 4.5. Beta values exceeding 4.5 typically indicate that a downstream hydraulic control was missed during data collection. In addition, velocity adjustment factor (V AF) values should be given for the full range of simulation flows, so that it can be evaluated whether the VAF values meet the FWS standard of the range of 0.2 to 5.0, and the standard of V AFs increasing with increasing flow.	The hydraulic calibrations were reviewed during a Hydraulic Review Workshop with the agencies on November 28, 2012. Notes from this meeting were included in the Final Instream Flow Study Report, dated April 26, 2013, in Appendix C. The log-log Beta ranged between 1.7 and 3.8. The VAFs were generally within a range of 0.2–5.0 over the range of simulation flows. Participants in the meeting agreed that, with stated modifications, the hydraulic model was be suitably calibrated for use in the analysis, and no further evaluation of its acceptability was necessary.
USFWS-DLA -15	USFWS	Sec. 2.8 Habitat Time Series pg.	It is not appropriate to limit the upper range to 1,200 cfs because it takes away the ability to measure and analyze the contribution of the floodplain to salmonid and splittail production and breeding. The range should be extended up to at least 2,000 cfs, to allow for an	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were

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		14	analysis of the amount of habitat that might be gained at these higher flows. In this regard, we note that the existing data are sufficient to simulate up to 1,690 cfs (2.5 times 677 cfs, the lowest of the high calibration flows). All four of the proposed methods are unreliable, indicating that either a habitat time series should not be done, or that a habitat time series cannot be done with the available data.	addressed in Appendix K (reply #10) of the Final Report, dated April 26, 2013. Floodplain analyses were addressed by the Lower Tuolumne River Floodplain Hydraulic Assessment (TID/MID 2017b), which was undertaken to develop a hydraulic model to simulate the interaction between flow in the main channel and the floodplain from La Grange Diversion Dam (RM 52.2) to the confluence with the San Joaquin River to address the following objectives: (1) floodplain inundation extents for flows between 1,000 and 3,000 cfs at 250 cfs intervals and between 3,000 cfs and 9,000 cfs at 500 cfs intervals, (2) estimate the area, frequency, and duration of inundation over a range of flows for base case (WY 1971–2012) hydrology, and (3) apply modeled water depths and velocities to quantify the amount of suitable rearing habitat area for juvenile fall-run Chinook salmon and *O. mykiss* at the designated flow increments. In addition, as a supplement to the Districts' PHABSIM study (Stillwater Sciences 2013), WUA versus flow analyses for Sacramento splittail, using existing HSC, were conducted in 2013-2014 (Stillwater Sciences 2014). Results of the splittail analysis are shown in Section 3.5.4 of Exhibit E of this AFLA.
USFWS-DLA -16	USFWS	Sec. 2.9 Effective Habitat pg. 15	A standard approach to calculating weighted useable area (WUA) should be used in conjunction with the "effective" WUA analysis utilized in this study. This is because standard methodologies are well Understood and would provide validation (or rejection) of the effective WUA analysis.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #11) of the Final Report, dated April 26, 2013. Standard approaches were applied to calculating WUA.
USFWS-DLA -17	USFWS	Sec. 2.9 Effective Habitat pg. 15	In order to determine in stream flows necessary to maximize Chinook salmon and *O. mykiss* production and survival throughout their various life stages, the final study must include an assessment of the flows needed to provide temperatures that support these species. The final study should include an assessment of the flows needed to meet the EPA temperature criteria (2003) for each life stage of Chinook salmon and *O. mykiss*.	The USFWS repeats their previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #12) of the Final Report, dated April 26, 2013. Temperature criteria are included in the salmon and *O. mykiss* models, and effective habitat analysis for *O. mykiss* was completed (Stillwater Sciences 2017).
USFWS-DLA -18	USFWS	Sec. 2.10 Habitat Suitability Criteria pg. 15	The Service does not support the use of the site-specific curves developed as ordered by the FERC. In its May 12, 2010, Order, the FERC adopted its staff recommendations that "[i]n order to obtain and utilize the most up-to-date information and validate existing data, the Districts should' conduct the field work necessary to develop specific HSC curves for the project." (Ordering Paragraph B, adopting staff recommendations in Paragraph 37). The Districts have not followed the Service's recommendation from our November 5, 2009 Instream Flow and Water Temperature Study Plans letter commenting on the draft study plan. The Service repeats its recommendation that the Districts use the steelhead curves developed for the Lower American River or from the Lower Yuba River (USFWS 2003, USFWS 2010a).	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #13) of the Final Report, dated April 26, 2013. Site-specific curves are widely accepted as preferable criteria to use in such studies, and the appropriateness of the criteria for the Tuolumne River was reviewed in a series of collaborative workshops with agency and NGO participation.
USFWS-DLA -19	USFWS	Sec. 2.10.1 Existing Habitat Suitability	The Service does not support the way the HSC were developed as presented in Table 12. While the spawning criteria for Chinook salmon are acceptable, cover should be included for all the additional categories, along with adjacent velocities for the juvenile and adult Chinook and *O. mykiss*.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #15) of the Final Report, dated April 26, 2013.

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		Criteria pg. 15		
USFWS-DLA -20	USFWS	Sec. 2.10.1 Site-specific Habitat Suitability Criteria pg. 16	The approach for collecting HSC for the Chinook salmon and *O. mykiss* adult and juvenile life stages lacks certain aspects that are important. For example, data should have been collected at a different set and range of flows. While we agree with using 2,000 cfs as the maximum flow, the low and mid- range flows should have been higher. The Service recommends a minimum flow of at least 250 cfs, one mid-flow of at least 800 cfs, an additional mid-flow, and a 2,000 cfs maximum flow.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #16) of the Final Report, dated April 26, 2013.
USFWS-DLA -21	USFWS	Sec. 2.10.2.1 Habitat suitability Criteria Site Selection pg. 17	However, areas that have the potential to be inundated must be included in this study in order to develop flows that will maximize fall-run Chinook salmon and *O. mykiss* production and survival throughout their various life stages. The study excluded any dry areas and areas of potential inundation. It is essential that higher flows are included in the study, because the floodplain and habitat subject to potential inundation are very likely to improve and expand the amount of habitat, cover and food that would result in a healthier and more robust Chinook salmon and *O. mykiss* population.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #17) of the Final Report, dated April 26, 2013.
USFWS-DLA -22	USFWS	Sec. 2.10.2.2 Direct observation and Field measurements pg. 23	However, as noted previously, collection of cover data should have been completed. Without cover data, any HSC developed will not be satisfactory.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #18) of the Final Report, dated April 26, 2013.
USFWS-DLA -23	USFWS	Sec. 2.10.2.3 Data Analysis pg. 23	The Service agrees with the size ranges assigned to the various life stages, but the categories used for cover are not appropriate (see discussion under Section 3.1.2).	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #19) of the Final Report, dated April 26, 2013.
USFWS-DLA -24	USFWS	Sec. 3.1.2 Site-specific Habitat Suitability Criteria Development and Validation pg. 26	However, additional flows should have been included in the HSC data collection process. As mentioned previously, the Service is in agreement with the 2,000 cfs maximum flow. However, for the low and mid-range flows, we recommend that higher and additional flows be used, with the low flow being at least 250 cfs.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #21) of the Final Report, dated April 26, 2013.
USFWS-DLA -25	USFWS	Sec. 3.1.2 Site-specific Habitat Suitability	The Service has recommended that cover be used to validate HSC for Chinook salmon and *O. mykiss* fry and juveniles. This is because cover is crucial to the accurate development of juvenile HSC. A full range of meaningful cover variables should be included in the validation process.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #22) of the Final Report, dated April 26, 2013.

Comment Number	Organization	Page (of letter)	Comment (Quote or Paraphrase)	Districts' Response
		Criteria Development and Validation pg. 26		
USFWS-DLA -26	USFWS	Sec. 3.1.2 Site-specific Habitat Suitability Criteria Development and Validation pg. 26	The Service does not support the decision to use the depth and mean column velocity curves that were selected, because cover was not included in the analysis, floodplain use was not measured, use at higher flows was not measured; and they appear to be biased toward lower flows. The "Tuol Mod" curve for the Chinook fry depth and the "Tuol Env" curve for the Chinook fry show that higher flows are most likely desirable for optimal habitat.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #23) of the Final Report, dated April 26, 2013.
USFWS-DLA -27	USFWS	Figure 6 pg. 32	The Service does not support the use of the cover categories shown in Figure 6. We recommend use of the cover categories utilized by the Service (USFWS 2005).	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #24) of the Final Report, dated April 26, 2013.
USFWS-DLA -28	USFWS	Figures 7-9 and 10, 12-17, 19 Pages 33-35, 37-41	The HSC do not reflect the most recent understanding of habitat use by Chinook salmon and *O. mykiss*.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #25) of the Final Report, dated April 26, 2013.
USFWS-DLA -29	USFWS	Figures 11 and 18, pages 36 and 42	The Service substrate data presented in these figures are appropriate, but the results presented in Figure 18 are not consistent with our understanding of Chinook salmon spawning preference. The Service has found that the size classes of 1-3 inch and 2-4 inch size substrate are optimal for Chinook salmon spawning.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #27) of the Final Report, dated April 26, 2013.
USFWS-DLA -30	USFWS	Sec. 3.1.3 Adjacent Velocity pg. 45	We recommend that Service data be included in the process.	Comment noted. The USFWS has been an active participant in the IFIM Study Plan comment and review process in 2009, as well as numerous workshops in the conduct of the IFIM Study beginning in 2010, and Service data were included for discussion during the workshops.
USFWS-DLA -31	USFWS	Sec. 3.2 Weighted Usable Area pg.45	The Service does not support the WUA results from the PHABSIM analysis for any life stage for Chinook salmon and *O. mykiss*. It is the Service's opinion that there is a strong bias towards lower flows in each case. The collection of criteria data at very low flows and the lack of data collected at higher flows has resulted in the WUA values that were selected. The Districts should review and utilize the WUA values for the Chinook adults and juveniles and the *O. mykiss* juveniles as presented in the Service reports	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #29) of the Final Report, dated April 26, 2013. Data were collected over a wide range of flows (including high flows), as documented in the reports.
USFWS-DLA -32	USFWS	Sec. 5 References pages 60-62	The August 19, 2008, Flow-Overbank Inundation Relationship for Potential Fall-Run Chinook Salmon and Steelhead/Rainbow Trout Juvenile Outmigration Habitat in the Tuolumne River (USFWS 2008) was not included as a reference, but it is an important and relevant reference that should be utilized. The majority of the instream flow references are out-of-date and do not represent the state of the science.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #30) of the Final Report, dated April 26, 2013.

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			The Service recommends utilizing recent literature on instream flow methodology, such as those in the FWS Standards.	
USFWS-DLA -33	USFWS	Appendix B-1	The habitat types to be sampled are appropriate; however, more units per habitat type should be sampled and doubling the number of units is appropriate. The proposed habitat units appear acceptable; however, the backup units should also be included and additional transects as recommended by the Service should be added.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #33) of the Final Report, dated April 26, 2013. The number, type, and location of all sampled habitat units were agreed to by the agencies, including several USFWS representatives at the time.
USFWS-DLA -34	USFWS	Appendix C - Study Background-Field Efforts	It was inappropriate to conduct the HSC surveys at such low flow (i.e., 100 cfs, 350 cfs) and then analyze the HSC data at the high flow of 2,000 cfs. It would have been more appropriate to collect the HSC data at 300 cfs, 400 cfs, 600 cfs, 1,000 cfs, 1,500 cfs, 2,000 cfs, and 5,000 cfs, which would be consistent with the July 16, 2009, Commission Order while allowing for interpretation of floodplain effects.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #35) of the Final Report, dated April 26, 2013. Data were collected over a wide range of flows (including high flows), as documented in the reports.
USFWS-DLA -35	USFWS	Appendix C - Methods, Substrate and Cover Data	The substrate data that were used in the PHABSIM model are appropriate; however, the Service does not agree with the cover type categories used in the PHABSIM part of this study.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #36) of the Final Report, dated April 26, 2013.
USFWS-DLA -36	USFWS	Appendix C - PHABSIM Model Calibration	The range of flows used in the study was inappropriate, considering the potential the river has for higher flows. The Service's flow recommendations for instream flow monitoring are 300 cfs, 400 cfs, 600 cfs, 1,000 cfs, 1,500 cfs, 2,000 cfs, and 5,000 cfs.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #37) of the Final Report, dated April 26, 2013. All of the calibration flows were agreed to by agency representatives, and were part of the FERC-approved study plan.
USFWS-DLA -37	USFWS	Appendix D - Habitat Suitability Criteria	Serious consideration should be given to reviewing and utilizing the HSC for 0. mykiss and fall-run Chinook salmon developed by the Service	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #38) of the Final Report, dated April 26, 2013. Service HSC were considered by the agency and NGO group during the HSC workshops, as documented in the reports.
USFWS-DLA -38	USFWS	Appendix D - Existing Habitat Suitability Criteria Data	The cover data collected as part of this study should be used without collapsing the categories.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #39) of the Final Report, dated April 26, 2013.
USFWS-DLA -39	USFWS	Appendix D - Existing Habitat Suitability	With regard to the depth and velocity criteria for fall-run Chinook salmon, these criteria are too low. In order to develop adequate HSC data, a full range of flows, substrate characteristics, and cover must be used. The output for depth criteria does not appear to be consistent with our current understanding of habitat use by Chinook salmon.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #40) of the Final Report, dated April 26, 2013.

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		Criteria Data		
USFWS-DLA -40	USFWS	Appendix D - Chinook Salmon Juvenile Depth and Velocity Criteria	The Service does not support the use of the criteria developed for the juvenile Chinook salmon. The depth and velocity criteria do not represent the full range of floodplain inundation flows that would support juvenile salmonid production and survival, and appear biased toward lower flows. Cover is the primary component in developing accurate HSC values for juvenile fall-run Chinook. Although cover type and amount are important considerations for juvenile salmonid survival, they were not given adequate consideration in the HSC. The combination of depth, velocity (including adjacent velocity values) and cover are crucial to developing accurate HSC for juvenile Chinook salmon. As stated previously, the reports for the studies conducted by the Service should be reviewed and the existing Service-developed criteria should be utilized.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #43) of the Final Report, dated April 26, 2013. Floodplain analyses were addressed by the Lower Tuolumne River Floodplain Hydraulic Assessment (TID/MID 2017b), which was undertaken to develop a hydraulic model to simulate the interaction between flow in the main channel and the floodplain from La Grange Diversion Dam (RM 52.2) to the confluence with the San Joaquin River to address the following objectives: (1) determine floodplain inundation extents for flows between 1,000 and 3,000 cfs at 250 cfs intervals and between 3,000 cfs and 9,000 cfs at 500 cfs intervals, (2) estimate the area, frequency, and duration of inundation over a range of flows for base case (WY 1971–2012) hydrology, and (3) apply modeled water depths and velocities to quantify the amount of suitable rearing habitat area for juvenile fall-run Chinook salmon and *O. mykiss* at the designated flow increments.
USFWS-DLA -41	USFWS	Appendix D - Chinook Salmon Fry	Existing criteria developed by the Service should be reviewed and utilized.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #44) of the Final Report, dated April 26, 2013.
USFWS-DLA -42	USFWS	Appendix E - *O. mykiss* Adults	As described in previous comments, the Districts should utilize the HSC for *O. mykiss* that were developed by the Service in studies conducted on the Lower Yuba River (USFWS 2010a).	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #45) of the Final Report, dated April 26, 2013.
USFWS-DLA -43	USFWS	Appendix E - *O. mykiss* Adults	Although the Service supports the use of a variety of curves from various studies; in this case, the HSC for *O. mykiss* (steelhead) developed by the Service should be utilized. The adult *O. mykiss* criteria that are presented in the Final Report appear to be biased toward lower velocities and depths. Higher flows need to be considered and analyzed, because higher flows may allow for higher amounts of food that can be utilized by the adult *O. mykiss*. In addition, the HSC should include cover, which is crucial for the adult fish.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #46) of the Final Report, dated April 26, 2013.
USFWS-DLA -44	USFWS	Appendix E - *O. mykiss* Spawning	The data appear to show a bias toward lower flows, depths, and velocities, which is not consistent with the results in other studies conducted by the Service (USFWS 2010a).	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #47) of the Final Report, dated April 26, 2013.
USFWS-DLA -45	USFWS	Appendix E - *O. mykiss* Fry	The Service's HSC should be utilized in this study, as the Service's criteria data for *O. mykiss* fry have been collected in a number of robust studies in rivers and creeks in the Central Valley	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #48) of the Final Report, dated April 26, 2013.

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USFWS-DLA -46	USFWS	Appendix E - *O. mykiss* Juveniles	A proper and accurate HSC for *O. mykiss* juveniles should utilize depth, velocity (including adjacent velocity) and cover.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #49) of the Final Report, dated April 26, 2013.
USFWS-DLA -47	USFWS	Appendix F- Chinook Salmon Fry	However, it would be best to consider the primary use of the criteria developed by the Service.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #50) of the Final Report, dated April 26, 2013.
USFWS-DLA -48	USFWS	Appendix F - *O. mykiss* Fry	The Service is not supportive of the criteria. The depth and velocity data are severely biased toward lower flows and velocities.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #51) of the Final Report, dated April 26, 2013.
USFWS-DLA -49	USFWS	Appendix F - *O. mykiss* Adults	The velocity and depth criteria that are presented in this report are inadequate as they do not consider higher flows. Review of the reports published by the Service, NMFS, California Department of Fish and Wildlife and other agencies and stakeholders is recommended.	A variety of sources provided by the agencies and other stakeholders were considered in development of the HSC, including data collected at high flows. Additionally, high flow site-specific data from the Tuolumne River was included. Concurrence with these criteria among most of the agencies and stakeholders was achieved during the HSC workshops.
USFWS-DLA -50	USFWS	Sec. 2.1.3 Topographic and Bathymetry Surveys at Study Sites pg. 5	Aerial LIDAR data, which has a typical vertical accuracy of plus or minus 0.5 feet, is not sufficiently accurate for purposes of simulating microhabitat, where topographic data with a vertical accuracy of 0.1 feet is required, per FWS Standards.	As described in the approved study plan (Stillwater Sciences 2009) the objectives of the pulse flow study are to characterize microhabitat conditions of total habitat usability and segmentation for the Lower Tuolumne River during flood conditions by developing habitat vs. flow relationships. As such, the use of the existing 2005 LiDAR and bathymetry was appropriate.
USFWS-DLA -51	USFWS	Sec. 2.2.1 Model Development pg. 7	The polygons used to assign roughness should also have accounted for roughness due to vegetation.	The Districts acknowledge that detailed development of all parameters used to build and run the 2D hydraulic and habitat models can improve model reliability, but assert that certain data limitations and necessary assumptions exist and are acceptable when conducting complex hydraulic and habitat assessment to the level of precision needed for resource management decision-making.
USFWS-DLA -52	USFWS	Sec. 2.2.2 Model Calibration and Development pg. 7	In cases where there was an eddy of non-uniform flow at the downstream boundary, as mentioned in the last sentence on this page, an artificial downstream extension should have been added to the model; this would have resulted in better predictions of velocities at the original downstream boundary location.	The Districts acknowledge that grid extension is an accepted practice to create suitable hydraulic conditions at the 2D model downstream boundary. Grid extension was tested during the pulse flow study at the Riffle 5A study site for 3,000 cfs and 5,000 cfs predictions where the downstream eddy condition occurred. The testing indicated that employing a grid extension of 5 channel widths required an increase in the water surface slope that negatively impacted the predicted vs. observed water surface elevation relationship at the downstream boundary and led to poor total water mass-balance. Conversely, forcing the downstream velocity vector conserved mass-balance and resulted in a more reliable predicted vs. observed water surface elevation relationship.
USFWS-DLA -53	USFWS	Sec. 2.2.3 Fish Habitat Availability pg. 8	Additional simulation flows, such as from 1,000 to 5,000 cfs by 250 cfs increments, are needed to adequately quantify flow-habitat relationships. As described in our comments on the IFIM Final Report, cover and adjacent velocity should also be used to simulate habitat for anadromous salmonid fry and juveniles.	Although cover and adjacent velocity were not listed as habitat criteria to be used in the Pulse Flow Study portion of the approved study plan for overbank flows in excess of 1,200 cfs, these analyses have been included in the 1-D IFIM study (Stillwater Sciences 2013). Floodplain analyses were addressed by the Lower Tuolumne River Floodplain Hydraulic Assessment (TID/MID 2017b),

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				which was undertaken to develop a hydraulic model to simulate the interaction between flow in the main channel and the floodplain from La Grange Diversion Dam (RM 52.2) to the confluence with the San Joaquin River to address the following objectives: (1) determine floodplain inundation extents for flows between 1,000 and 3,000 cfs at 250 cfs intervals and between 3,000 cfs and 9,000 cfs at 500 cfs intervals, (2) estimate the area, frequency, and duration of inundation over a range of flows for base case (WY 1971–2012) hydrology, and (3) apply modeled water depths and velocities to quantify the amount of suitable rearing habitat area for juvenile fall-run Chinook salmon and *O. mykiss* at the designated flow increments.
USFWS-DLA -54	USFWS	Sec. 2.2.3.1 Habitat Suitability Criteria for Juvenile Salmonids pg. 8	As described in our comments on the IFIM Final Report, cover and adjacent velocity criteria, and the depth and velocity criteria from USFWS 2010b, should also be used to simulate habitat for anadromous salmonid fry and juveniles.	Cover and adjacent velocity were not listed as habitat criteria to be used in the approved study plan.
USFWS-DLA -55	USFWS	Sec. 2.2.3.2 Habitat Suitability Criteria for Predator Fish Species pg. 9	The assumption that all velocities are suitable for striped bass appears unreasonable; a Delphi analysis should be used to develop velocity criteria for this species.	Comment noted. However, a Delphi analysis (development of Category I consensus curves) is not necessary since existing HSC for striped bass are available. The Districts applied the HSC included in the 1-D PHABSIM study (Pacific lamprey, Sacramento splittail, and non-native predatory fish habitat assessment: Final 1-D PHABSIM habitat suitability criteria) as part of the ongoing instream flow studies (WUA-flow relationships for splittail and lamprey are discussed in Section 3.5.4 of Exhibit E). These HSC were circulated as draft on October 30, 2013, and the revised HSC were included in Updated Study Report, filed on January 6, 2014. USFWS provided comments on the striped bass HSC on November 21, 2013, and in the Services supplemental USR comments, filed on March 27, 2014.
USFWS-DLA -56	USFWS	Table 2-5 pg. 9	Was it assumed that the suitability stayed at 1.0 for all depths greater than those shown in the table?	Habitat suitability for predator species was assumed to be 1.0 at depths greater than those listed in Table 2-5 of the Pulse Flow Study report.
USFWS-DLA -57	USFWS	Sec. 3.1 2D Hydraulic Model Calibration pg. 11	LIDAR data that was actually water surface elevations of standing water at the time of data collection should have been removed from the topographic data set, and topographic data should be collected for these areas using RTK GPS or total station. Polygons of substrate and cover should be mapped in to get more accurate velocity simulations.	The Districts acknowledge that detailed development of all parameters used to build and run the 2D hydraulic and habitat models can improve model reliability, but assert that certain limitations and assumptions exist and are acceptable when conducting complex hydraulic and habitat assessment to the level of precision needed for resource management decision-making. The approved study plan indicates the existing 2005 topographic surface would be utilized for the pulse flow study with limited elevation spot checks for accuracy. Based on the limited elevation spot checks the 2005 topographic surface was found to be acceptable for development of microhabitat flow verses total floodplain habitat relationships.
USFWS-DLA -58	USFWS	Sec. 3.2 Fish Habitat Suitability Analyses pg. 12	The report overstates the adverse predation risk that Sacramento pikeminnow pose to anadromous salmonids. Pikeminnow predation is only a concern around artificial structures (Brown and Moyle 1981). If the goal of the analysis is to evaluate the degree to which predators reduce available microhabitat for anadromous salmonid juveniles, this should be evaluated for both in-channel areas, as part of the IFIM	Comment noted. Although the report provides usable habitat area estimates for several predatory fish species known to inhabit the Tuolumne River, the Predation Study (TID/MID 2013c) provides a more complete assessment of the relative predation rates observed in 2012.

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			study, and floodplain areas, in the Pulse Flow study, and quantitative estimates of the remaining juvenile habitat weighted useable area, as a function of flow, should be presented for the entire range of Tuolumne River flows in the two studi.es (50 to 5,000 cfs).	
USFWS-DLA -59	USFWS	Sec. 4.1.1 Comparisons with USFWS (2008) GIS Analysis pg. 17	The pulse flow study does not present any evidence to support the assertion that over-bank habitats along the Tuolumne River do not provide the same relative benefits as other river floodplain habitats studied in lowland portions of the Central Valley.	Analysis of publicly available digital elevation models from USGS indicates that the slope of the Tuolumne River floodplain ranges from near 0.1 percent from near La Grange Dam downstream to RM 30, 0.03 percent from RM 30 downstream to RM 10, and 0.01 percent between RM10 and the San Joaquin River confluence. By comparison, the valley slope along the Yolo Bypass referenced in floodplain studies such as Summer et al. (2001) is on the order of 0.01 percent. Because upwards of 40 miles of the Tuolumne River is at gradients two to ten times higher than the Yolo Bypass, water residence times and water temperatures on the Tuolumne River do not differ to the degree that has been observed in published floodplain rearing studies. Pulse Flow Study (Stillwater Sciences 2012) observations suggest that low water temperatures occur within both in-channel and overbank habitats during flood control releases such as in 2011. For this reason, as well as the relatively high quality food resources for salmonid rearing in the Tuolumne River summarized in the Synthesis Study (TID/MID 2013d), the Districts disagree with the benefits attributed to floodplain rearing along the Tuolumne River that has been inferred from studies of lowland flood bypasses. Floodplain analyses were addressed by the Lower Tuolumne River Floodplain Hydraulic Assessment (TID/MID 2017b), which was undertaken to develop a hydraulic model to simulate the interaction between flow in the main channel and the floodplain from La Grange Diversion Dam (RM 52.2) to the confluence with the San Joaquin River to address the following objectives: (1) determine floodplain inundation extents for flows between 1,000 and 3,000 cfs at 250 cfs intervals and between 3,000 cfs and 9,000 cfs at 500 cfs intervals, (2) estimate the area, frequency, and duration of inundation over a range of flows for base case (WY 1971–2012) hydrology, and (3) apply modeled water depths and velocities to quantify the amount of suitable rearing habitat area for juvenile fall-run Chinook salmon and *O. mykiss* at the designated flow increments. See Section 3.5.4 of Exhibit E of this AFLA for an explanation of the study results.
USFWS-USR-47	USFWS	16	Despite this recommendation, habitat suitability for these species was not addressed in the Final report, although existing habitat suitability relationships for these species are available from the Service.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #2) of the Final Report, dated April 26, 2013. The analyses for lamprey and splittail have been completed and the USFWS has commented on the draft report. The final report is included in the AFLA and results are summarized in Section 3.5.4 of Exhibit E to the AFLA.
USFWS-USR-48	USFWS	16	Floodplain inundation is so important to early life stages of native riverine fishes that not integrating the results of the IFIM and Pulse Flow reports is inconsistent with conducting a study "to determine instream flows necessary to maximize fall-run Chinook salmon on *O. mykiss* production and survival throughout their various life stages" as required in the Commission Order, or to determine Project effects on the Sacramento splittail as recommended by Commission staff in the	As discussed in the Synthesis Study (TID/MID 2013d), a number of factors beyond flow affect salmonid production from the Tuolumne River. Although the results of the IFIM and Pulse flow studies were used in the subsequent development of the Chinook salmon population model (TID/MID 2017a) as well as the *O. mykiss* population model (W&AR-10), it is unclear from the comment what "integration of results" is required as part of the 2013 IFIM Study. Floodplain analyses were addressed by the Lower Tuolumne River

Comment Number	Organization	Page (of letter)	Comment (Quote or Paraphrase)	Districts' Response
			Study Plan Determination.	Floodplain Hydraulic Assessment (TID/MID 2017b), which was undertaken to develop a hydraulic model to simulate the interaction between flow in the main channel and the floodplain from La Grange Diversion Dam (RM 52.2) to the confluence with the San Joaquin River to address the following objectives: (1) determine floodplain inundation extents for flows between 1,000 and 3,000 cfs at 250 cfs intervals and between 3,000 cfs and 9,000 cfs at 500 cfs intervals, (2) estimate the area, frequency, and duration of inundation over a range of flows for base case (WY 1971–2012) hydrology, and (3) apply modeled water depths and velocities to quantify the amount of suitable rearing habitat area for juvenile fall-run Chinook salmon and *O. mykiss* at the designated flow increments. See Section 3.5.4 of Exhibit E of this AFLA for an explanation of the study results. In addition, a splittail habitat assessment was conducted in accordance with the December 2011 FERC Study Determination and results are summarized in Section 3.5.4 of Exhibit E to the AFLA. A substantially similar comment was received from the USFWS in response to the draft IFIM Study report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #3) of the Final Report, dated April 26, 2013.
USFWS-USR-49	USFWS		This comment is about the Instream Flow Study and the Pulse Flow Study. These comments are in the USFWS letter's DLA comment section, and the USR did not include either of these studies. Therefore, SW would like to address these comments in the DLA.	Cover included 10 categories (recorded in the field as percent cover); however, initial analyses identified no discernible relationships for HSC preference using all 10 categories. In order to increase sample size and provide more meaningful results, cover types were grouped into four categories. A sensitivity analysis was also completed "In order to evaluate the effect of the cover parameter on the WUA results, the model was run both with and without cover for Chinook fry. The results presented in [the Instream Flow Final Report] Appendix H (Figure H-3) suggest that cover has a relatively small influence in the magnitude of WUA, and no influence on the WUA versus flow relationship." Therefore, the flow model results were not greatly altered by the inclusion of cover, and is not anticipated to change with the inclusion of alternate cover categories; the WUA curve shape and peaks remained the same, even though the magnitude of the curves varied. See also the response to USFWS April 8, 2013 comment No 4 in Appendix K of the Instream Flow Report, dated April 26, 2013.
USFWS-USR-50	USFWS		This comment is about the Instream Flow Study and the Pulse Flow Study. These comments are in the USFWS letter's DLA comment section, and the USR did not include either of these studies. Therefore, SW would like to address these comments in the DLA.	The USFWS repeats its previous comment on the draft report. Pursuant to the requirements of the FERC Order, the Lower Tuolumne River Instream Flow Study Draft Report was circulated for a 30-day review period (February 28 – April 1, 2013). The USFWS provided comments on April 8, 2013, which were addressed in Appendix K (reply #4 and #5) of the Final Report, dated April 26, 2013.

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ATTACHMENT A
DISTRICTS' RESPONSE TO COMMENTS ON DRAFT LICENSE APPLICATION

APPENDIX A

ASSESSMENT OF DON PEDRO PROJECT OPERATIONS TO MEET EPA REGION 10 GUIDANCE FOR PACIFIC NORTHWEST STATE AND TRIBAL TEMPERATURE WATER QUALITY STANDARDS

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1.0 INTRODUCTION

On November 26, 2013, Turlock Irrigation District ("TID") and Modesto Irrigation District ("MID") (collectively, the "Districts") filed with the Federal Energy Regulatory Commission (FERC) and relicensing participants the Draft License Application ("DLA") for the Don Pedro Hydroelectric Project ("Project"). With the Districts' submittal of their Final License Application ("FLA"), FERC, as the "action agency", will consider whether, and under what conditions, to issue a new license to permit the Districts to continue hydropower generation at the Don Pedro Project. In comments provided on the DLA, both the State Water Resource Control Board ("SWRCB") and FERC requested the Districts evaluate the effects of the Don Pedro Project on temperatures in the lower Tuolumne River.

Water temperatures in the lower Tuolumne River below the La Grange Project are the result of a number of factors. These factors include, but are not limited to, hydrology, climate, daily temperatures, meteorological conditions, Hetch Hetchy Project outflows and diversions, Don Pedro outflows, water diversions at La Grange Dam, modifications to river geometry affecting time of travel, loss of riparian shading, urban and agricultural floodplain encroachment, groundwater accretion, irrigation return flows, riparian diversions, and Dry Creek inflows.

The effect of hydropower operations at the Don Pedro Project on the temperature regime of the lower Tuolumne River has been evaluated as part of the relicensing process and is examined in the FLA. In summary, the operation and maintenance of the hydropower facilities do not affect the temperature regime of the lower Tuolumne River. Flow releases from the Don Pedro Project are made to satisfy the primary purposes and needs of water supply and flood control, and to meet the minimum flow requirements of the current FERC license. Hydropower generation is scheduled as a consequence of these other water uses. As explained in Exhibit B of the FLA, the daily releases from Don Pedro Reservoir would remain virtually unchanged if there were no hydropower operations at the Don Pedro Project.

1.1 Description of Existing Temperature Regime

The most direct manner of assessing the effect of the Don Pedro Project on water temperatures is by comparing reservoir inflow and outflow temperatures. As demonstrated in the FLA, the primary effect of the Don Pedro Project on Tuolumne River temperatures is to provide an overall cooling effect from the beginning of May to the end of October with maximum cooling effect being a reduction in river temperatures of up to 10 to 12°C in mid-summer. On the other hand, the Don Pedro Project tends to have a slight warming effect on river temperatures from the beginning of November to the end of April, when outflow temperatures are relatively constant at 10°C and reservoir inflow temperatures can range from 3°C to 10°C (Figure 1-1).

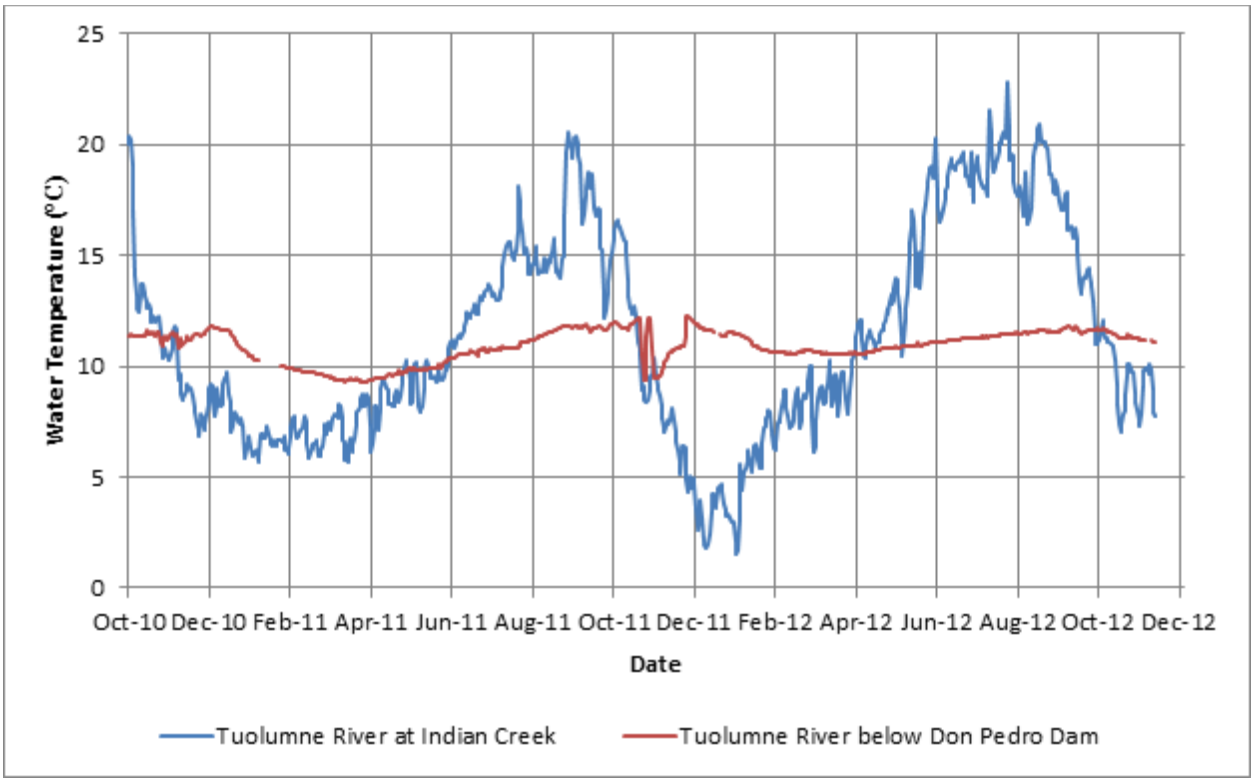


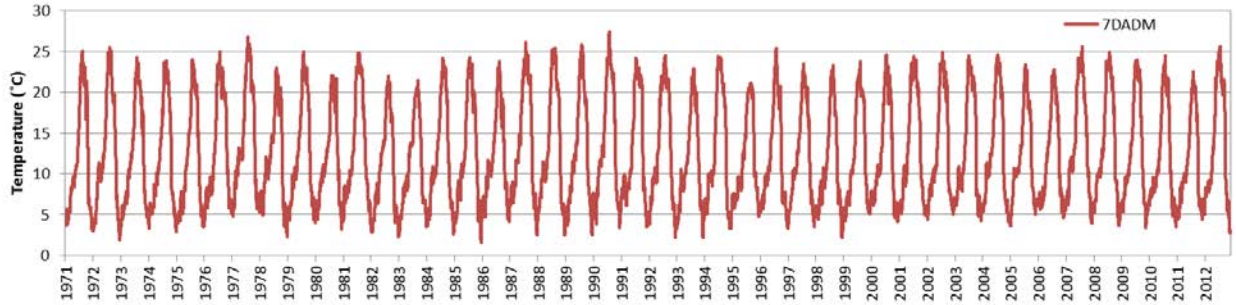
Figure 1-1. Don Pedro Reservoir average daily inflow and outflow temperature as recorded by thermologgers on the Tuolumne River from October 2010 to November 2012.

To provide context for assessing the temperature regime of the Tuolumne River, the Districts retained Watercourse Engineering to develop a "without dams" temperature model for the entire Tuolumne River extending from its headwaters to its confluence with the San Joaquin River. Model results are discussed in the FLA.

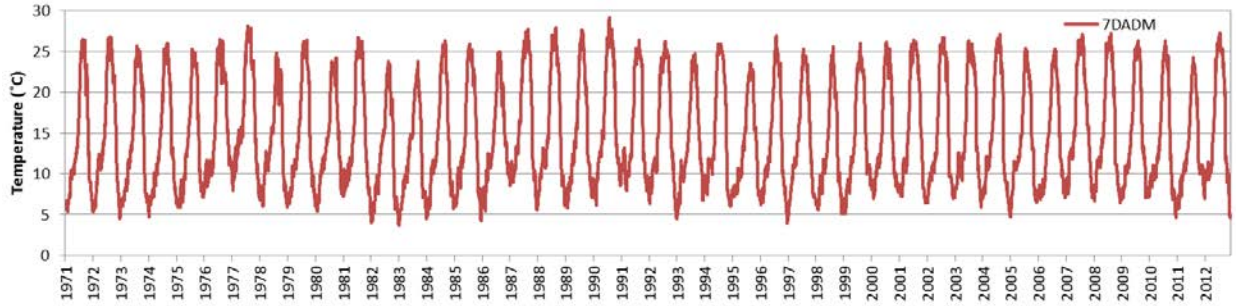
Figure 1-2 shown below summarizes the resulting "without dams" temperature regime of the Tuolumne River. These plots show that under "without dams" conditions, river temperatures have reached equilibrium with local meteorological conditions in the summer months by RM 88, several miles above Don Pedro Reservoir. The "without dams" model also shows that 7DADM temperatures would exceed 25°C at the La Grange gage location and in the remainder of the lower Tuolumne River each summer.

The temperature plots shown in Figures 1-3 through 1-6 also indicate that upstream of approximately RM 34, which is the primary salmon spawning reach, the "with dams" (Base Case) water temperatures are slightly warmer in winter and cooler in the summer compared to the "without dams" conditions. Below RM 34, summer temperatures under the "with dams" (Base Case) conditions are slightly (2-4°C) warmer than "without dams", primarily as a result of the Base Case minimum summer flow during dry years being 50 or 75 cfs.

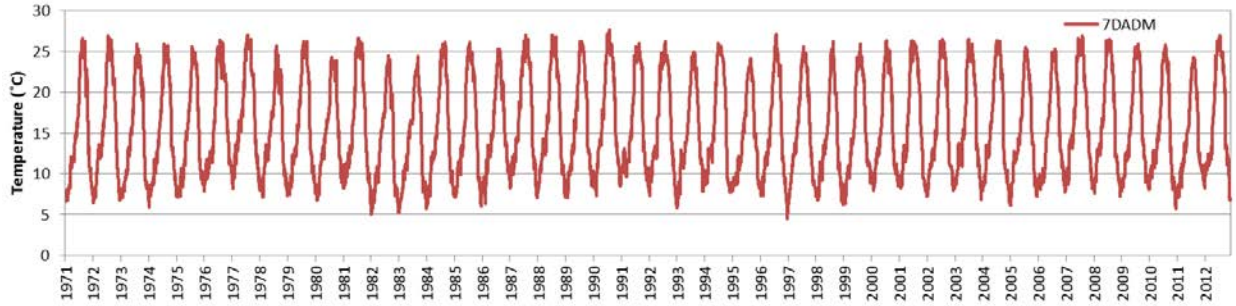
Above Don Pedro (RM 88):



La Grange (RM 52):



RM 24:



RM 1:

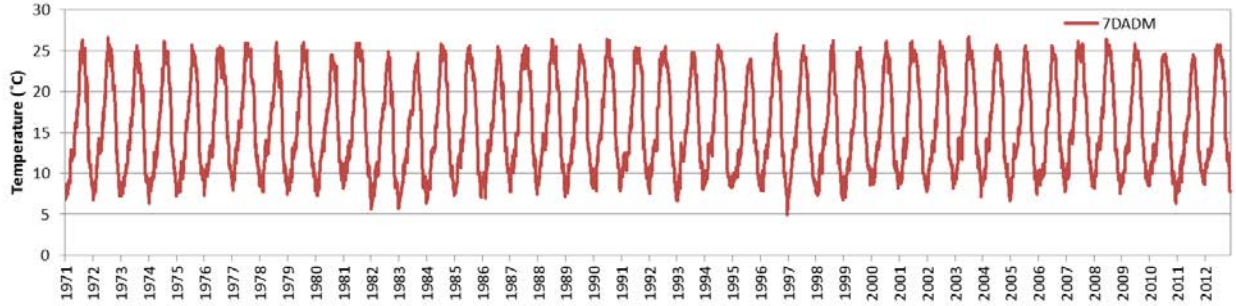


Figure 1-2. Simulated "without dams" temperature regime of the Tuolumne River at locations between RM 88 (above Don Pedro Reservoir) and RM 1 at San Joaquin River confluence.

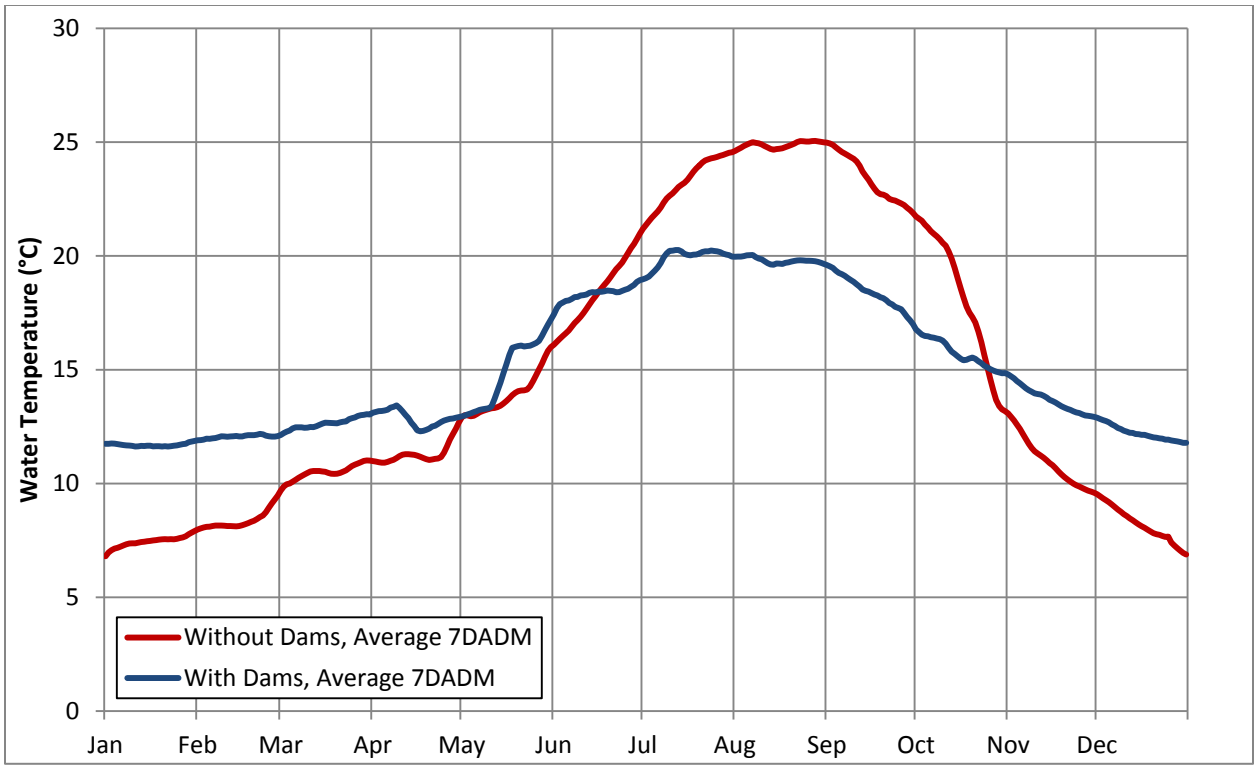


Figure 1-3. Temperature regime of the lower Tuolumne River at RM 46 under "Base Case" and "Without Dams" conditions.

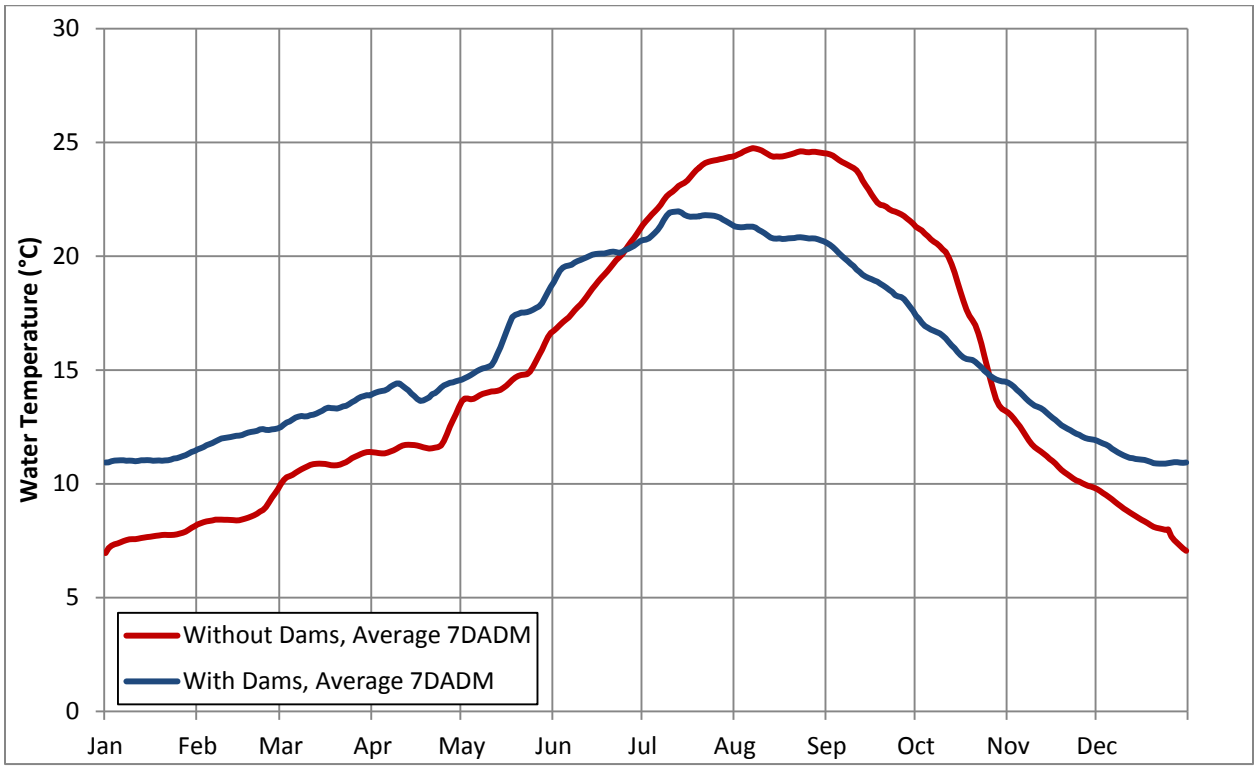


Figure 1-4. Temperature regime of the lower Tuolumne River at RM 40 under "Base Case" and "Without Dams" conditions.

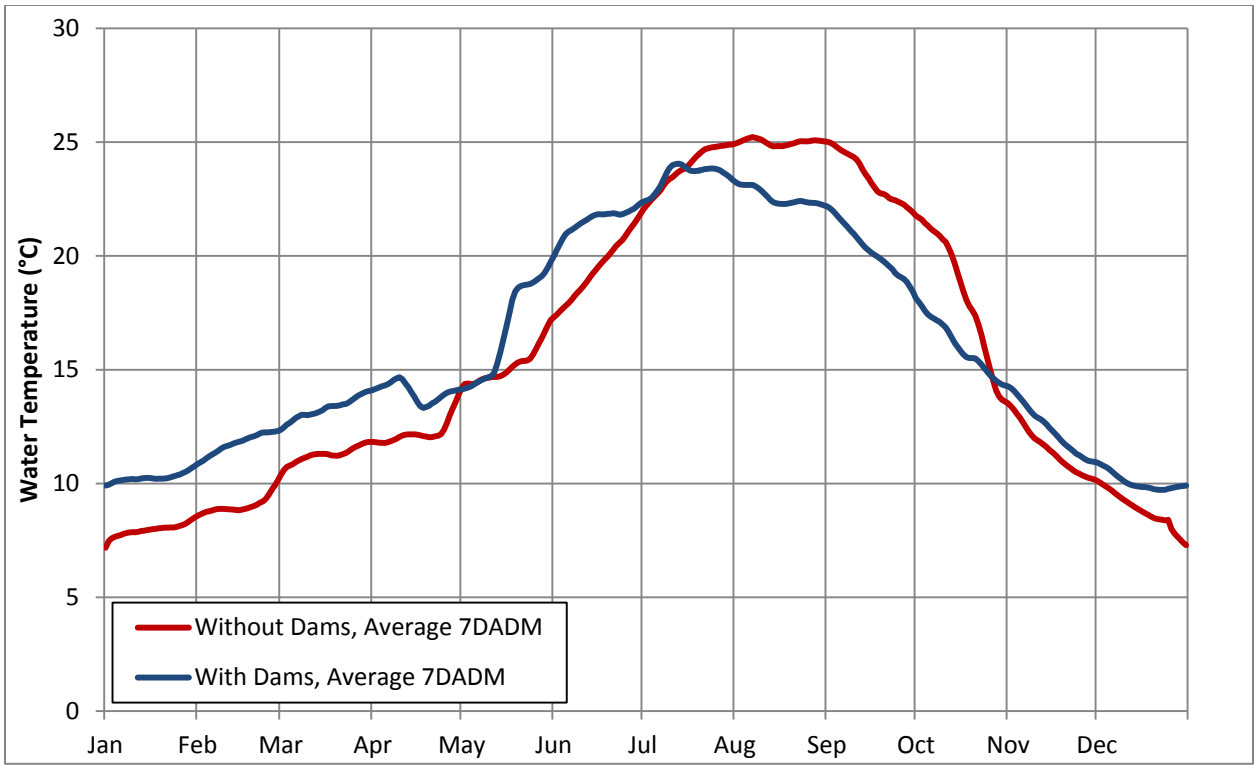


Figure 1-5. Temperature regime of the lower Tuolumne River at RM 34 under "Base Case" and "Without Dams" conditions.

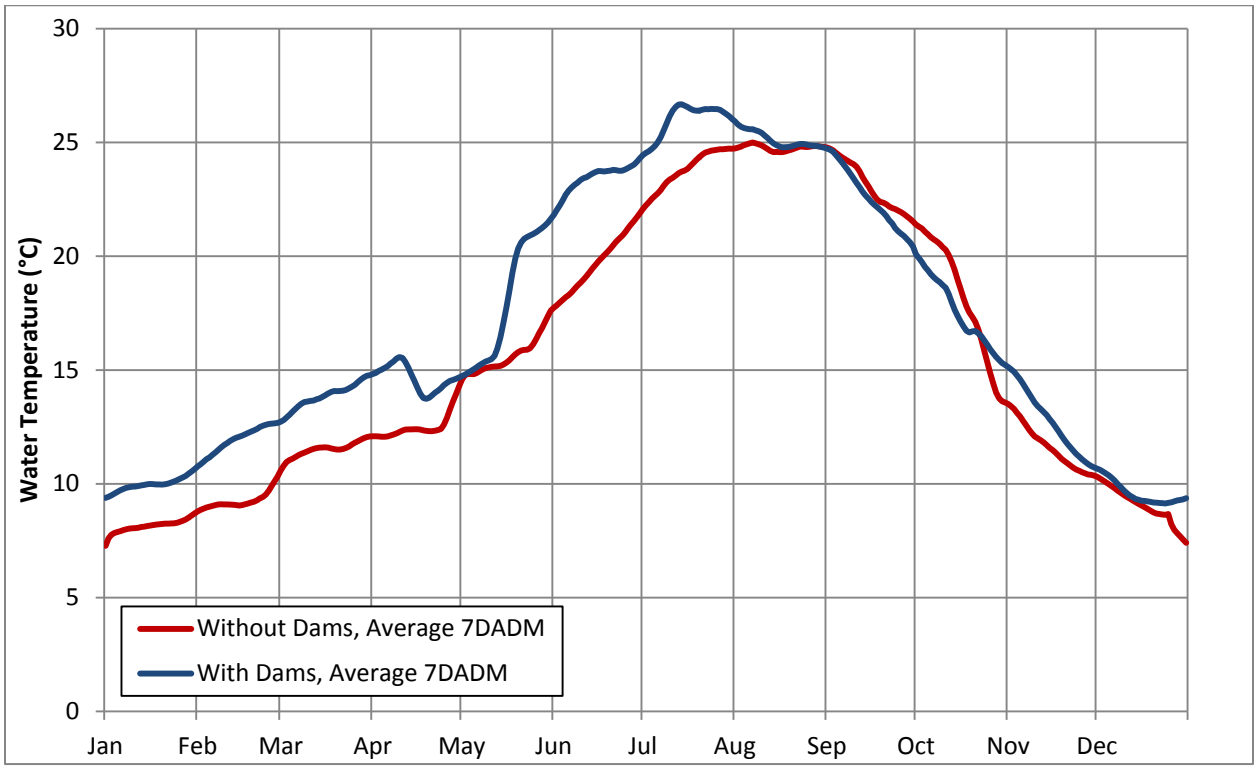


Figure 1-6. Temperature regime of the lower Tuolumne River at RM 24 under "Base Case" and "Without Dams" conditions.

1.2 Agency Request for Additional Information

As mentioned above, in response to the Districts' November 26, 2013 DLA, both the SWRCB and FERC staff requested that the Districts evaluate the Don Pedro Project's effects on temperatures in the lower Tuolumne River. Specifically, both parties requested evaluations of the Don Pedro Project's contribution to temperature impairment in the lower Tuolumne River. The SWRCB's temperature impairment finding, summarized below in Section 2.0, was based on applying to the Tuolumne River certain temperature guidelines for salmonids' life stages developed in a report by the Pacific Northwest Region of the US Environmental Protection Agency (EPA 2003).

In the March 4, 2014, letter providing comments to the DLA, FERC states on page 1 of Appendix A:

> *In the Director's December 22, 2011 Study Plan Determination on the Districts proposed Temperature Criteria Assessment Study, (not recommended), we stated that we would use the temperature criteria in EPA (2003) for our evaluation of project effects on salmonids. We also said that we would use temperature criteria developed from salmonids in the lower Tuolumne River if available. The DLA did not include model results and analyses of project effects on salmonids or effects of proposed changes in project operations for protection of salmonids using the EPA (2003) criteria. We expect that the FLA will include results of temperature model runs using the EPA (2003) criteria over the range of water year classifications determined by the California State Water Board's San Joaquin Basin Water Supply Index and the California Water Resources Department April 1 San Joaquin Valley unimpaired runoff forecast. In addition, the results of the temperature model runs using EPA (2003) criteria should be used as input to the W&AR-6, Chinook Salmon Population Model and in the W&AR-10, O. mykiss Population Study for all salmonid life stages included in the models.*

Similarly, the SWRCB in its March 3, 2014, letter providing comments on the DLA requested information on the potential contribution of the Don Pedro Project to temperature impairment in the lower Tuolumne River and how the current minimum flow requirements could be altered to mitigate the impairment. Specifically, the SWRCB letter states on page 3 of Attachment A:

> *A brief analysis of temperature in the lower Tuolumne River is included in Section 4.0: Cumulative Effects of The Proposed Action. Section 4.0 gives an overview of how flows in the lower Tuolumne River may affect temperature but there is only a brief mention of the impairment and no analysis of how the Project may be contributing to that impairment. Any application for water quality certification needs to contain this information. State Water Board staff also believes that clearly understanding the Project's effects on temperature and how it relates to the impairment is necessary in order to properly inform protection, mitigation and enhancement (PM&E) measures. Therefore, State Water Board staff requests that the Districts include this information in their FLA.*
>
> *To assist the Districts in accomplishing this effort, State Water Board staff has included the Final 2008 California 303(d)/303(b) Integrated Report Supporting Information*

(Supporting Information) for the Tuolumne River temperature listing in Attachment B. This document outlines the information and criteria that was used to support the listing of the Tuolumne River as temperature impaired. The FLA should discuss how minimum instream flows controlled by the Districts' operation of the Project affect the temperature in the lower Tuolumne River and how such operations relate to the impairment listing. The FLA should also discuss how minimum instream flows can be altered to address the impairment.

During the relicensing process, the Districts worked closely with relicensing participants to develop a set of five Tuolumne River–specific quantitative models to establish the Base Case conditions and enable the evaluation of alternative Don Pedro Project operations scenarios. These models include the Tuolumne River Operations Model (Operations Model), Don Pedro Reservoir 3-D Temperature Model, Lower Tuolumne River Temperature Model, Fall-run Chinook Population Model and *O. mykiss* Population Model. The models are designed to be used in combination to evaluate alternative Don Pedro operation scenarios and the effects of such alternatives. Since the Operations Model also includes the water supply operations of CCSF's Hetch Hetchy water system, the effects of alternative scenarios to CCSF's water supply to the Bay Area can also be evaluated. This suite of models was used to perform the evaluations requested by SWRCB and FERC staff.

The analysis of the flows needed to meet the EPA 2003 temperature guidelines on the Tuolumne River is a complex undertaking. For example, the Don Pedro Reservoir temperature model has demonstrated that as reservoir water levels approach and fall below elevation 650 ft (+/-), the temperature of outflows may rise and can reach upwards of 18°C, and potentially higher under summertime air temperatures, as outflow temperatures approach inflow temperatures at very low reservoir levels. While this has happened very infrequently during the initial license term (the reservoir has been lower than elevation 650 ft only two percent of the time), potentially higher minimum flows in the future would result in this occurring more frequently. At low reservoir levels, the stability of the cold water pool can break down as reservoir volume shrinks. Adding to this complexity, for the analysis to properly reflect reality, Project operations personnel would have to be able to estimate the flows needed to meet the desired downstream river temperatures based on forecasted local meteorological conditions, and do so *in advance of* exceeding the required temperature some 50 miles downstream. Therefore, as described in the following sections, the analysis proceeds by first establishing specific times and locations where the EPA 2003 temperature guidelines apply (Section 2.0), then developing operational rules to meet these temperatures, and then delivering flows from system storage based on these operational rules so as not to exceed the required temperature (Section 3.0).

In Section 4.0 of the report, the results of the analysis are summarized for the period of record (1971 – 2012), and the operational implications of trying to meet the EPA temperature benchmarks are discussed.

2.0 EPA DECISION ON 2008-2010 SECTION 303(D) LIST OF IMPAIRED WATERS

On November 12, 2010, EPA approved the California State Water Resource Control Board's 2008-2010 Section 303(d) List of Impaired Waters and disapproved the omission of several water bodies and associated pollutants that meet federal listing requirements. On October 11, 2011, EPA issued its final decision regarding the waters EPA added to the State's 303(d) list (EPA 2011). Included in Enclosure 2 to that decision, EPA determined that the Tuolumne River from Don Pedro Reservoir to the San Joaquin River has "water quality-limited segments still requiring TMDLs for temperature pursuant to CWA, sec. 303(d) and 40 CFR 130.7(b)". EPA identified four temperature "benchmarks" for the Tuolumne River:

> ***Tuolumne River, Lower (Don Pedro Reservoir to San Joaquin River)***
>
> *In this segment, the Chinook salmon adult migration period occurs from river mile 3.4 (Shiloh Bridge) to river mile 52 (LaGrange Powerhouse) and Sep1-Oct31 (Julian weeks 36-43). Stream temperatures were monitored at river miles: 3.4, 12, 16, 16.3, 19, 21, 23.6, 26, 31, 32, 33, 35, 36.5, 36.7, 38, 39.5, 42.6, 42.9, 43.2, 43.4, 45, 45.5, 45.7, 47.5, 48.8, 49, 49.7, 50.5, 50.8, 51.6 and 52 from 1991 to 2007. Eighty three of 145 yearly maximum 7DADM values exceeded the 18°C benchmark.*
>
> *The Chinook salmon spawning period occurs from river mile 26 (Fox Grove) to river mile 52 (LaGrange Powerhouse) and Oct1-Dec15 (Julian weeks 40-50). Stream temperatures were monitored at river miles: 26, 31, 32, 33, 35, 36.5, 36.7, 38, 39.5, 42.6, 42.9, 43.2, 43.4, 45, 45.5, 45.7, 47.5, 48.8, 49, 49.7, 50.5, 50.8, 51.6 and 52 from 1996 to 2007. One hundred and two of 118 yearly maximum 7DADM values exceeded the 13°C benchmark.*
>
> *The Chinook salmon smoltification and juvenile rearing period occurs from river mile 3 (Grayson Rotary Screw Trap) to river mile 52 (LaGrange Powerhouse) and Mar15-Jun15 (Julian weeks 11-24). Stream temperatures were monitored at river miles: 3, 3.4, 12, 16, 16.3, 19, 21, 23.6, 26, 31, 32, 33, 35, 36.5, 36.7, 38, 39.5, 42.6, 42.9, 43.2, 43.4, 45, 45.5, 45.7, 47.5, 48.8, 49, 49.7, 50.5, 50.8, 51.6 and 52 from 1997 to 2008. Seventy-five of 137 yearly maximum 7DADM values exceeded the 16°C benchmark.*
>
> *The Steelhead trout summer rearing period occurs from river mile 42.6 (Riffle K1) to river mile 52 (LaGrange Powerhouse) and Jun15-Sep15 (Julian weeks 24-37). Stream temperatures were monitored at river miles: 42.6, 42.9, 43.2, 43.4, 45, 45.5, 45.7, 47.5, 48.8, 49, 49.7, 50.5, 50.8, 51.6 and 52 from 1998 to 2007. Twenty-six of 78 yearly maximum 7DADM values exceeded the 18°C benchmark.*

SWRCB and FERC have requested an analysis of flows and temperatures in the lower Tuolumne River to determine if there are operational measures that could be implemented at Don Pedro to achieve the stated temperature benchmark values for each of the listed life stages during the life history timing periods noted. The Districts utilized the life stage temperature benchmarks identified below at the EPA-selected locations in the river. The purpose of the Districts' analyses

described herein is to estimate the amount of flow necessary to achieve the temperature benchmark[1] at the locations and within the time periods specified for the Tuolumne River, as follows:

- Chinook salmon adult migration (Sept 1 – Oct 31): 7DADM of 18°C at RM 3.4
- Chinook salmon spawning (Oct 1 – Dec 15): 7DADM of 13°C at RM 26
- Chinook salmon smoltification and juvenile rearing (Mar 15 – June 15): 7DADM of 16°C at RM 3
- *O. mykiss* summer rearing (June 15 – Sept 15): 7DADM of 18°C at RM 42.6

[1] For purposes of this analysis, a "benchmark" is a temperature threshold at a specific location for a defined period of time for a specific life stage of anadromous salmonids as identified by EPA in its 303(d) listing of temperature impairment for the Tuolumne River below Don Pedro Dam.

3.0 DESCRIPTION OF ANALYTICAL METHODS

The basis of the EPA's impairment ruling was a matrix of temperature "benchmarks" established for the Central Valley portion of the Tuolumne River, based on water temperature guidelines provided in EPA (2003) for salmonids in the Pacific Northwest. It is apparent from a plain reading of EPA (2003) that the report was intended to suggest temperature guidelines and not criteria or standards. Although it is not precisely clear what the term "benchmark" is intended to denote, for purposes of this analysis the benchmark temperature is assumed to be a threshold (i.e. not-to-exceed) benchmark. Prior communications with resource agencies have indicated that this is consistent with their interpretation; that is, above the specified temperature significant harm will occur to the particular life stage. Use of the benchmark temperatures identified previously in Section 2 of this report does not signify that the Districts agree that EPA (2003) temperature guidelines developed for the Pacific Northwest should be used as threshold values on the Tuolumne River or elsewhere in California's Central Valley.

3.1. Modeling Approach

Using the suite of models developed for the Don Pedro Hydroelectric Project relicensing, a modeling approach was developed whereby all the consumptive use and water supply purposes of the Don Pedro, La Grange, and CCSF's Hetch Hetchy projects were eliminated in order to maximize the amount of water available to meet the temperature benchmarks.[2] In order to develop an operations scenario that is driven by compliance with the temperature "benchmarks", it is necessary to develop a practical and realistic decision tool that could be put into actual use by an operator working in real-time. In order to compute the flow required to meet each temperature benchmark, the Districts relied on information reasonably available to a real-time operator. Therefore, specific flow-temperature relationships were developed to assist operator decision making, and to recognize from the outset that perfect operator foresight and instant operator response cannot be assumed.

As a starting point, Don Pedro outflow temperatures are assumed to be equal to their seasonal average as computed by the reservoir temperature model (W&AR-03), shown in Figure 3-1. This outflow temperature regime has been documented by actual observation; and for reservoir levels above approximately 650 feet, the temperature regime is mimicked well by the Base Case reservoir model. The Don Pedro Reservoir has two outlets which convey water below Don Pedro Dam, one at elevation 535 ft and one at elevation 350 ft; however, field measurements show there is normally little difference in temperatures between the two intakes, this at most being 1 to 3°C. This small difference in temperature between the two intakes quickly disappears once water is released from Don Pedro Reservoir due to the dominant effect local meteorological conditions have on the river's temperature regime.

[2] Flood management operations required by the US Army Corps of Engineers' Flood Control Manual were retained in the modeling effort.

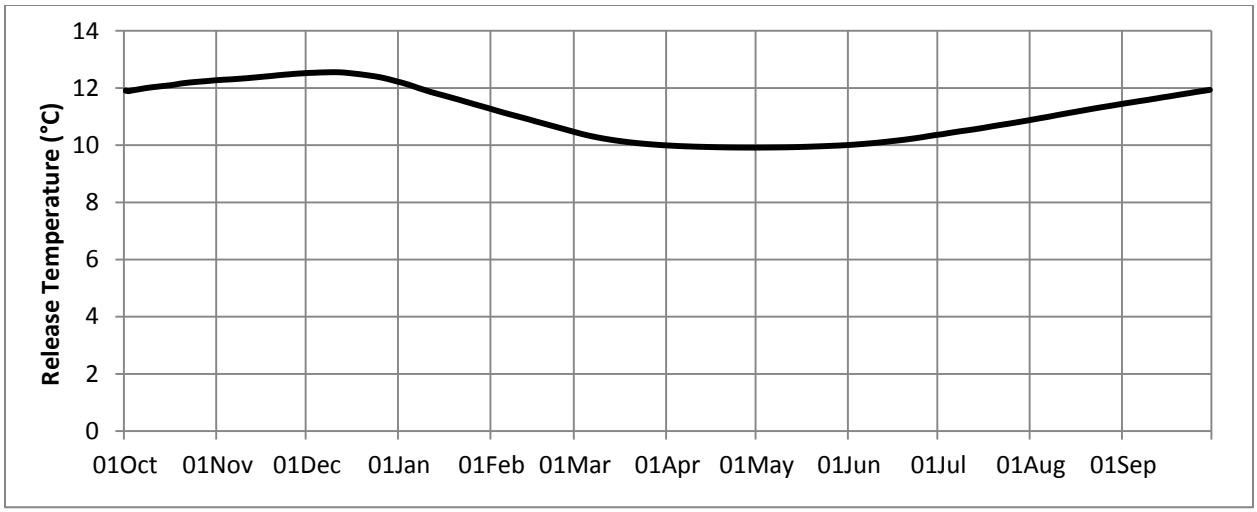


Figure 3-1. Average Don Pedro Reservoir release temperatures, Base Case results, 1971 to 2012.

The Districts' Tuolumne River temperature model is not reactive or iterative; that is, it will not assume that the entire Project operations can change hour-to-hour based on changing river temperature and meteorological conditions. It would be unrealistic to assume a real system could operate in this fashion, with no other constraints (e.g., ramp rates or public safety). The purpose of the model is to establish the quantity of water needed to meet a benchmark temperature, such that the computed flow will always result in a temperature very close to the benchmark. It also needs to be acknowledged that no model is a perfect representation of actual conditions, calibration accuracy carries uncertainty, and that all devices used to measure temperature are imprecise (see W&AR-16 Intensive Water Temperature Survey Report in the FLA). The assessment approach employed herein uses only the amount of water the model predicted as necessary and does not discharge excess water as a "buffer" against these uncertainties. On the practical side, an operator may never be able to do better than the model in meeting temperature benchmarks in the lower half of the river reach because:

- 7DADM is a multi-day average of instantaneous results;
- travel times to the confluence are always more than several hours and often more than one day, making it impossible to reactively manage flow to modify the daily maximum temperature;
- accretion rates and accretion temperatures cannot be precisely estimated; and
- Dry Creek flow rates and temperatures can fluctuate widely over short periods of time, are not controlled in any way by the Districts, and can play a significant role in river temperatures below RM 16.

Nevertheless, the models employed in this analysis provide a reasonable portrayal of flows necessary to attempt to achieve the temperature benchmarks. The EPA temperature benchmarks are in effect for approximately 275 days of each year. For the remaining 90 days of the year, it was assumed that the current FERC-required minimum flows were applicable. While all consumptive uses of water by the Districts and CCSF were eliminated, flood control operations remained in effect.

3.2. Development of Analytical Tools for Flow-Temperature Analysis

The temperature benchmarks used herein are defined under the EPA temperature impairment listing as rolling seven-day averages of the daily maxima (7DADM). The 7DADM temperature at a given location in a stream will be dependent on many factors, but will be highly sensitive to air temperature and flow rate. Other prominent factors can be degree of direct solar insolation, substrate type, and stream width/depth ratio. For purposes of this analysis, the maximum daily air temperature was used because it is a readily available daily forecasted value (that is, available for use by an operator), and it should have a strong relationship to the daily maximum water temperature.

Direct use of recorded data was not feasible for the current assessment because some of the temperature benchmarks are at locations that have no associated thermologgers. The in-situ data collected from 2011, 2012, and 2013 show that diurnal temperatures (i.e., maximum temperatures) along the lower Tuolumne River can vary considerably from one location to the next even over short distances, apparently due to site-specific factors (e.g. groundwater accretion, Special Run Pools, riparian diversions).

The Base Case operations model does not include a full range of meteorological conditions combined with the full range of possible flow conditions, as the Base Case operations are driven by current operational parameters and specific FERC-license requirements. To develop an operational scenario driven by temperature benchmarks, it was necessary to go well outside the Base Case operational rules. A matrix of conditions was developed to establish the basis for this temperature benchmark modeling effort. A set of eleven steady flow rates was developed to follow the pattern of sensitivity of stream temperature to flow, which generally follows an exponential distribution (100; 175; 250; 350; 500; 750; 1,100; 1,500; 2,000; 3,000; and 9,000 cfs). An additional set of meteorological conditions was used to understand the relationship between daily maximum air temperature and daily maximum stream temperature. The meteorological conditions were “cool”, “average”, and “warm” and were computed by using the 10^{th} percentile, median, and 90^{th} percentile, respectively, of the 42-year period-of-record values for a given hour for the whole year (Figure 3-2). The 42 years of hourly data were derived from the Meteorological Data Set developed for the Base Case temperature models, described in Attachment D of the W&AR-03 Study Report.

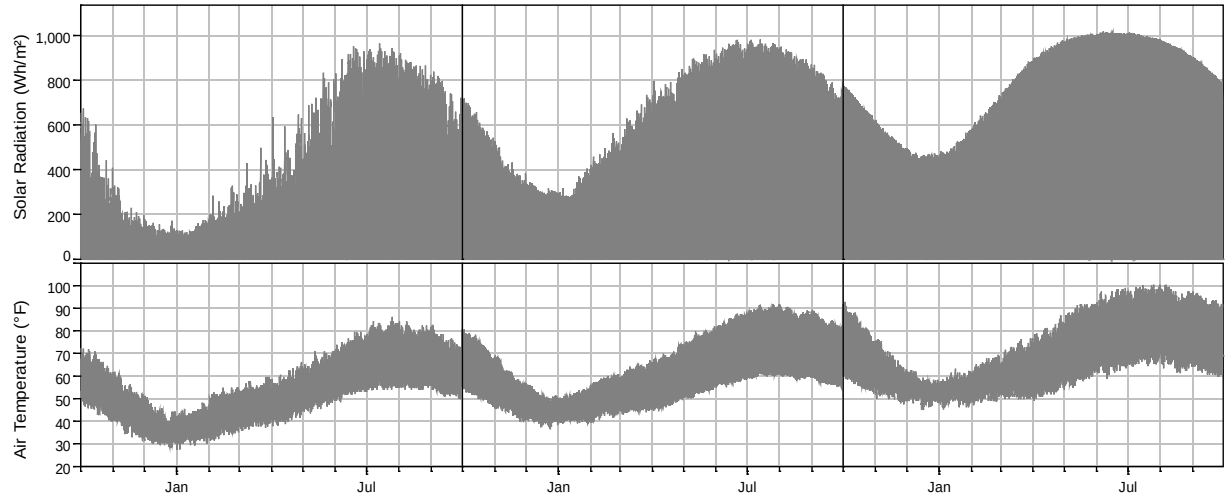


Figure 3-2. Cool, average, and warm meteorological conditions from left to right.

For each of the eleven selected steady flow rates, a linear regression was made to estimate 7DADM stream temperature given the daily maximum air temperature, as shown in Figure 3-3.

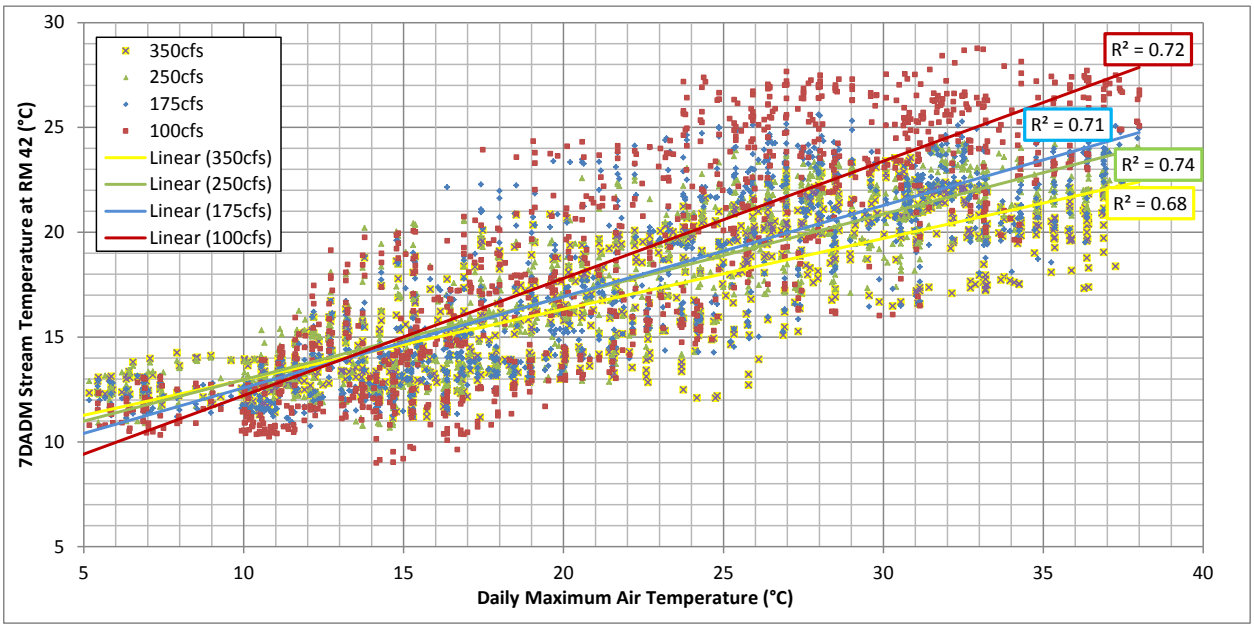


Figure 3-3. 7DADM as a function of daily maximum air temperature, linear regressions.

For a given daily maximum air temperature, 7DADM stream temperatures can be derived from the linear regressions for each of the eleven flow rates, as shown in the example of Figure 3-4.

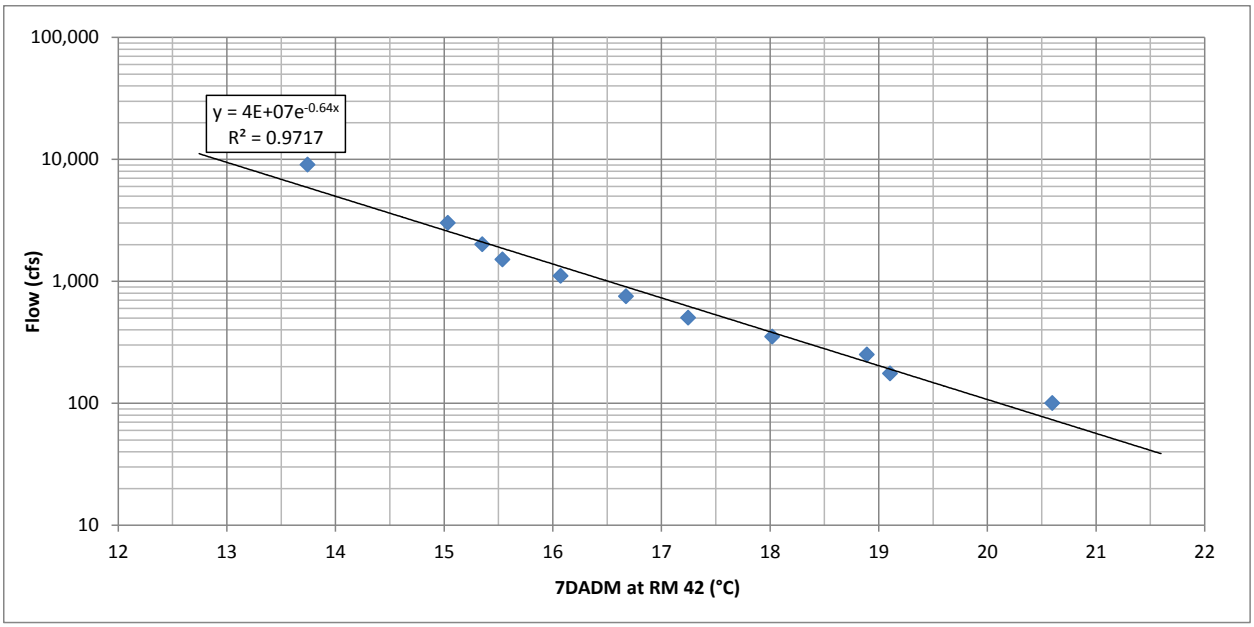


Figure 3.4. Flow as a function of 7DADM temperature at RM 42 when daily maximum air temperature is 25°C (77°F).

Again holding the daily maximum air temperature constant, an exponential function can be estimated that will allow computation of flow given a desired 7DADM temperature. This process was repeated for every daily maximum air temperature observed in the period of record, for the EPA's four different locations and 7DADM temperature benchmarks.

When the flows computed to attain a specific maximum water temperature are run through the Operations Model, 3-D Reservoir Temperature model, and River Temperature model, the 7DADM temperature benchmarks are achieved by the computed flow most of the time, as shown in Figure 3-5, assuming the quantity of flow needed is available from Don Pedro or CCSF's Hetch Hetchy Project.

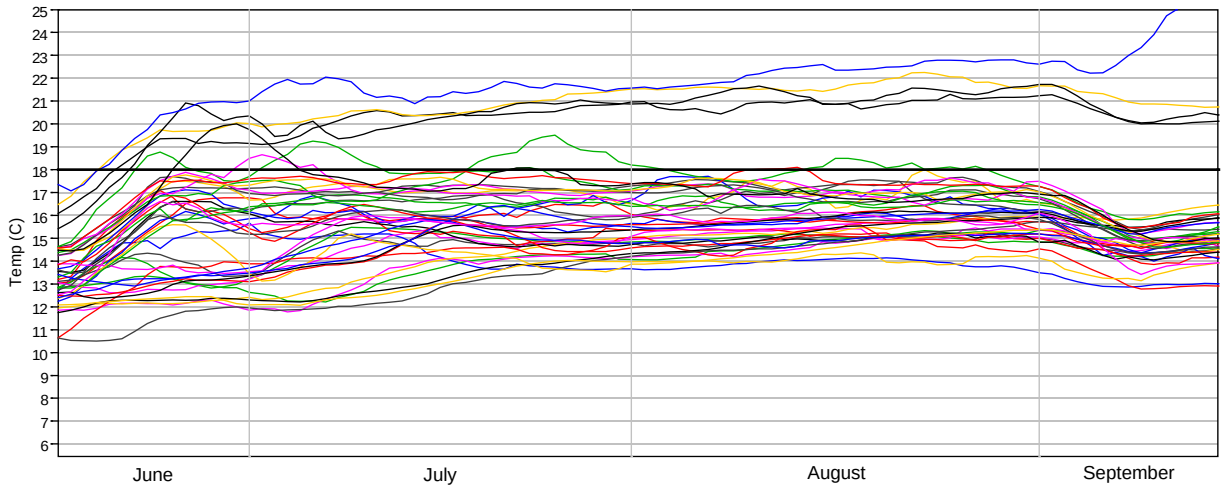


Figure 3-5. Temperature benchmark simulation for 7DADM of 18°C at RM 42.6 from June 15th to September 15th, 42 annual traces (WY 1971-2012).

The averaging of the seven maximum daily values helps to smooth out sudden changes in maximum daily temperatures that are observed in the 7DADM time series. There are several years that consistently fail to meet the temperature benchmarks because in these years, mostly sequential dry years, reservoir outflow temperatures are approaching or are already higher than the temperature benchmark. When low reservoir levels occur during summer periods, the thermal stratification necessary to maintain the cold water pool breaks down and warmer water occurs through the entire water column.

Because meeting the benchmark often requires a significant amount of flow to be released, the full Operations Model scenario must be run to ensure there is adequate water available for release to meet the required temperature benchmark flows. In addition, the reservoir temperature model needs to be run to determine if outflow temperatures may be increasing due to low reservoir elevations. Using the Operations Model in conjunction with the reservoir and river temperature models demonstrated that the flows required to meet the temperature benchmark(s) can, in some cases, result in Don Pedro Reservoir being drawn down to a level where the outflow temperatures are already greater than the benchmark. At that point, no amount of water release would meet the benchmark temperature.

As discussed above, this analytical approach does not iterate flow trials until a solution is found because that approach cannot be achieved in real-time over 50 miles of river through hour-to-hour adjustments to reservoir operations. The approach employed provides a reasonable estimate of the flow rate needed to reach the given benchmark in the Tuolumne River. The methods used approximate the level of foresight and knowledge that an operator could reasonably beto expected to have available to implement a temperature driven operational scenario for the Tuolumne River.

3.3 Analytical Approach to Salmonid Model Simulations

In its March 4, 2013 comment letter on the DLA, FERC staff also requested that the results of the Operations Model and reservoir and river temperature models used to evaluate the EPA benchmark temperatures be input to the Tuolumne River Chinook salmon (TRCh) and *O. mykiss* (TROm) population models. To provide input data to the salmonid models, flow and water temperature time series were developed to try to meet the four seasonal EPA 7DADM temperature benchmarks, with water temperatures at other times of year reflecting the current minimum flow schedule under the existing FERC license requirements. Using estimates of spawning timing, population composition (age, sex ratio), and spawner fecundity, juvenile salmonid productivity metrics as well as estimates of year-over-year adult *O. mykiss* replacement were calculated using the validated models.

During the development of the Districts' two salmonid population models, some relicensing participants also recommended that the model use the EPA temperature benchmarks as model parameters for temperature thresholds, implying that once these temperature thresholds were exceeded, then mortality occurred. Instead, the Districts relied upon the underlying literature review sources actually used by EPA (2003), other information sources, and river-specific empirical data to inform processes affected by water temperature, including growth bioenergetics, movement, mortality and smoltification. Use of a single temperature metric such as the EPA benchmarks is not useful for modeling purposes because it does not consider different responses over a *range* of temperatures, which more realistically reflect actual biological responses to temperature variations in the Tuolumne River. For example, if the October 1 to December 15 EPA benchmark temperature of 13°C is exceeded by 0.5°, what is the biological response? The implication of the EPA benchmark temperature, since exceeding it might be considered a "violation" of a water quality benchmark, is that any exceedance has severe biological consequences, otherwise, of what utility is the benchmark. The Districts rejected the recommendation to employ the EPA benchmark temperatures in their salmonid models specifically because the particular thresholds were not well associated with biological responses or life history outcomes that could be readily represented in the models and extensive empirical monitoring data specific to the Tuolumne River disproves their applicability as a "threshold" value.

4.0 ANALYSIS RESULTS

4.1 Water Temperatures

After several test runs of just the Operations and river temperature models, it became apparent that large release volumes would frequently be required to meet the EPA temperature benchmarks. Therefore, as a starting point to attempt to meet the temperature benchmarks, the Districts began the analysis conservatively by assuming that *all* the water available in the Tuolumne River, *all* Don Pedro storage and operations, and *all* of CCSF's Hetch Hetchy Project storage and operations would be available to meet the benchmarks. Therefore, all the storage available in the Tuolumne River reservoirs was operated with the single goal of attempting to meet the EPA benchmarks, once any ACOE flood control requirements were met. Applying this operational scenario, Figure 4-1 presents the number of days that the temperature benchmarks for each salmonid life stage were met at the selected locations and the corresponding flow releases to meet the benchmarks.

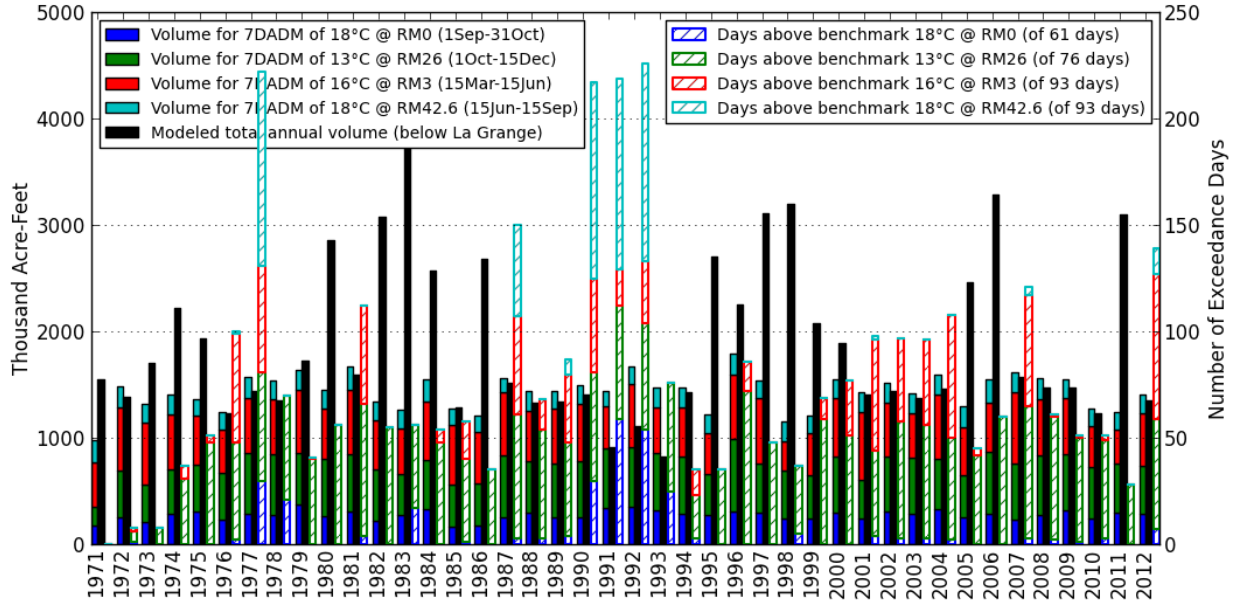


Figure 4-1. Flows required to meet EPA benchmark temperatures in each water year of the 1971 to 2012 period. Also shown are number of days when benchmark temperatures are exceeded in each year (see right y-axis).

Applying the operational scenario where the Districts receive no water for irrigation for all 42 years, where the City of Modesto receives no Project water for M&I purposes for 42 years, and where CCSF and its Bay Area customers receive no water from the Hetch Hetchy system for 42 years, all of the EPA benchmark temperatures for salmon and *O. mykiss* were not met in any year of the 42-year period, with the exception of 1971[3]. Therefore, even when eliminating all consumptive uses of Tuolumne River water, the EPA benchmark temperatures are exceeded in 98 percent of the years.

[3] The benchmarks could be met in 1971, the first year of modeling, because all reservoirs were assumed to be full at the start of the model.

In half of the 42 years, at least two of the four benchmark temperatures are not met; in nine of the 42 years, three of the benchmarks are unmet; and in four of the years, none of the benchmarks are met. As mentioned above, the EPA temperature benchmarks encompass a period of 275 days in each year. The number of days when the temperature benchmarks are unmet vary from less than 10 days (in three of the years), to over 50 days in 30 of the years, to over 100 days in ten of the years. During sequential dry year periods, meeting the EPA benchmarks become increasingly difficult because as the reservoir level is lowered, the reservoir outflow temperature begins to increase, requiring even more flow to try to meet the temperature benchmark, which in turn lowers the reservoir faster, leading to even higher outflow temperatures. Figure 4-2 shows the resulting 42 year sequence of reservoir levels and outflow temperatures from the Operations Model. During the 1990 to 1993 time frame, the Don Pedro Reservoir goes completely dry, and in nine of the 42 years (>20 percent of the time), the reservoir drops below dead pool. Significantly, during the 1976-1977 and 1987-1992 drought periods, the Don Pedro and all the Hetch Hetchy reservoirs go dry, even with no water being available for consumptive use purposes.

The amount of water associated with operating the system to try to meet each of the individual EPA benchmarks is shown in Figure 4-3; however, use of these quantities still does not result in actually meeting the EPA benchmarks. At least one benchmark is unmet in 41 of 42 years, and there are more than 50 days of unmet temperature benchmarks in 70 percent of the years. The average annual water volume dedicated to trying to meet the benchmarks is just slightly less than 1.5 million acre-feet per year; the median unimpaired flow of the Tuolumne River at La Grange is 1.8 million acre-feet.

For purposes of comparison, the Districts also evaluated the EPA benchmark temperatures under the Base Case Operations Model and the “without dams”/unimpaired flow model. Table 4-1 presents the results of these model runs. In none of the 42 years did the “without dams”/unimpaired flow model meet the EPA temperature benchmarks. In almost half of the years, the Districts/CCSF Base Case fared better in meeting the EPA benchmarks than the “without dams” model.

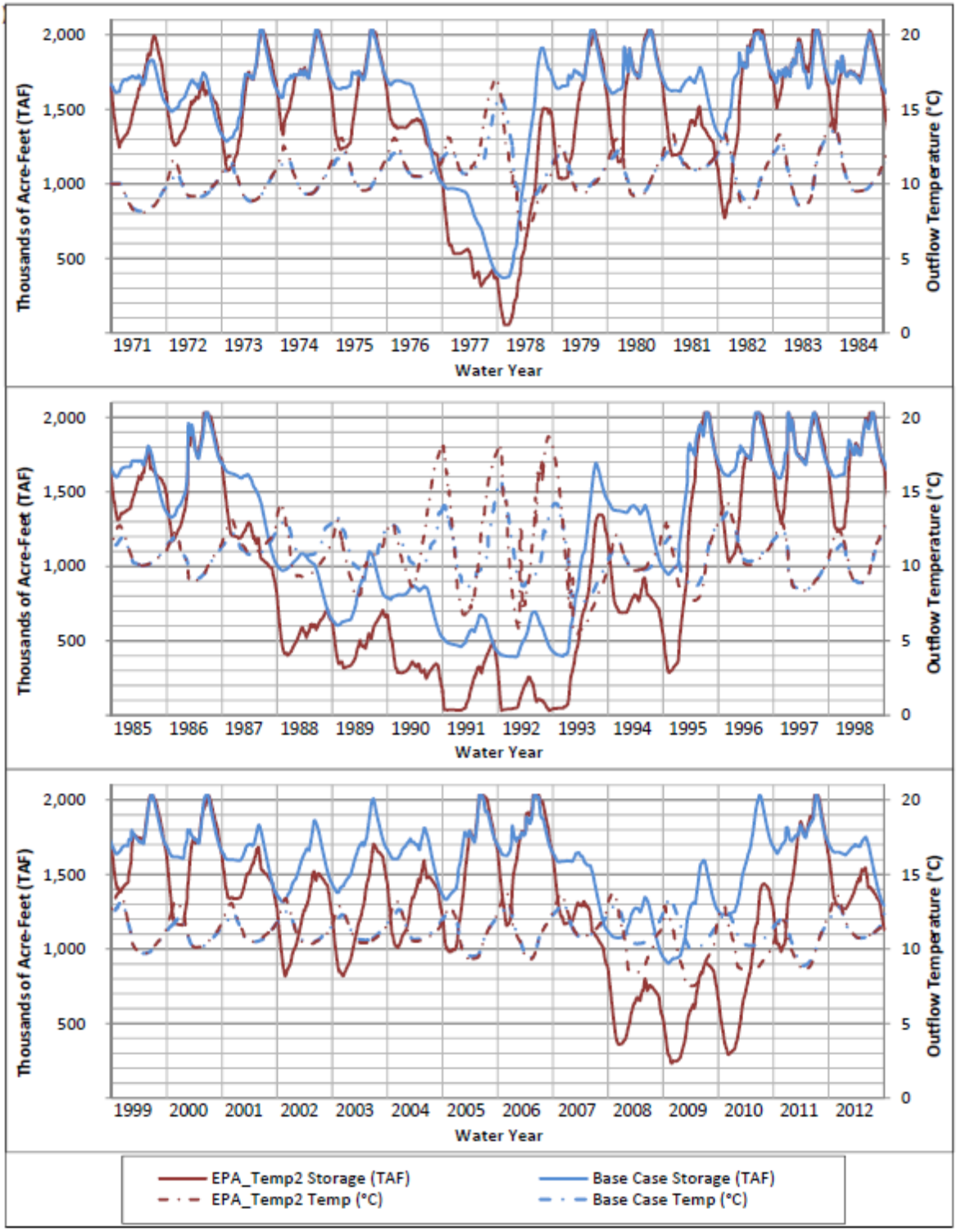


Figure 4-2. **Output of the simulated reservoir operations scenario over the 42-year time series intended to meet the EPA benchmark temperatures, illustrating Don Pedro Reservoir storage and outflow temperatures.**

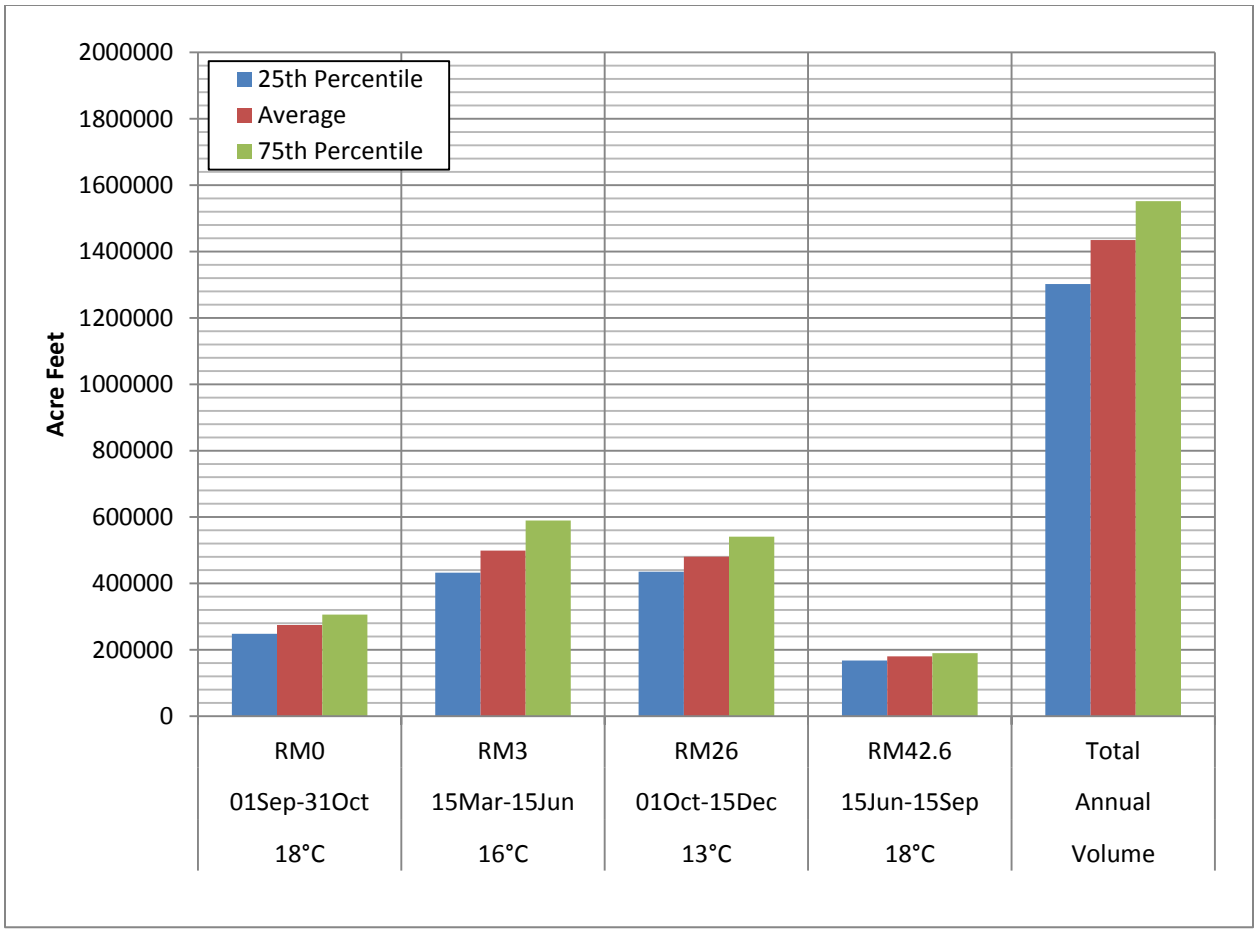


Figure 4-3. **Average, 25th percentile and 75th percentile of water volume used to try to meet each of the four EPA benchmark temperatures in the 42-year period of record. On average, almost 1.5 million AF of water is dedicated to trying to attain the benchmark temperature.**

Table 4-1. Number of days for each of four EPA benchmarks when temperature benchmark is exceeded under Base Case, "without dams"/unimpaired flow case, and case where consumptive use purposes are eliminated and river system is operated only for temperature purposes.

	Without Dams					Base Case					Operation only for Temperature				
Dates	September 1-October 31	March 15-June 15	October 1-December 15	June 15-September 15	Total Exceedance days Per Year	September 1-October 31	March 15-June 15	October 1-December 15	June 15-September 15	Total Exceedance days Per Year	September 1-October 31	March 15-June 15	October 1-December 15	June 15-September 15	Total Exceedance days Per Year
EPA Benchmark	18° 7DADM	16° 7DADM	13° 7DADM	18° 7DADM		18° 7DADM	16° 7DADM	13° 7DADM	18° 7DADM		18° 7DADM	16° 7DADM	13° 7DADM	18° 7DADM	
Location	RM 0	RM 3	RM 26	RM 42.6	All	RM 0	RM 3	RM 26	RM 42.6	All	RM 0	RM 3	RM 26	RM 42.6	All
WY															
1971	58	22	89	80	206	38	30	18	93	156	0	0	0	0	0
1972	46	40	34	93	182	45	86	26	93	220	1	2	5	0	8
1973	46	37	30	89	171	41	35	35	62	151	0	0	8	0	8
1974	51	25	33	87	160	37	33	35	66	149	0	6	31	0	37
1975	50	29	40	80	164	46	36	31	62	148	0	3	48	0	51
1976	49	44	27	93	179	34	70	40	93	218	2	51	46	1	100
1977	50	55	51	93	214	55	87	51	93	246	30	50	51	91	207
1978	50	29	47	71	162	44	57	51	78	200	21	0	49	0	50
1979	50	36	39	91	181	38	36	41	76	168	0	1	40	0	41
1980	49	28	32	66	141	46	14	43	24	101	0	0	56	0	56
1981	45	41	42	93	191	40	70	43	93	221	4	46	62	0	112
1982	50	26	31	66	138	25	0	53	10	78	0	0	55	0	55
1983	50	24	28	60	127	21	0	39	0	60	17	0	39	0	56
1984	50	28	36	91	170	31	38	57	93	203	0	6	48	0	54
1985	44	35	30	93	173	41	63	39	93	210	1	18	39	0	58
1986	48	25	39	85	164	48	21	42	62	146	0	0	35	0	35
1987	49	45	55	93	208	45	82	50	93	240	3	46	58	43	150
1988	50	42	38	93	188	57	93	46	93	247	3	14	51	0	68
1989	53	45	42	92	194	56	80	44	93	232	4	32	44	7	87
1990	50	46	28	93	182	51	90	48	93	246	30	44	51	92	202
1991	49	23	48	85	171	59	70	51	93	229	59	17	53	90	175
1992	51	45	41	93	194	53	82	50	93	240	54	29	50	93	187
1993	49	15	39	79	148	55	33	48	83	185	25	0	51	0	51
1994	49	32	42	93	182	37	72	40	93	220	3	12	20	0	35
1995	44	19	32	63	129	44	0	36	9	66	0	0	35	0	35
1996	50	23	64	84	186	48	34	55	64	172	0	14	72	0	86
1997	46	32	29	90	166	44	31	33	55	149	0	0	48	0	48
1998	50	3	40	65	123	32	0	39	25	74	5	0	32	0	37
1999	47	15	34	84	148	30	31	38	70	154	0	10	59	0	69
2000	50	30	48	93	186	46	30	49	75	173	0	26	51	0	77
2001	49	42	32	93	182	38	75	39	93	222	4	52	40	2	98
2002	50	30	46	93	184	53	77	53	93	238	3	39	55	0	97
2003	49	32	38	89	174	51	63	48	93	219	3	40	53	0	96
2004	55	46	46	93	200	57	66	45	93	219	2	58	48	0	108
2005	47	16	26	76	133	47	18	41	65	139	0	3	42	0	45
2006	51	23	53	80	171	46	3	54	64	136	0	0	60	0	60
2007	47	43	43	93	194	42	93	50	93	251	3	52	62	4	121
2008	48	43	52	93	203	58	90	54	93	252	2	1	58	0	61
2009	49	35	34	92	176	57	88	54	93	250	1	1	49	0	51
2010	48	22	43	81	161	49	65	45	58	185	3	2	46	0	51
2011	50	12	31	61	119	47	0	45	14	79	0	0	28	0	28
2012	53	42	34	93	184	41	74	38	93	220	7	68	52	12	139

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4.2 Salmonid Model Results

Using the validated Chinook salmon and *O. mykiss* population models, juvenile and adult productivity metrics were evaluated for the EPA benchmarks scenario reflecting seasonal variations of the flows released to try to meet the identified EPA benchmarks (275 days/yr) or the existing minimum FERC-required flow requirements (remaining 90 days/yr) over the simulation period (1971–2012).

4.2.1 Chinook Salmon Productivity Comparisons

Figure 4-4 provides the results of the model runs for fall-run Chinook salmon smolt productivity for the EPA benchmarks scenario and the Base Case scenario. Also shown in the figure are the modeled estimates of the annual discharge volume at the La Grange gage (USGS 11289650) for the simulation period. For Chinook salmon, the increased flows that occur under the EPA benchmarks scenario relative to the Base Case scenario generally result in increased smolt productivity, with the largest relative increases occurring in below normal water years and dry water years.

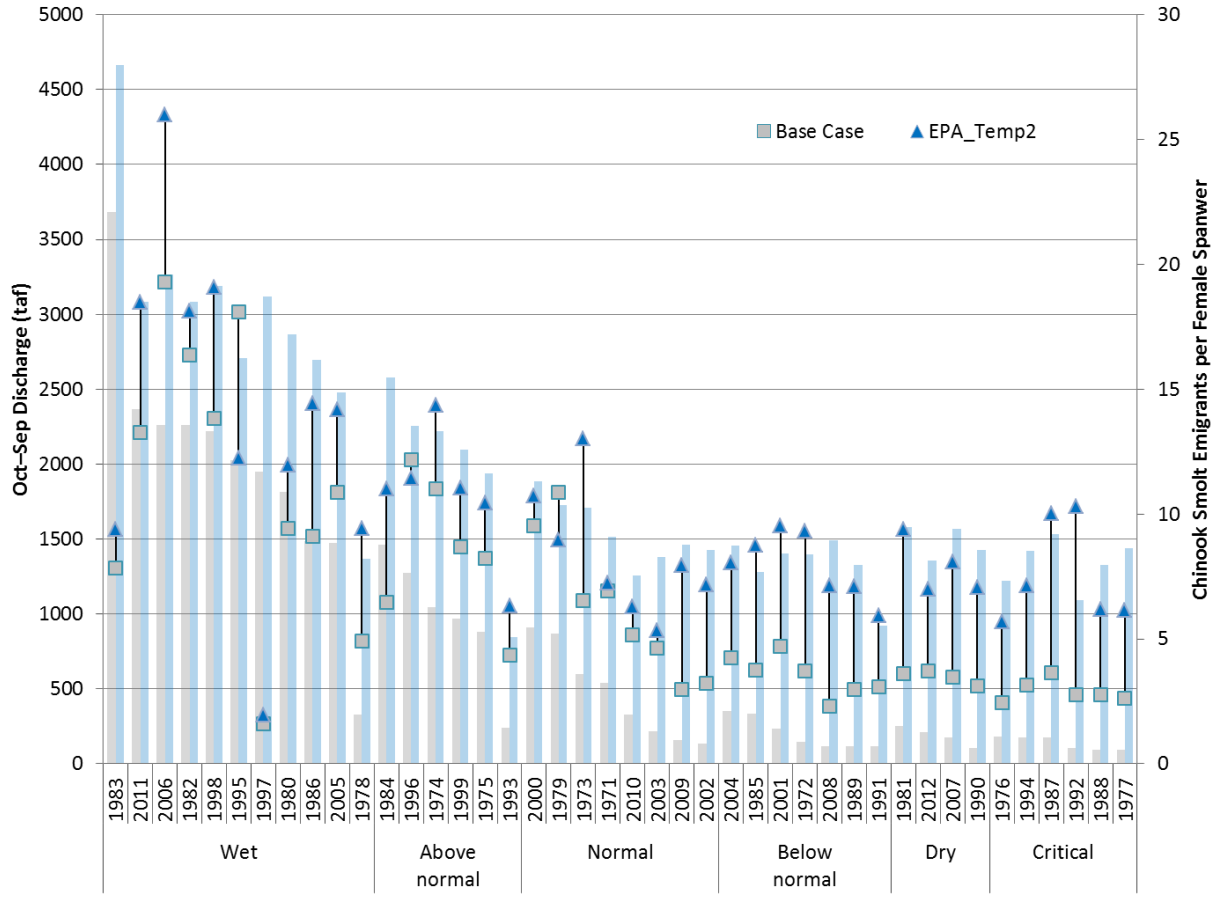

Figure 4-4. Modeled Chinook salmon smolt productivity comparisons for the EPA benchmarks scenario and Base Case scenario (1971–2012) sorted by annual discharge volume at La Grange and water year. [Note: Districts' population model does not incorporate EPA benchmark temperatures.]

Figure 4-5 shows Chinook smolt productivity as a function of annual flow. Because the TRCh model encodes a linear relationship of smolt survival with flow, it is not unexpected that the largest smolt productivity gains are shown for drier water years with otherwise low springtime flows. However, even without consideration of the feasibility of providing discharges necessary to meet the identified EPA benchmarks in the face of other Tuolumne River water demands, it is apparent that the EPA benchmarks scenario uses significantly greater amounts of water than the Base Case to achieve similar benefits to smolt productivity. For example, Figure 4-5 shows that under Base Case rules for flow requirements, a water year with approximately 1 million AF of water at the La Grange gage produces about eight smolts per female spawner. Using the EPA benchmarks, it takes approximately 1.45 million AF of water to produce eight smolts per spawner. Preliminary TRCh model scenario runs by the Districts have indicated that increases in smolt productivity can be accomplished using much less water than is represented by the EPA benchmarks scenario.

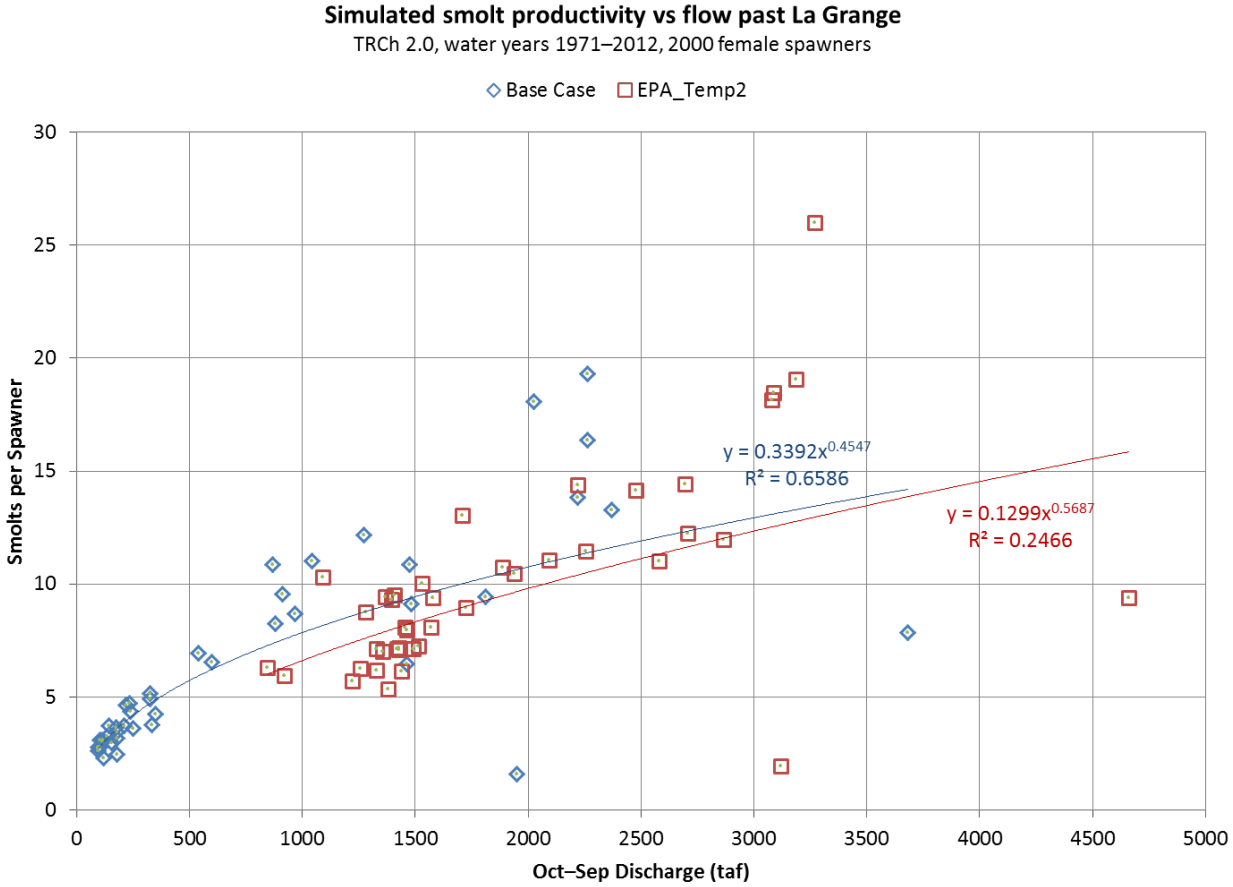

Figure 4-5. **Modeled Chinook salmon smolt productivity versus annual flow at La Grange resulting from operations scenario developed to meet EPA benchmark temperatures. [Note: Districts' population model does not incorporate EPA benchmark temperatures.]**

4.2.2 Juvenile *O. mykiss* productivity and adult replacement comparisons

Figures 4-6 and 4-7 provides the results of the model runs for juvenile *O. mykiss* productivity and adult replacement metrics for the EPA benchmarks scenario and Base Case scenario. Also shown in the figure are the modeled estimates of the annual discharge volume at the La Grange gage (USGS 11289650) for the simulation period. For *O. mykiss*, increased summertime flows under the EPA benchmarks scenario relative to Base Case operations results in increased juvenile productivity and adult replacement, with the largest relative increases occurring in Below Normal and drier water year types.

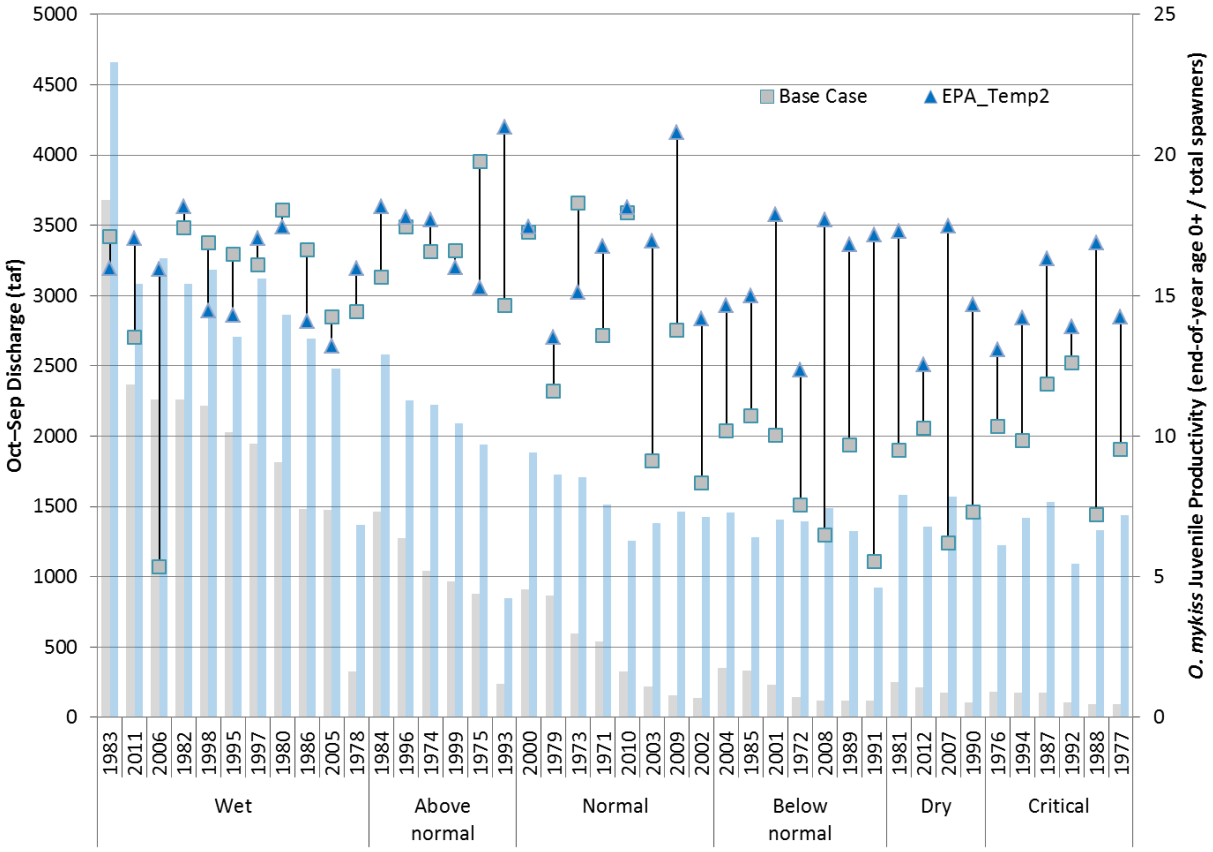

Figure 4-6. Modeled juvenile *O. mykiss* productivity comparisons for the EPA 2003 benchmarks and Base Case scenarios (1971–2012) sorted by annual discharge volume at La Grange and water year. [Note: Districts' population model does not incorporate EPA benchmark temperatures.]

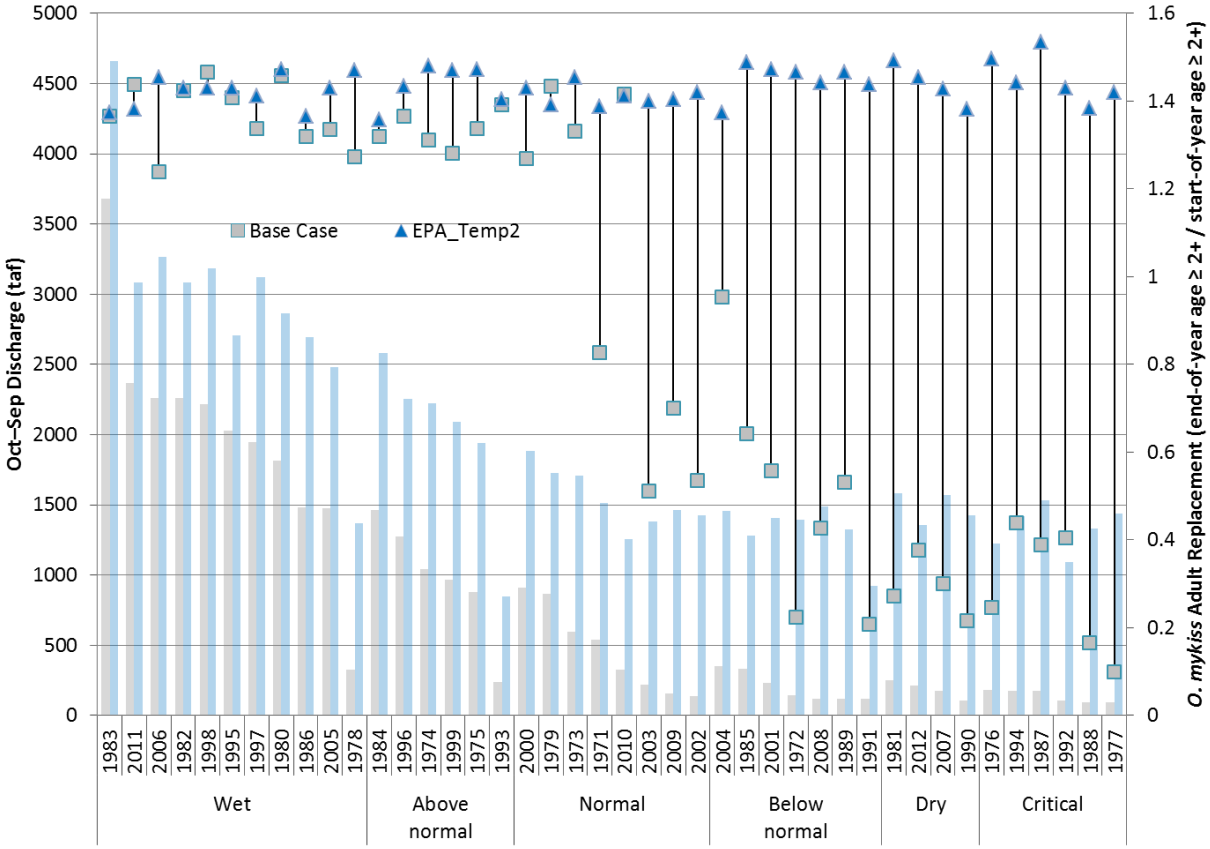

Figure 4-7. **Modeled adult *O. mykiss* replacement ratio comparisons for the EPA 2003 benchmarks and Base Case scenarios (1971–2012) sorted by annual discharge volume at La Grange and water year. [Note: Districts' population model does not incorporate EPA benchmark temperatures.]**

Figures 4-8 and 4-9 show juvenile *O. mykiss* productivity and adult replacement as a function of annual flow past La Grange. The apparent gains in *O. mykiss* productivity metrics relate directly to lower summertime temperatures under the EPA benchmarks scenario compared to the Base Case. In examining potential *O. mykiss* responses to increased extent of rearing habitat with suitable summertime rearing habitat under the Base Case, an annual flow past the La Grange gage of approximately 800 TAF results in an estimated 16 juvenile *O. mykiss* per spawner at the end of the simulation year on September 31st (Figure 4-8). Adult replacement ratios at an annual flow of 800 TAF were in excess of 1.2 (Figure 4-9). Interestingly, however, the large increases in annual flow necessary to meet the EPA benchmarks do not result in further increases in either juvenile productivity (Figure 4-8) or adult replacement (Figure 4-9). Preliminary runs by the Districts have shown comparable *O. mykiss* productivity can be achieved at annual discharge levels far below those corresponding to the EPA benchmarks.

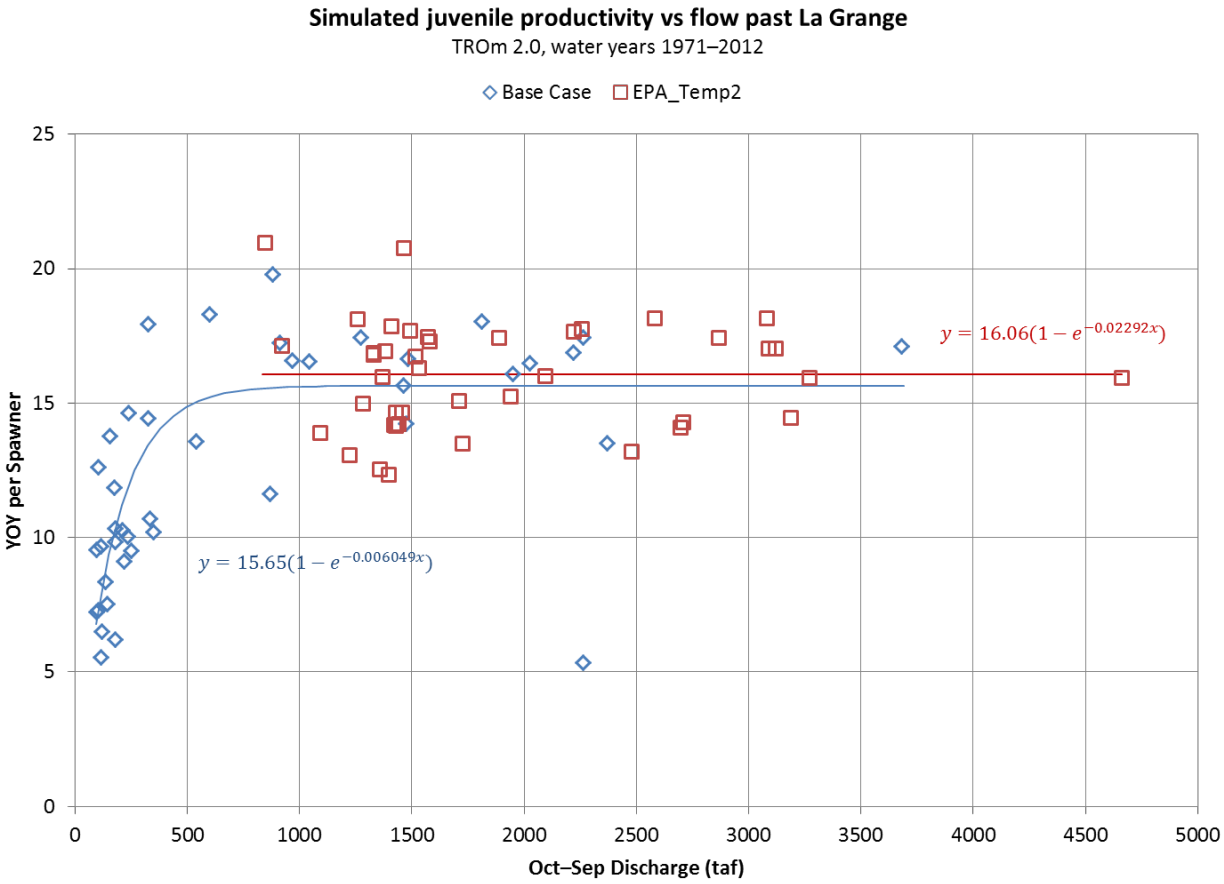

Figure 4-8. **Modeled juvenile *O. mykiss* productivity versus annual flow at La Grange resulting from operations scenario developed to meet EPA benchmark temperatures. [Note: Districts' population model does not incorporate EPA benchmark temperatures.]**

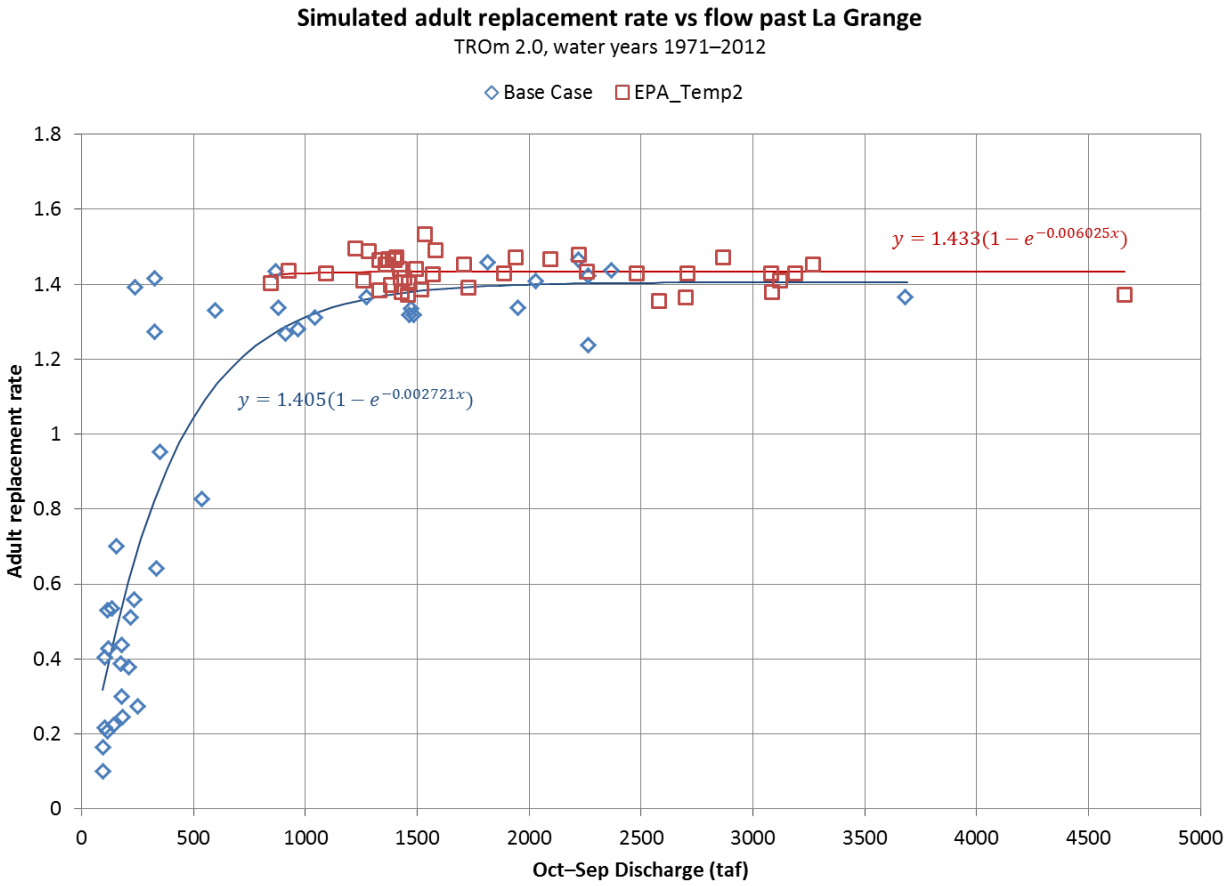

Figure 4-9. **Modeled adult *O. mykiss* replacement ratio versus annual flow at La Grange resulting from operations scenario developed to meet EPA benchmark temperatures. [Note: Districts' population model does not incorporate EPA benchmark temperatures.]**

5.0 DISCUSSION

At the request of FERC and SWRCB staff, the Districts performed model runs to examine what changes in the Don Pedro Hydroelectric Project's minimum flows would be needed to meet the temperature "benchmarks" established by EPA in its ruling and subsequent final decision on SWRCB's 2008-2010 Section 303(d) List of Impaired Waters. The Districts evaluation of what type of operational scenario might be required at the Don Pedro Project to meet the EPA benchmark temperatures applied the scenario wherein all consumptive use purposes of the Tuolumne River watershed, including CCSF's Hetch Hetchy Project, were completely eliminated, and the reservoirs were managed for water temperature purposes. The analysis demonstrated that, even with all consumptive uses being eliminated, the EPA benchmark temperatures were exceeded in 41 of 42 years. Further, the EPA's benchmark temperatures were exceeded for more than 50 days in 70 percent of the years. The Districts also applied their "without dams" temperature model to examine if unimpaired flows would attain the EPA benchmark temperatures. In every year of the "without dams" simulation (42 of 42 years), at least one of the EPA benchmark temperatures was exceeded under unimpaired flow conditions, and there were never any fewer than 100 days of non-attainment in any year. From this perspective, meeting EPA temperature benchmarks fared better under current operations than under unimpaired flow conditions.

Interpreting EPA's benchmark temperatures as "thresholds" above which significant biological harm occurs, one would be forced to conclude that historical and existing thermal conditions on the Tuolumne River have been, and continue to be, unsuitable for salmonids. However, common sense indicates otherwise, as there is and has been a fall-run Chinook salmon population on the Tuolumne River, and empirical data show that the *O. mykiss* population is increasing. The Districts' salmonid population models developed for the Don Pedro relicensing reflect thermal and biological realities, using established bioenergetics principles and approaches that predict biological responses over a range of temperatures, providing a more realistic basis for assessing temperature management needs on the lower Tuolumne River. Under the EPA benchmarks, it is unclear what biological outcomes are to be assumed to occur since the benchmark temperatures are routinely exceeded under the scenarios analyzed.

Although the Districts remain unclear regarding the EPA's definition of a temperature "benchmark", the analyses performed for this evaluation indicate that any reasonable possibility of satisfying the EPA benchmarks as "thresholds" must reconsider not only the temperature component of the benchmarks, but the location and time period over which the benchmarks are achieved. The analyses presented above suggest the need for all parties to engage in open dialogue on the appropriate application and interpretation of the EPA "benchmarks".

6.0 LITERATURE CITED

USEPA. 2011, October 11. USEPA's final approval letter and enclosure for California's 2010 303(d) List (http://www.swrcb.ca.gov/rwqcb5/water_issues/tmdl/impaired_waters_list/index.shtml)

ATTACHMENT A
DISTRICTS' RESPONSE TO COMMENTS ON DRAFT LICENSE APPLICATION

APPENDIX B

RESPONSE TO CONSERVATION GROUPS' COMMENTS REGARDING CUMULATIVE EFFECTS ANALYSIS

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PART I

DATE: APRIL 2014

I. CONTRARY TO THE CONSERVATION GROUPS' ARGUMENTS, THE DISTRICTS ARE NOT REQUIRED TO ENGAGE IN SPECULATIVE ANALYSIS, OR DO THE IMPRACTICAL BY INCLUDING DETAILED CONSIDERATION OF UNKNOWN CUMULATIVE EFFECTS IN THE FINAL LICENSE APPLICATION.

The National Environmental Policy Act ("NEPA")[1] does not require an agency to "engage in speculative analysis" or "do the impractical, if not enough information is available to permit meaningful consideration." (*N. Plains Res. Council v. Surface Transp. Bd. ("N. Plains")*, 668 F.3d 1067, 1078 (9th Cir. 2011). See *Transcon. Pipe Line Co., LLC*, 143 FERC ¶ 61132 (May 16, 2013), at P 60, n. 84 (quoting *N. Plains*, 668 F.3d at 1078) (internal quotation omitted) ("NEPA does not require an agency to engage in speculative analysis or do the impractical, if not enough information is available to permit meaningful consideration.").) Thus, although a relicense application must contain information that FERC "may determine is necessary for compliance" with NEPA,[2] including the identification of cumulatively affected resources,[3] applicants are not obligated to engage in speculative analysis or do the impractical where there is not enough information available to permit meaningful consideration.

A. The Districts Cannot be Required to Include Detailed Analysis of the Proposed Action's Cumulative Effects on Fish Passage Above La Grange Dam in the Final License Application.

The Conservation Groups ("CGs") recommend that in light of FERC's determination that it has jurisdiction over the La Grange Project, the Final License Application ("FLA") should, "[a]t minimum, use existing information to identify potential alternatives for addressing the project's cumulative impacts on fish passage."[4] Further, the CGs suggest that the Districts should now be required to undertake upstream fish passage studies at the Don Pedro Project.[5]

However, FERC has simply determined that the Districts must file a license (or exemption) application for the La Grange Project.[6] Thus, it remains to be seen whether FERC will ultimately issue a license for the La Grange Project, and, if so, whether the Districts will accept the issued license. Because FERC's authority to impose mitigation measures only extends to licensed projects, unless and until FERC issues a license for the La Grange Project,

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[1] 42 U.S.C. §§ 4321, *et seq*.

[2] 18 C.F.R. § 380.3(a)(2).

[3] 18 C.F.R. § 5.18(b)(2).

[4] *Conservation Groups' Comments on Draft License Application and Updated Study Report*, Project No. 2299-075, February 24, 2014 (referred to below as "CGs' Comments"), at pp. 35-36. The CGs' Comments were jointly submitted by ten conservation groups: the Tuolumne River Trust, American Rivers, American Whitewater, California Sportfishing Protection Alliance, California Trout, Friends of the River, Golden West Women Flyfishers, Central Sierra Environmental Resource Center, Northern Council Federation of Flyfishers, and Trout Unlimited. See *id*. at pp. 43-46.

[5] *Id*. at pp. 35-36.

[6] *Turlock Irrigation District and Modesto Irrigation District*, 141 FERC ¶ 62,211, at P 45 (2012).

and the Districts accept the issued license, FERC cannot require the Districts to implement measures to mitigate the adverse effects, if any, of the La Grange Project. The Districts cannot be required to speculate as to whether FERC will ultimately license the La Grange Project, and, if so, whether it will require fish passage. (*N. Plains*, 668 F.3d at 1078.) Further, in order to meaningfully consider the cumulative effects of continued generation of hydroelectric power at the Don Pedro Project ("Proposed Action")[7] on fish passage above La Grange dam, the Districts would, at a minimum, need certain information that is not currently available, *e.g.*, the nature and extent of any future fish passage requirements. (*Id*.)

In addition, contrary to the CGs' arguments, the basis for the Director of the Office of Energy Project's ("OEP") decision not to require fish passage studies for the Don Pedro Project remains valid because fish passage above La Grange dam is not "reasonably certain to occur in the near future."[8] More specifically, the Director of OEP's decision was based on: (1) the fact that La Grange dam is the terminal barrier to upstream fish passage on the Tuolumne River; and, (2) the fact that there had been no showing "that fish passage above La Grange dam would be reasonably certain to occur in the near future."[9] However, FERC may not ultimately issue a license for the La Grange Project, or FERC may issue a license for the La Grange Project but not require fish passage, or the Districts' may prevail on their appeal of FERC's determination that it has jurisdiction over the La Grange Project in the D.C. Circuit Court of Appeal, and/or or the Districts may not accept any license that is issued. Thus, FERC cannot consider fish passage above La Grange dam to be "reasonably certain to occur" unless and until it issues a license for the La Grange Project that contains fish passage requirements, the Court of Appeal affirms FERC's assertion of jurisdiction over the La Grange Project, and the Districts accept the issued license. Therefore, the Director of OEP's rationale remains valid, and thus, the Districts cannot be required to conduct fish passage studies for inclusion in the FLA.

B. The Districts Cannot be Required to Engage in Multiple Levels of Speculative Analysis Regarding Potential Cumulative Effects of Project and Non-Project Operations that May Result from the State Water Resource Control Board's Contemplated Amendments to the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary.

The CGs recommend that the cumulative effects analysis in the FLA include detailed consideration of the State Water Resources Control Board's ("State Water Board") contemplated amendments to the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary ("Bay-Delta Plan"), which would establish new flow objectives on the Lower San Joaquin River ("LSJR") and its three eastside tributaries, the Stanislaus, Tuolumne, and Merced rivers, and new southern Delta water quality ("SDWQ") objectives.[10] More specifically, the CGs recommend,

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[7] The proposed action being considered by FERC in this relicensing proceeding is whether, and under what conditions, to authorize the Districts to continue generating hydroelectric power at the Don Pedro Project.

[8] OEP, "Study Plan Determination for the Don Pedro Hydroelectric Project," eLibrary Accession No. 20111222-3041, December 22, 2011, at p. 74.

[9] *Id.*

[10] CGs' Comments, *supra* note 4, at pp. 37-38; *See* Public Draft of Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the San Francisco Bay-Sacramento/San Joaquin Delta Estuary: San Joaquin River Flows and Southern Delta Water Quality (referred to below as "Draft SED"), Executive Summary, *available at* http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2012_sed/docs/2012_exec_sum.pdf, at p. ES-1.

> The FLA should use existing information to consider how project operations would be modified in response to a requirement that the Tuolumne River release between 30% and 60% of February – June unimpaired flow measured at the La Grange Gauge. It should consider that this requirement may be modified in multiple sequential dry year scenarios. It should also consider whether changes at the project would likely be made in coordination with changes at in-basin non-project facilities, e.g., CCSF's Hetch-Hetchy system. It should consider how alternative operating scenarios to comply with higher instream flows would change the project's cumulative effects on water resources, aquatic resources, geomorphology, and socioeconomics.[11]

The CGs' recommendation that the cumulative effects analysis in the FLA consider how project operations for both the Don Pedro Project and "in-basin non-project facilities," such as "CCSF's Hetch-Hetchy system," might be modified in "response to a requirement that the Tuolumne River release between 30% and 60% of February – June unimpaired flow," and further, consider cumulative effects that may result from such potential modifications to project and non-project operations, over such a broad geographic scope, potentially extending as far as "upstream on the Tuolumne River to Hetch Hetchy and extending downstream to San Francisco Bay,"[12] would have the Districts engage in speculative analysis of extremely limited, if any, practical utility for at least three reasons.

1. The Current Status of Environmental Review for the State Water Board's Contemplated Amendments to the Bay-Delta Plan, and the Further Proceedings that would be Needed in Order to Implement New LSJR Flow Objectives, Preclude Meaningful Consideration of the Cumulative Effects of New Unimpaired Flow Requirements on the Tuolumne River.

The Draft SED evaluates five alternatives for LSJR flows during the February-June time frame, a Preferred LSJR Alternative, a No Project Alternative (LSJR Alternative 1), and three other alternatives (LSJR Alternatives 2, 3, and 4).[13] The Draft SED explains that LSJR Alternative 1, the No Project Alternative, aims to present baseline conditions by assuming the continuation of existing requirements into the foreseeable future.[14] The Preferred LSJR

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[11] CGs' Comments, *supra* note 4, at p. 38.

[12] *Scoping Document 2 Don Pedro Hydroelectric Project*, Project No. 2299-075, Federal Energy Regulatory Commission, Office of Hydropower Licensing, Washington, DC, July 2011 (referred to below as "Scoping Document 2"), at p. 34.

[13] Draft SED, *supra* note 10, at pp. ES-2, ES-11.

[14] *Id*. at p. ES-13 (*citing* 14 CCR § 15126.6(e)(1) and (3)(A).) As the Draft SED explains, the No Project Alternative "conditions include full compliance with all flow and water quality objectives in the 2006-Bay-Delta Plan as implemented through Water D-1641 and the [National Marine Fisheries Service Biological Opinion] (which is included in the baseline . . . . SJR flow and SDWQ conditions differ between the No Project Alternative and baseline. Specifically, relative to flow, the [Vernalis Adaptive Management Plan or VAMP] flows were being implemented under baseline conditions, but VAMP ended in 2011, after the baseline was established. Accordingly, under the No Project Alternative, flow requirements at Vernalis would be those required under D-1641, which are generally higher than those required previously under VAMP."). *Id*. at pp. ES-13, ES-14. *See also* San Joaquin Tributaries Authority, "Substantive Comments on the Draft Substitute Environmental Document" (Mar. 29, 2013), *available at* http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/baydelta_pdsed/doc

Alternative, if adopted, would establish February-June flow requirements of 35 percent unimpaired flow for the Stanislaus, Tuolumne, and Merced Rivers.[15] LSJR Alternative 2 would require minimum 14-day running average unimpaired flows of 20 percent from the rivers during the same period.[16] LSJR Alternative 3 would require unimpaired flows of 40 percent, and LSJR Alternative 4 would require unimpaired flows of 60 percent.[17] Notably, because the Draft SED analyzes the effects of a range of flows from 20 to 60 percent of unimpaired flow, the State Water Board "could select an alternative percent of unimpaired flow within this range."[18] Thus, in addition to the percentages of unimpaired flow, *i.e.*, 20, 35, 40, and 60 percent, that are identified in the Draft SED, the State Water Board may ultimately adopt a different percentage of unimpaired flow between 20 and 60 percent for February-June flow requirements on the Stanislaus, Tuolumne, and Merced Rivers.

Moreover, the State Water Board plans to release a "revised draft Substitute Environmental Document (SED) for Phase 1 of the update to the Bay-Delta Water Quality Control Plan in April 2014."[19] However, the release may be delayed "due to the increased work effort to deal with drought issues."[20] In any event, the current Draft SED will be superseded by a revised version.

Therefore, the CGs' recommendation that the cumulative effects analysis in the FLA include detailed consideration of an indeterminate number of potential flow scenarios, and consider how each of the flow scenarios may be modified in dry years, and further, anticipate how Don Pedro Project and non-project operations might be changed to accommodate such flow scenarios, and then analyze the cumulative effects of such operational changes, would require the Districts to engage in several levels of speculative analysis of little, if any, practical utility. (*N. Plains*, 668 F.3d at 1078.) More importantly, because the Draft SED will be superseded by a revised version, the Districts simply do not have the information available to permit meaningful consideration. (*Id*.)

Additionally, another practical consideration militates against analysis of the cumulative effects of the State Water Board's potential amendments to the Bay-Delta Plan at this time; following the State Water Board's release of a revised version of the Draft SED and eventual, formal adoption of the SED and new LSJR flow objectives, extensive, further proceedings would still be required before any new LSJR flow objectives could be implemented. The contemplated amendments to the Bay-Delta Plan do "not affect the water rights of anyone either within or outside the Delta. Any changes to water rights that may be needed to implement the plan will be considered in future proceedings."[21] As explained in the Draft SED,

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s/comments032913/valerie_kincaid.pdf, at pp. 46-48 (explaining that the inappropriate inclusion of VAMP flows in the baseline results in the Draft SED falsely minimizing project impacts, and that the exclusion of Stanislaus River instream flows skews the analysis to reflect false impacts to aquatic resources).

[15] Draft SED, *supra* note 10, at p. ES-2.

[16] *Id*. at p. ES-14.

[17] *Id*.

[18] *Id*. at p. ES-3. See also *id*. at p. ES-12 (explaining that the range of unimpaired flows of between 20 and 60 percent "were selected as alternatives to capture the range of potential flow alternatives that the State Water Board may implement.").

[19] *See* State Water Board's website, Bay-Delta Program & Delta Watermaster Portals, Announcements, *available at* http://www.swrcb.ca.gov/water_issues/programs/delta.shtml.

[20] *Id*.

[21] Draft SED, *supra* note 10, at pp. ES-1, ES-2.

> [t]o develop precise requirements for implementation of the provisions described above, LSJR Alternatives 2, 3, and 4 call for establishing an implementation workgroup consisting of persons with expertise in fisheries management, unimpaired flows, and operations on the Stanislaus, Tuolumne, and Merced Rivers to develop recommendations for such measures that would best achieve the February-June requirements while minimizing water supply costs. The recommendations would be included in an implementation plan submitted to the Executive Director of the State Water Board for approval within a specified period. The implementation plan would then be considered in State Water Board water right proceedings, Federal Energy Regulatory Commission licensing proceedings, or during other implementation actions to achieve the February-June flows.[22]

Thus, following the State Water Board's release of a revised version of the Draft SED, eventual, formal adoption of the SED and new LSJR flow objectives, and possible administrative and court review of the State Water Board's determinations, *e.g.*, a court may stay any attempt to implement the objectives pending the outcome of a legal challenge, extensive, further proceedings would still be required before any new LSJR flow objectives could be implemented. NEPA does not require consideration of other projects so far removed in time "that the interrelationship, if any, between them is unknown and speculative."[23] (*Natural Res. Defense Council, Inc. v. Callaway*, 524 F.2d 79, 90 (2nd Cir. 1975).)

Although, as the Conservation Groups point out, the State Water Board may prescribe instream flows for the Tuolumne River in any water quality certification that it issues for the Proposed Action under Clean Water Act section 401, Title 33 United States Code ("U.S.C.") section 1341,[24] the imposition of any such flow requirements would occur in an entirely distinct regulatory setting, *i.e.*, as part of FERC's relicensing proceeding. While it may be foreseeable that the State Water Board will condition certification on instream flow releases that it believes are needed to help achieve tributary flow objectives that may ultimately be adopted in the Bay-Delta Plan,[25] unless and until the State Water Board imposes such requirements under its 401 certification authority, and such requirements are affirmed in any administrative review or State court challenge of the State Water Board's final decision, it would be inappropriate and unlawful to require the Districts to speculate as to what such flow requirements may be, and the nature and extent of the cumulative effects that might result from such flows.

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[22] *Id*. at p. ES-12.

[23] See also *Mooreforce, Inc. v. U.S. Dep't of Transp*., 243 F. Supp. 2d 425, 441 (M.D.N.C. 2003) (*citing* 40 C.F.R. § 1508.23; *Kleppe v. Sierra Club*, 427 U.S. 390, 410 n.20 (1976)) (internal quotation omitted) (stating, "a proposal exists at that stage in development of an action when an agency ... has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated. Projects that are not imminent are not considered proposals, and therefore, do not require an analysis of cumulative impacts.").

[24] CGs' Comments, *supra* note 4, at p. 38.

[25] *Id*. (opining, "[i]t is reasonably foreseeable that the State Water Board will condition certification on instream flow releases that are needed to help achieve tributary flow objectives adopted in the Bay-Delta Plan.").

2. Any Future Analysis of the Cumulative Effects of the Proposed Action that Might Result from Potential, New Unimpaired Flow Requirements on the Tuolumne River Must be Limited to Effects Downstream of the Don Pedro Project and Within the Tuolumne River.

Even if the practical and procedural obstacles detailed above could be surmounted in a reasonable time frame, *e.g.*, by a comprehensive, multi-party settlement providing for implementation of new LSJR water quality objectives, the CGs' recommendation would still, to a great extent, be impracticable. It is not possible to meaningful consider the cumulative effects, if any, of the Proposed Action that might result in certain geographic areas from new unimpaired flow requirements on the Tuolumne River. More specifically, FERC has broadly defined the geographic scope of its cumulative effects analysis for water resources, aquatic resources, and socioeconomics as "extending upstream on the Tuolumne River to Hetch Hetchy and extending downstream to San Francisco Bay," and "tentatively determined a cumulative geographic scope for anadromous fish and [essential fish habitat] that includes the Tuolumne River basin downstream to the confluence with the San Joaquin River, and through the Sacramento-San Joaquin Delta to [the] San Francisco Bay."[26] But the geographic scope of the Districts' analysis of the Proposed Action's cumulative effects, assuming new LSJR objectives on the Tuolumne River, cannot extend upstream of the Don Pedro Project. As the Draft SED explains, "physical environmental effects upstream of the three rim dams and respective reservoirs are not expected under the LSJR alternatives. . . ."[27] Therefore, these upstream reaches were not included in the modeling or analysis for the Draft SED.[28] Accordingly, it would be inappropriate to require the Districts to undertake analysis that the State Water Board has determined to be irrelevant and unnecessary.

Similarly, the geographic scope of the Districts' analysis of the Proposed Action's cumulative effects, assuming new LSJR objectives on the Tuolumne River, cannot extend downstream beyond the Tuolumne River. As explained in more detail below, because the Proposed Action's contribution, if any, to cumulative effects in the highly complex and dynamic environments of the San Joaquin River basin, Sacramento-San Joaquin Delta, and the San Francisco Bay has not been quantified, and cannot be isolated from the effects of other contributing actions, it would be inappropriate to require the Districts to speculate as to the nature and extent of such cumulative effects. (*N. Plains*, 668 F.3d at 1078.)

3. It is Not Possible to Analyze the Cumulative Effects of the Proposed Action that Might Result from Potential, New Unimpaired Flow

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[26] *Scoping Document 2*, supra note 12, at p. 34 (wherein FERC broadly defined the geographic scope of its cumulative effects analysis for water resources, aquatic resources, and socioeconomics "as extending upstream on the Tuolumne River to Hetch Hetchy and extending downstream to San Francisco Bay." By contrast, for geomorphology, FERC explained, "at this time we define the geographic scope as extending upstream of the Tuolumne and San Joaquin Rivers." FERC also "tentatively determined a cumulative geographic scope for anadromous fish and [essential fish habitat] that includes the Tuolumne River basin downstream to the confluence with the San Joaquin River, and through the Sacramento-San Joaquin Delta to San Francisco Bay.").

[27] Draft SED, *supra* note 10, at p. 5-56.

[28] *Id*. at p. 5-55.

Requirements on the Tuolumne River Until Outstanding FERC Ordered Studies Have Been Completed.

Even if the practical and procedural obstacles detailed above in Section I(B)(1) were surmounted in a reasonable time frame, and the geographical scope of the Districts' analysis of the Proposed Action's cumulative effects, assuming new LSJR objectives, was limited to the stretch of the Tuolumne River below the project, such effects could not be comprehensively analyzed until five important studies involving the river are completed, *i.e*., Lower Tuolumne River Predation Study using a mark-recapture approach, Fall-run Chinook Salmon Otolith Study, Lower Tuolumne River Floodplain Hydraulic Assessment, Non-Native Predator IFIM Assessment, and *O.Mykiss* Swim Tunnel Study. Until these studies are completed, the Districts are unable to comprehensively analyze the cumulative effects of the Proposed Action that might result from new LSJR objectives on the Tuolumne River, or develop and propose appropriate protection, enhancement and mitigation ("PM&E") measures.[29]

C. The Districts Cannot be Required to Engage in Speculative Analysis Regarding Potential Cumulative Effects of Project Operations that May Result from Exports Under the Bay Delta Conservation Plan.

The CGs recommend that the cumulative effects analysis in the FLA include detailed consideration of an undefined "suite of reasonable Delta export operations . . . on their own or combined" with operation of exports under the Bay Delta Conservation Plan ("BDCP") north Delta diversion scenarios.[30]

The CGs' recommendation would have the Districts engage in speculative analysis of extremely limited, if any, practical utility given the current status of environmental review for the BDCP and the State Water Board's contemplated amendments to the Bay-Delta Plan.[31] The Draft Environmental Impact Report / Environmental Impact Statement for the Bay Delta Conservation Plan ("BDCP Draft EIR/EIS") analyzes 15 action alternatives.[32] The action alternatives are "variations of conservation plans that differ primarily in the location, design, *conveyance capacity*, and rules that would determine the *operation of the conveyance facilities* implemented under [BDCP Conservation Measure 1 or CM1]."[33] As the BDCP Draft EIR/EIS explains,

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[29] *See e.g.*, Letter from Vince Yearick, Director, Division of Hydropower Licensing, Office of Energy Projects, Federal Energy Regulatory Commission, to Steve Boyd, Director of Water Resources, Turlock Irrigation District, and Greg Dias, Project Manager, Modesto Irrigation District, Project No. 2299-075, March 5, 2014, at p. 2 (granting 1-year extension to complete *W&AR-7--Predation Study* after determining that "[t]he results of the predation study are necessary for the Commission's environmental analysis of project effects and evaluation of potential protection, mitigation, and enhancement measures for the new license.").

[30] CGs' Comment, *supra* note 4, at p. 39 (wherein the CGs recommend "[t]he FLA should use existing information to consider project operations in the context of a suite of reasonable Delta export operations, including South Delta export reductions or cessation in the February through June period, on their own or combined with operation of exports under BDCP (north Delta diversion) scenarios.").

[31] *See* Draft SED, *supra* note 10, at p. ES-1.

[32] Draft Environmental Impact Report/Environmental Impact Statement Bay Delta Conservation Plan, Section 3.1 (referred to below as "BDCP Draft EIR/EIS"), *available at* http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Public_Draft_BDCP_EIR-EIS_Chapter_3_-_Description_of_Alternatives.sflb.ashx, at p. 3-2.

[33] *Id*. (italics added). *See also* BDCP Draft EIR/EIS, Appendix 3A, Identification of Water Conveyance Alternatives, Conservation Measure 1, *available at*

> *[T]he alternatives range from the proposed construction of one [3,000 cubic feet per second or cfs] intake to five such intake facilities, representing a range of north Delta conveyance capacities from 3,000 cfs to 15,000 cfs. The operational rules also include varying requirements for Delta outflow and river flows in the south Delta.* The range of alternatives also include different amounts and types of habitat restoration and enhancement proposed under [Conservation Measure 2] through [Conservation Measure 11]. One alternative includes 40,000 fewer acres of tidal habitat restoration compared to the other alternatives. Another includes 10,000 more acres of seasonally inundated floodplain restoration and 20 more miles of channel margin enhancement compared to the other alternatives.[34]

Thus, the 15 action alternatives represent a range of north Delta conveyance capacities from 3,000 cfs to 15,000 cfs.[35] In fact, the 15 action alternatives include facilities with 4 different diversion and conveyance capacities, *i.e.*, 3,000, 6,000, 9,000, and 15,000 cfs.[36]

Further, as noted, the 15 action alternatives include varying requirements for Delta outflow and river flows in the south Delta.[37] There are several sets of rules that govern Delta outflow, including the minimum monthly outflows specified in D-1641 for each month, which often depend on the water year type, *i.e.*, runoff conditions.[38] These flows objectives were established to protect beneficial uses of Delta water for fish habitat.[39] As explained, "the State Water Board has recently explored additional operational rules that would require Delta outflow to be a specified percentage of monthly unimpaired flow."[40] Accordingly, although most of the

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http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Public_Draft_BDCP_EIR-EIS_Appendix_3A_-_Identification_of_Water_Conveyance_Alternatives_Conservation_Measure_1.sflb.ashx, at p. 3A-2 (explaining that Conservation Measure 1 "consists of water conveyance facilities components combined with water conveyance operational components."). More specifically, Conservation Measure 1 includes: "[a] range of conveyance alignment alternatives to convey water from the Sacramento River to existing [State Water Project or SWP] and [Central Valley Project or CVP] pumping plants located in the south Delta," and "[a] range of conveyance water supply operations alternatives related to the timing and capacity of water diversions from the Sacramento River and/or from existing SWP and CVP pumping plants in the south Delta." *Id.*

[34] BDCP Draft EIR/EIS, Section 3.1, *supra* note 32, at p. 3-2 (italics added).

[35] *Id.*

[36] *Id.* at p. 3-8.

[37] *Id.* at p. 3-2.

[38] *Id.* at p. 3-33. See *In the Matter of Implementation of Water Quality Objectives for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary; A Petition to Change Points of Diversion in the Southern Delta; and a Petition to Change Places of Use and Purposes of Use of the Central Valley Project*, dated March 15, 1999, 1999 WL 33582265 (Cal.St.Wat.Res.Bd.) (denying reconsideration of Water Right Decision 1641 (D-1641) and amending D-1641).

[39] BDCP Draft EIR/EIS, Section 3.1, *supra* note 32, at p. 3-33.

[40] *Id.*

BDCP alternatives include the D-1641 rules, "BDCP Alternative 8 includes a monthly outflow/unimpaired flow percentage of 55% from January through June."[41]

Notably, when the BDCP Draft EIR/EIS was released, on December 9, 2013, the federal lead agencies did not identify a preferred alternative for the purposes of NEPA.[42] By contrast, the Department of Water Resources ("DWR"), the lead agency under the California Environmental Quality Act ("CEQA") and project applicant for the BDCP, has identified Alternative 4 as the preferred alternative for purposes of CEQA.[43] However, the BDCP Draft EIR/EIS clarifies,

> [I]dentification of Alternative 4 as the preferred CEQA alternative is tentative only, and is subject to change as DWR and the CEQA responsible agencies, as well as the NEPA Lead Agencies, receive and consider public and agency input on this EIR/EIS. It is therefore possible that the final version of the BDCP may differ from Alternative 4 as described herein, either because Alternative 4 itself was refined, because another alternative was determined to be preferable, or because the Lead Agencies, in response to input, developed a new alternative with some features from some existing alternatives and other features from other existing alternatives.[44]

The public review and comment period for the BDCP Draft EIR/EIS is December 13, 2013 through June 13, 2014 (including a 60-day extension of the comment period).[45]

Therefore, the CGs' recommendation that the cumulative effects analysis in the FLA include consideration of an undefined "suite of reasonable Delta export operations . . . on their own or combined" with operation of exports under the BDCP north Delta diversion scenarios would require the Districts to analyze 15 action alternatives – all of which are subject to change as a result of further refinements and/or input received on the BDCP Draft EIR/EIS – that represent a range of north Delta conveyance capacities from 3,000 cfs to 15,000 cfs and variations in assumptions about LSJR flow objectives, as established by D-1641, which, as noted, may be amended by the State Water Board.[46] Even if there was sufficient information

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[41] *Id*. at p. 3-33 (stating, "[a]ll the BDCP alternatives include these same D-1641 rules."); compare *id*. at p. 3-34 (referencing potential new State Water Board rule that would "require Delta outflow to be a specified percentage of monthly unimpaired flow," and explaining, "[b]ecause this possible Delta outflow rule would limit the total water diverted to storage or exported, higher outflows might be expected in many months. BDCP Alternative 8 includes a monthly outflow/unimpaired flow percentage of 55% from January through June.").

[42] *Id*. at p. 3-3.

[43] *Id*.

[44] *Id*. at p. 3-4.

[45] Bay Delta Conservation Plan website, *available at* http://baydeltaconservationplan.com/PublicReview.aspx.

[46] Notably, at least one of the CGs, the California Sportfishing Protection Alliance ("CSPA"), publicly opposes the BDCP, and further, has recommended a "Better Solution," that it describes as "a series of formal analyses . . . necessary to providing [sic] the information and framework that would allow solutions to materialize." California Sportfishing Protection Alliance website, No Bay Delta Conservation Plan Campaign, *available at* http://calsport.org/news/no-bdcp-campaign/. Thus, although CSPA does not support *any* of the 15 action alternatives analyzed by the BDCP Draft EIR/EIS, it nevertheless requests that the Districts comprehensively analyze *all* of them, by explaining how each alternative would interact with the Don Pedro Project in contributing to cumulative effects.

available to permit meaningful consideration of the range of alternatives presented by the BDCP Draft EIR/EIS and the underlying assumptions upon which they rely, NEPA does not require such precision. *Idaho Power Co.*, 110 FERC ¶ 61,242, at P 30 (2005) (explaining, "the Conservation Groups charge that the cumulative impacts analysis is too general, apparently because it does not explain in detail how each action alternative would interact with each factor contributing to cumulative impacts. *NEPA does not require such precision.* As noted above, NEPA requires only a reasonably thorough discussion of the significant aspects of the probable environmental consequences. We believe that standard has been met.") (italics added).

D. The Districts Cannot be Required to Engage in Speculative Analysis Regarding Cumulative Effects to Tuolumne River Salmon and Steelhead from Head of Old River Barrier and Other Potential, Future Barriers Downstream on the San Joaquin River.

The CGs recommend that "the FLA should evaluate the benefits to Tuolumne River salmon and steelhead of the placement of various barriers in South Delta channels," such as "an engineered fish protection structure at the head of Old River, and potentially at other points downstream on the San Joaquin [River]."[47]

The Head of Old River ("HOR") barrier is part of the South Delta Temporary Barriers Project, which was initiated as a test project in 1991 and extended for five years in 1996, and again for seven years in 2001.[48] The project consists of four rock barriers across South Delta channels.[49] Of the four rock barriers, the HOR barrier serves as a fish barrier and has been in place most years since 1963 between September 15 and November 30.[50] It was also installed in the spring between April 15 and May 30 of 1992, 1994, 1996, 1997, 2000, 2001, 2002, 2003, and 2004, and 2007 (high San Joaquin River flows prohibited installation in 1993, 1995, 1998, 1999, 2005, and 2006).[51] In 2008, a court order designed to protect Delta smelt prohibited the installation of the spring HOR barrier pending fishery agency actions or further order of the court.[52]

In short, because the HOR barrier is not currently installed, and it is unclear whether it will be installed again, how it might be operated in the future, and if it even benefits salmonid survival through the Delta,[53] it would be inappropriate and unlawful to require the Districts to speculate as to how these issues may ultimately be resolved. (*N. Plains*, 668 F.3d at 1078.)

Similarly, as it is unknown whether other fish barriers downstream on the San Joaquin River will be installed, and, if so, where such barriers might be located, the Districts cannot be required to speculate as to how these issues may ultimately be resolved, and, what, if any, relevant cumulative effects might result. (*Id.*)

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[47] CGs' Comments, *supra* note 4, at pp. 13, 39.

[48] Temporary Barriers Project Information, California Department of Water Resources Bay-Delta website, *available at* http://baydeltaoffice.water.ca.gov/sdb/tbp/web_pg/tempbar.cfm.

[49] *Id.*

[50] *Id.*

[51] *Id.*

[52] *Id.*

[53] Temporary Barriers Operating Schedule, California Department of Water Resources Bay-Delta website, *available at* http://baydeltaoffice.water.ca.gov/sdb/tbp/web_pg/tempbsch.cfm#(xvii) (explaining, "[t]he 2013 spring Head of Old River Rock Barrier was not installed due to uncertainty about the benefits of installing the barrier to salmonid survival through the Delta.").

E. The Districts Cannot be Required to Engage in Speculative Analysis Regarding Potential Cumulative Effects of Restoration Flows to be Released Under the San Joaquin River Restoration Program.

The CGs contend that the Draft License Application ("DLA") does not include adequate information to determine how operation of Friant Dam in accordance with the San Joaquin River Restoration Program ("SJRRP") "affects the project's cumulative effects on salmon and steelhead" in the Tuolumne river, *e.g*., "increased releases from Friant Dam in February and March will provide additional cold water to the San Joaquin River, including the reach downstream of the confluence with the Tuolumne River. This may improve success of rearing and outmigration of juvenile salmon and steelhead from the Tuolumne River."[54] Thus, the CGs recommend that the "FLA should include alternatives that consider various flow releases from Friant Dam and varying water temperature impacts, and should consider potential measures that would create benefits for Tuolumne River salmon and steelhead from increased Friant releases."[55]

Although restoration flows contemplated under the SJRRP may, as the CGs suggest, eventually improve rearing and outmigration conditions for juvenile salmon and steelhead from the Tuolumne River, there is currently too much uncertainty surrounding the implementation of the flows to meaningfully analyze the potential, relevant cumulative effects that may result. More specifically, it is unclear when full restoration flows will commence. As explained in more detail in the DLA, the SJRRP is a direct result of a settlement reached in September 2006 to provide sufficient fish habitat in the San Joaquin River below Friant Dam.[56] The settlement identifies ten "Phase 1 Improvements," which are described as "the highest priority improvements," such as the creation of a bypass channel around Mendota Pool, modifications in channel capacity to ensure conveyance of the higher flows through various reaches of the river, and modifications to ensure fish passage and prevent entrainment.[57] The SJRR Settlement Agreement provides,

> In recommending a date for commencement of the Restoration Flows, the Restoration Administrator shall consider the state of completion [of Phase 1 improvements]; provided, however, that the full Restoration Flows shall commence on a date certain no later than January 1, 2014. *If, for any reason, full Restoration Flows are not released in any year beginning January 1, 2014, the Secretary shall release as much of the Restoration Flows as possible*, in consultation with the Restoration Administrator, in light of then existing channel capacity and without delaying completion of the Phase 1 improvements.[58]

Thus, the release of full restoration flows is contingent upon the completion of Phase 1 improvements. For example, the completion of the Mendota Pool Bypass will "allow for

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[54] CGs' Comments, *supra* note 4, at pp. 36-37.

[55] *Id*. at p. 36-37.

[56] Draft License Application, eLibrary no. 20131126-5015 (Nov. 26, 2013) (referred to below as "DLA"), Exhibit E, at p. 4-44.

[57] Notice of Lodgment of Stipulation of Settlement, *NRDC, et al., v. Kirk Rodgers, et al.*, Case No.CIV S-88-1658 LKK/GGH (E.D.Cal. September 13, 2006), Attachment 1 (referred to below as "SJRR Settlement Agreement"), at p. 8, ¶ 11(a).

[58] SJRR Settlement Agreement, *supra* note 57, at pp. 15-16, ¶ 13(h)(i) (italics added).

releases above 1,300 cfs."[59] Similarly, the size of restoration flows cannot be increased over 2,000 cfs unless and until critical levees along the San Joaquin River are stabilized and repaired, and site-specific channel capacity projects are completed.[60] Moreover, another factor limiting the size of restoration flows is seepage; unless and until seepage mitigation measures are successfully implemented for increased flows, "[c]hannel capacities must meet the most restrictive of seepage constraints."[61] There are currently no restoration flows since the SJRR Settlement Agreement flow schedule only calls for riparian demand in a critical low water year type on the San Joaquin River.[62] But, as explained above, operational constraints, such as conveyance capacity and downstream seepage concerns, "may restrict the release of Restoration Flows during non-critical low Restoration Year Types."[63]

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[59] Third Party Working Draft, Framework for Implementation, San Joaquin River Restoration Program, June 19, 2012, *available at* http://www.restoresjr.net/program_library/02-Program_Docs/20120619_SJRRP_Framework_for_ImplDRAFT.pdf (referred to below as "SJRRP Framework for Implementation"), at p. 10 (explaining that the completion of the Mendota Pool Bypass would reduce the need for trap and haul and "allow for releases above 1,300 cfs.").

[60] *Id*. at p. 39 (italics added) (explaining that in addition to the completion of the Eastside Bypass and Reach 2B levees, the "site-specific projects must be completed to gain any increase in channel capacity, as those reaches are the bottlenecks. The Agencies identified channel capacity projects to increase flows to 2,000 cfs as part of the core program. *The agencies may delay projects for higher flows to later dates*."). This is a significant limitation as the SJRR Settlement Agreement calls for Friant releases of as much as 4,000 cfs from April 16th through April 30th in normal-wet and wet year types, and releases of 2,500 cfs from April 1st through April 15th in a normal-dry year type. SJRR Settlement Agreement, *supra* note 52, Exhibit B. *See also* Technical Memorandum: Channel Capacity Report 2014 Restoration Year, San Joaquin River Restoration Program, January 2014, *available at* http://restoresjr.net/program_library/02-Program_Docs/2014/Channel_Capacity_Report_Final_-_2014_Accessible.pdf (referred to below as "2014 Channel Capacity Report"), at p. 7 (explaining, "[t]hroughout Settlement implementation, the maximum downstream extent and rate of Restoration Flows to be released would be limited to then-existing channel capacities. As channel or structure modifications are completed with additional environmental compliance, Restoration Flow releases would be correspondingly increased in accordance with then-existing channel capacities and with the release schedule.").

[61] SJRRP Framework for Implementation, *supra* note 59, at p. 35 (italics added) (explaining that as of June 19, 2012, "seepage constraints would limit flows upstream of Mendota Pool to *2,100 cfs* in Reach 2A. Seepage constraints vary by season and by hydrology below Sack Dam. The constraints limit flows between *0 and 140 cfs* in the Eastside Bypass, between Sand Slough Control Structure and the Mariposa Bypass Bifurcation Structure.").

[62] 2014 Restoration Allocation and Default Flow Schedule, San Joaquin River Restoration Program, Bureau of Reclamation, January 21, 2014, *available at* http://restoresjr.net/program_library/02-Program_Docs/20140121_SJRRP_Restoration_Allocation_20140121.pdf, at p. 5 (explaining, "[s]ince the Restoration Year Type is Critical Low, the default schedule is simply the riparian demand from the Exhibit B in the Settlement.").

[63] *Id*. (stating, "[o]perating criteria such, [sic] as channel conveyance capacity, ramping rate constraints, scheduled maintenance, and downstream seepage concerns, may restrict the release of Restoration Flows during non-critical low Restoration Year Types. At this time, channel capacity does not constrain restoration releases from Friant Dam because there are no restoration releases.").

However, the construction schedule for Phase 1 improvements to address, among other things, conveyance capacity, has been significantly delayed and it appears likely that the schedule will be further extended. The SJJR Settlement Agreement includes a schedule for construction of Phase 1 improvements which provides that all such improvements will be completed by December 2013.[64] But the completion of the "highest priority channel and structural improvement projects are unavoidably behind schedule."[65] For example, in June 2012 a revised schedule provided for completion of the Mendota Pool Bypass by 2020, seven years later than initially planned.[66]

In addition to technical obstacles, such as seepage management, the completion of Phase 1 improvements and associated mitigation measures has also been delayed by lack of funding.[67] In short, because the release of full restoration flows is contingent upon completion of Phase 1 improvements and associated mitigation measures, and the completion of these projects has been delayed by technical obstacles and lack of adequate funding, it is unclear when full restoration flows will begin. The Districts cannot be required to speculate as to how the multitude of highly complex issues surrounding the delayed completion of Phase 1 improvements and associated mitigation projects will eventually be resolved, what portion of restoration flows will be released prior to that time, and what, if any, relevant cumulative effects may result. (*N. Plains*, 668 F.3d at p. 1078.)

F. The Districts Cannot be Required to Engage in Multiple Levels of Speculative Analysis Regarding Potential Cumulative Effects of Project Operations that May Result from the State Water Board's Contemplated Amendment to the Bay-Delta Plan and Eventual Adoption of Unimpaired Flow Objectives for the Merced River.

The CGs assert that "[t]he FLA should use existing information to consider how Don Pedro Project operations would be modified or coordinated in response to a requirement that the licensee of the Merced River Project release between 30% and 60% of February – June unimpaired flow into the lower Merced River as measured at the Shaffer Bridge Gauge. It also should consider that this requirement may be modified in multiple sequential dry year

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[64] SJRR Settlement Agreement, *supra* note 57, at Exhibit C.

[65] SJRRP Framework for Implementation, *supra* note 59, at p. 2; *see also* San Joaquin River Restoration Program Floodplain Management Association Presentation, January 17, 2013, *available at* http://www.floodplain.org/files/San_Joaquin_Restoration_Jan_2013.pdf, at p. 12 (stating, "[s]ome actions required by the Settlement are unavoidably behind schedule.").

[66] SJRRP Framework for Implementation, *supra* note 59, at p. 10.

[67] *San Joaquin River Restoration Hits Snags*, Capital Public Radio, Amy Quinton, December 30, 2013, *available at* http://www.capradio.org/articles/2013/12/30/san-joaquin-river-restoration-hits-snags/ (reporting, "Alicia Forsythe, Program Manager for the restoration program, says many of the delays were unavoidable. The recession hit just as the project was beginning. Water seepage stalled projects. The land is sinking in an area where a new fish screen is needed. 'The settlement assumed that those projects would begin immediately, that there would be willing access from all landowners. That basically everything would fall perfectly in line for these projects,' says Forsythe. 'We find that that's just not reality.' The problems and delays have escalated costs. The program's original estimate was between $250 million to $800 million. Now Forsythe says it's closer to a billion. *She says the schedule for the projects will be revised again, based on priority and what she calls more realistic funding*."); *see also* 2014 Channel Capacity Report, *supra* note 60, at p. 6 (stating, "[t]he SJRRP will continue to limit Restoration Flows to levels that do not result in material adverse impacts due to groundwater seepage, which may be more limiting than levee seepage and stability.").

scenarios."[68] The CGs' Comments reference both the State Water Board's contemplated amendments to the Bay-Delta Plan, which, as explained above, would establish new flow objectives on the Lower San Joaquin River ("LSJR") and its three eastside tributaries, the Stanislaus, Tuolumne, and Merced rivers, and the fact that the Merced Irrigation District is currently applying to have the Merced River Hydroelectric Project (Project No. 2179) relicensed by FERC.[69] Thus, the CGS appear to contend that since the Merced River Hydroelectric Project may ultimately be required to release between 30% and 60% of February – June unimpaired flow into the lower Merced River, either as a result of the State Water Board's amendments to the Bay-Delta Plan, or under the State Water Board's 401 certification authority in the relicensing proceeding, the FLA should analyze how Don Pedro Project operations may be modified in consideration of such flows, and the relevant, cumulative effects that may result.

The CGs' recommendation that the FLA analyze how these potential, future flow requirements, if applied on the Merced River, might impact Don Pedro Project operations, and, in turn, might result in relevant cumulative effects, suffers from the same weakness as their similar recommendation regarding potential application of the same flow requirements on the Tuolumne River. In short, the CGs' recommendation that the cumulative effects analysis in the FLA include detailed consideration of an indeterminate number of potential flow scenarios on the Merced River, and consider how each of the flow scenarios may be modified in dry years, and further, anticipate how Don Pedro Project operations might be changed to accommodate such flow scenarios, and then analyze the potential cumulative effects of such operational changes, would require the Districts to engage in several levels of speculative analysis of little, if any, practical utility. (*N. Plains*, 668 F.3d at 1078.) More importantly, as noted, because the Draft SED will be superseded by a revised version, the Districts simply do not have the information available to permit meaningful consideration. (*Id*.)

In addition, after the State Water Board's release of a revised version of the Draft SED, eventual, formal adoption of the SED and new LSJR flow objectives, and possible administrative and court review of the State Water Board's determinations, *e.g*., a court may stay any attempt to implement the objectives pending the outcome of a legal challenge, extensive, further proceedings would still be required before any new LSJR flow objectives could be implemented. As noted, NEPA does not require consideration of other projects so far removed in time "that the interrelationship, if any, between them is unknown and speculative." (*Natural Res. Defense Council, Inc.*, 524 F.2d at 90.)

Lastly, although the Merced River Hydroelectric Project is currently being considered for relicensing, the State Water Board has not yet issued a 401 water quality certification for the project. In fact, the licensee, the Merced Irrigation District, has not yet requested 401 water quality certification.[70] Unless and until the State Water Board imposes specific flow

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[68] CGs' Comments, *supra* note 4, at p. 39.

[69] *Id*. *See also* DLA, *supra* note 56, Exhibit E, at pp. 4-33, 4-34 (explaining, that the "New Exchequer Dam and its downstream counterpart, McSwain Dam (RM 56.0), are the primary components of the Merced River Development Project, which is owned by the Merced [Irrigation District] and licensed by FERC."). *See* Public Website for Relicensing of Merced Irrigation District's Merced River Hydroelectric Project, FERC Project No. 2179, *available at* http://www.eurekasw.com/mid/default.aspx?Paged=Next&p_StartTimeUTC=20140123T173001Z&View=%7b6402BB0B%2dCFBB%2d4EAF%2d89C5%2dA84D1100239D%7d.

[70] See *Notice of Application Accepted for Filing, Soliciting Motions to Intervene and Protests, Ready for Environmental Analysis, and Soliciting Comments, Recommendations, Preliminary Terms and Conditions, and Preliminary Fishway Prescriptions*, elibrary No. 20140324-3026, March 24, 2104. The Merced Irrigation District has 60 days from issuance of the Notice of Acceptance and Ready for Environmental Analysis ("REA") for the Merced River Hydroelectric Project to file an application for 401 water quality certification. 18 CFR § 5.23(b). *See also*

requirements on the Merced River under its 401 certification authority, and such certification has withstood administrative and judicial review, it would be inappropriate and unlawful to require the Districts to speculate as to what such flow requirements may be, and the nature and extent of the cumulative effects that might result from such flows.

II. CONTRARY TO THE CONSERVATION GROUPS' ARGUMENTS, THE DISTRICTS CANNOT BE REQUIRED TO EXHAUSTIVELY ANALYZE UNKNOWN CUMULATIVE EFFECTS, OR TO DEVELOP AND PROPOSE ALTERNATIVES TO MITIGATE SUCH EFFECTS.

FERC cannot require the Districts to exhaustively analyze the potential cumulative effects of the Proposed Action, or to develop and propose alternatives to mitigate such effects where, as here: the nature and extent of the cumulative effects are unknown; it is impossible to isolate the effects of particular actions; FERC cannot require the Districts to analyze the potential cumulative effects of speculative alternatives; FERC does not have jurisdiction over other actions that may significantly contribute to the effects; and, the record does not support such further analysis or mitigation measures.

A. The Districts Cannot be Required to Exhaustively Analyze Cumulative Effects, or to Develop and Propose Alternatives to Mitigate Such Effects, Where Not Enough Information is Available to Permit Meaningful Consideration.

The CGs assert that the FLA should propose measures to mitigate the cumulative effects of "Project Operations."[71] Further, the CGs contend that the DLA's discussion of certain cumulative effects is insufficient to enable FERC "to fully consider the project's cumulative effects or reasonable alternatives to mitigate those effects."[72] In support of this contention, the CGs cite authority for the unexceptionable propositions that FERC is statutorily required "to give full consideration to alternative plans even where it has no authority to command the alternative,"[73] and that federal regulations require the NEPA document "[i]nclude reasonable alternatives not within the jurisdiction of the lead agency."[74]

However, notwithstanding FERC's statutory obligations to consider reasonable alternatives outside of its jurisdiction, as the United States Supreme Court has admonished, "the concept of [NEPA] alternatives must be bounded by some notion of feasibility." (*Vermont Yankee Nuclear Power Corp. v. Natural Res. Def. Council, Inc*. ("*Vermont Yankee*") 435 U.S. 519, 551 (1978).) As the Court instructed in *Vermont Yankee*,

> There is reason for concluding that NEPA was not meant to require detailed discussion of the environmental effects of alternatives put forward in comments when these effects cannot be readily ascertained and the alternatives are deemed only remote and

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Merced Irrigation District Public Relicensing Website, Event Calendar, *available at* http://www.eurekasw.com/MID/Lists/Event%20Calendar/DispForm.aspx?ID=229&Source=http%3A%2F%2Fwww%2Eeurekasw%2Ecom%2Fmid%2Fdefault%2Easpx%3FPaged%3DNext%26p%5FStartTimeUTC%3D20140123T173001Z%26View%3D%257b6402BB0B%252dCFBB%252d4EAF%252d89C5%252dA84D1100239D%257d (indicating the licensee will submit its request for 401 water quality certification to the State Water Board on May 23, 2014).

[71] CGs' Comments, *supra* note 4, at p. 33.

[72] *Id*. (citations omitted).

[73] *Id*. (internal quotations omitted) (citing *Scenic Hudson v. FPC*, 354 F.2d 608, 617-618 (2nd Cir. 1965); *Green Island Power Auth. v. FERC*, 577 F.3d 148, 167 (2nd Cir. 2009)).

[74] *Id*. (internal quotations omitted) (*citing* 40 C.F.R. § 1502.4).

> speculative possibilities, in view of basic changes required in statutes and policies of other agencies—making them available, if at all, only after protracted debate and litigation not meaningfully compatible with the time-frame of the needs to which the underlying proposal is addressed.[75]

Further, as other federal courts have clarified, a rule of reason governs both which alternatives an agency must discuss, and the extent to which it must discuss them. (*Natural Res. Def. Council, Inc. v. Hodel*, 865 F.2d 288, 294-95 (D.C. Cir. 1988) (citation omitted) (internal quotation omitted).) Thus, agencies are not required to consider alternatives that are speculative. (*Id.* (citation omitted) (internal quotation omitted); see also *Independence Pipeline Co.*, 91 FERC ¶ 61,102, at 61,332 (2000) (italics added) (finding that "the possibility of turnback capacity is *too speculative to be considered a viable alternative*.").

Accordingly, contrary to the CGs' argument, FERC is not required to exhaustively consider the potential cumulative effects referenced in the CGs' comments, nor must it consider alternatives to mitigate such effects, because, as thoroughly explained above in Section I, there is not enough information available to permit meaningful consideration of the other actions that may potentially contribute to such effects. (See *Idaho Power Co.*, 110 FERC ¶ 61,345, at P 80 (citation omitted) (explaining that FERC's "discussion of environmental alternatives [in NEPA documents] need not be exhaustive and need only provide sufficient information to permit a reasoned choice of alternatives."); *id.* (citing *Vermont Yankee*, 435 U.S. at 551-52 (further explaining that "under NEPA, the range of alternatives that must be discussed in an environmental analysis is a matter within an agency's discretion."). Although the FLA provides detailed discussion of the other actions that may contribute to the specific cumulative effects referenced in the CGs' comments, the FLA does not include speculative analysis of potential alternatives, nor propose mitigation measures to reduce such effects, because there is simply not enough information available to permit meaningful consideration. Given the respective status of each of the referenced actions, as explained above, the Districts cannot be required "to engage in speculative analysis or do the impractical." (*N. Plains*, 668 F.3d at 1078.)

B. The Districts Cannot be Required to Exhaustively Analyze Cumulative Effects, or to Develop and Propose Alternatives to Mitigate Such Effects, Where it is Impossible to Isolate the Effects of Multiple, Contributing Actions.

The Districts cannot be required to exhaustively analyze the cumulative effects referenced in the CGs' comments, or to develop and propose measures to mitigate such effects in the FLA, because, as a practical matter, it is impossible to meaningfully attribute effects in the complex and dynamic environments of the lower Tuolumne River, San Joaquin River basin, Delta, [and San Francisco Bay] to specific actions.[76] As the DLA states,

> The effects of the Project are attenuated with increasing distance downstream in the Tuolumne River and into the San Joaquin River basin and Delta. With increased distance downstream of the Project, the number and complexity of . . . past, current, and future actions make it exceedingly difficult, if not impossible, to

[75] *Vermont Yankee*, 435 U.S. at 551 (citations omitted) (internal quotation omitted) (italics added). See also *Lehigh Portland Cement Co.*, 24 FERC ¶ 61,165, at 61,379 (1983) (italics added) (explaining that in *Vermont Yankee* "the Supreme Court held that the content of alternatives to a proposed action is not self-defining. Rather, to make the impact statement something more than an exercise in boundless rambling, *the concept of alternatives must be bounded by some notion of feasibility, reasonableness, and common sense . . . .*").

[76] DLA, *supra* note 56, Exhibit E, at p. 3-5.

> meaningfully isolate specific effects of the numerous individual actions, including the Proposed Action, on the resources of concern.[77]

The Council for Environmental Quality ("CEQ") recognizes that in order to analyze cumulative effects it is necessary to isolate the effects of multiple, contributing actions.

> Initially, the analyst will usually determine *the separate effects* of past actions, present actions, the proposed action (and reasonable alternatives), and other future actions. *Once each group of effects is determined, cumulative effects can be calculated.*[78]

Similarly, CEQ instructs that in order to analyze the incremental contribution of alternatives it is necessary to isolate the effects which are attributable to specific actions.

> The separation of effects into those attributable to the proposed action or a reasonable alternative versus those attributable to past and future actions also allows the analyst to determine the incremental contribution of each alternative.[79]

Thus, because it is impossible to isolate the effects of the Proposed Action from the effects of other actions that may contribute to cumulative effects downstream in the Tuolumne River and into the San Joaquin River basin, Delta, and the San Francisco Bay, at present, it is neither possible to quantify the cumulative effects of all of the potentially relevant actions, nor determine the incremental contributions of the indeterminate array of potential alternatives.

C. The Districts Cannot be Required to Analyze the Potential Cumulative Effects of Alternatives.

The CGs contend that the FLA should analyze the cumulative effects of the Don Pedro Project under alternative operating scenarios taking into consideration potential "changes at in-basin non-project facilities," such as the Hetch Hetchy system, the Merced River Hydroelectric Project (Project No. 2179), Friant Dam, and the myriad north Delta diversion scenarios identified in the Draft Environmental Impact Report / Environmental Impact Statement for the Bay Delta Conservation Plan.[80] However, Federal agencies, such as FERC, are not required to analyze the cumulative effects of alternatives. (*Soda Mountain Wilderness Council v. Norton* (E.D. Cal. 2006) 424 F. Supp. 2d 1241, 1267 (concluding, "the cases do not appear to require a cumulative impacts discussion for each alternative."). Given that FERC is not required to analyze the cumulative effects of alternatives under NEPA, and that to do so here would require the agency to impermissibly speculate regarding the nature and extent of such effects, FERC cannot require the Districts to analyze the potential cumulative effects of an indeterminate array of alternatives involving possible operational changes to multiple "non-project" facilities.

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[77] *Id*.

[78] *Considering Cumulative Effects Under the National Environmental Policy Act*, Council on Environmental Quality, Office of NEPA Policy and Compliance, January 16, 1997, *available at* http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-CEQ-ConsidCumulEffects.pdf (referred to below as "Considering Cumulative Effects"), at p. 42 (italics added).

[79] *Id*. at p. 43.

[80] CGs' Comments, *supra* note 4, at pp. 36-39; BDCP Draft EIR/EIS, *supra* note 32, at p. 3-8 (identifying 15 action alternatives which include facilities with 4 different diversion and conveyance capacities, *i.e*., 3,000, 6,000, 9,000, and 15,000 cfs).

D. The Districts Cannot be Required to Exhaustively Analyze Cumulative Effects, or to Develop and Propose Alternatives to Mitigate Such Effects, Because FERC Does Not Have Jurisdiction Over Other Actions that May Significantly Contribute to the Effects.

The Districts cannot be required to exhaustively analyze cumulative effects, or develop and propose alternatives to mitigate such effects, because FERC does not have jurisdiction over other actions that may significantly contribute to such effects, and thus, FERC would have no reasonable basis for determining that any measures it required of the licensee would have any meaningful benefit to the resources of concern. FERC precedent does not support the imposition of measures to mitigate cumulative effects where, as here, FERC does not have jurisdiction over other actions that may significantly contribute to the effects, and the extent to which FERC required mitigation could achieve meaningful reductions, if any, is unknown. Although FERC evaluates cumulative effects on a case-by-case basis,[81] historically, in complex and dynamic environments involving multiple actions, FERC has generally only ordered mitigation of cumulative effects where it has had jurisdiction over the other actions which significantly contribute to the effects, such as situations involving multiple hydropower projects on a river, and thus, has been able to allocate mitigation responsibility with reasonable assurance that the reduction of a specific effect could be achieved. See e.g. *Allegheny*, 51 FERC ¶ 61,268, at 61,852 (wherein FERC required multiple hydropower projects on the Ohio River to address cumulative effects by implementing mitigation measures designed to maintain certain dissolved oxygen concentrations in the river, explaining "[t]he scope of monitoring and remediation responsibilities of each licensee whose project is located at a good to moderate aerating dam was based on a reasoned analysis of the location and aeration capabilities of each dam. . . . The Commission imposed theses measures because they are required to adequately mitigate the adverse water quality impacts of the projects, so the projects may be licensed to produce needed energy.")

By contrast, with the exception of the La Grange Project, over which FERC has recently asserted jurisdiction,[82] FERC does not have jurisdiction over any of the other actions referenced by the CGs in their comments that may significantly contribute to cumulative effects. Thus, because FERC would be unable to allocate mitigation responsibility amongst potential contributing actions outside of its jurisdiction, and over such a broad geographic scope, which encompasses the highly complex and dynamic environments of the Tuolumne River, San Joaquin River basin, Sacramento-San Joaquin Delta, and the San Francisco Bay,[83] FERC would have no reasonable assurance that mitigation measures imposed on the Proposed Action, measures that may potentially cost a great deal and result in severe socioeconomic impacts,

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[81] *Allegheny Electric Cooperative ("Allegheny")*, 51 FERC ¶ 61,268, at 61,832 (1990) (citing a Commission report prepared for the U.S. House of Representatives Energy and Commerce Chairman, wherein the Commission explained that "[t]he Commission believes that it would be inappropriate to generically specify what procedural steps should be used to evaluate cumulative environmental impacts. The specific circumstances of each basin or group of projects should determine the procedural steps needed to evaluate cumulative impacts. The Commission should therefore retain the flexibility to use the procedures it believes will most efficiently and effectively resolve the cumulative impact issues in individual situations.").

[82] As explained above in Section I(a), because FERC's authority to impose mitigation measures only extends to licensed projects, unless and until FERC issues a license for the La Grange Project that requires fish passage, and the D.C. Circuit Court of Appeal affirms FERC's assertion of jurisdiction over the project, and the Districts accept an issued license, FERC cannot require the Districts to implement measures to mitigate the adverse effects, if any, of the La Grange Project.

[83] *Scoping Document 2*, *supra* note 12, at p. 34.

would have any meaningful benefit to the resources of concern. Given FERC's inability to control other actions with potentially significant and relevant environmental effects, a decision to order the Districts to mitigate the cumulative effects referenced in the CGs' comments would not "be based on reasoned judgment,"[84] but instead, would untenably rely on FERC's "sheer speculation" regarding the effectiveness of such measures.[85]

E. The Districts Cannot be Required to Develop and Propose Alternatives to Mitigate Specific Cumulative Effects Because There is No Evidence in the Record to Support Such a Finding or Conclusion.

FERC must base all of its decisions, including the imposition of mitigation measures, on substantial evidence in the record. See e.g., *Pac. Gas & Elec. Co. v. FERC*, 373 F.3d 1315, 1319 (D.C. Cir. 2004) (citations omitted) (internal quotation omitted) (explaining, "FERC must be able to demonstrate that it has made a reasoned decision based upon substantial evidence in the record. We also must ensure that FERC articulate[s] a satisfactory explanation for its action including a rational connection between the facts found and the choice made."); 16 U.S.C. § 825l (italics added) ("[t]he finding of the Commission as to the facts, *if supported by substantial evidence*, shall be conclusive"); *Centralia*, 213 F. 3d at 750 (holding that FERC must support the imposition of mitigation measures and studies with substantial evidence, and must show, in the "required statutory balancing of power and non-power values," that a fishery recommendation is "reasonably related" to the goal of enhancing the fishery). In short, FERC cannot require the Districts to develop and propose measures to mitigate specific cumulative effects, as the CGs recommend, because: (1) there is no evidence in the record that quantifies the Proposed Action's contribution, if any, to such effects; and, (2) there is no evidence in the record that establishes that specific mitigation measures are "reasonably related" to reduction of the effects. (*Centralia*, 213 F. 3d at 750.)

III. CONTRARY TO THE CONSERVATION GROUPS' ARGUMENTS, ALL FLOW-RELATED EFFECTS OF THE PROPOSED ACTION DOWNSTREAM OF THE LA GRANGE PROJECT ARE CUMULATIVE, NOT DIRECT, EFFECTS.

Contrary to the CGs' argument, and as explained in the DLA, all flow-related effects of the Don Pedro Project downstream of the La Grange Project are cumulative, not direct, effects because water is diverted from the Tuolumne River at La Grange dam year round to meet the Districts' irrigation, municipal and industrial ("M&I") demands.[86] The CGs assert that the Don Pedro Project has flow-related, direct effects downstream of La Grange dam, and, in particular, contend that "at minimum," flow-related effects during the non-irrigation season, when there are "little or no diversions" from La Grange dam, "are direct effects of the project."[87] In support of their contention, the CGs cite to a determination by the Director of OEP in response to comments on Merced Irrigation District's Initial Study Report ("ISR") for the Merced River Hydroelectric

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[84] *Allegheny*, 51 FERC ¶ 61,268, at 61,852 (noting that measures designed to mitigate cumulative effects "must be based on reasoned judgment . . . .").

[85] *City of Centralia v. FERC* ("*Centralia*"), 213 F. 3d 742, at 749 (D.C. Cir. 2000) (italics added) (explaining, "FERC's conclusion is based on *sheer speculation*. Therefore, it cannot be said that there is substantial evidence justifying a study.").

[86] See *e.g*., DLA, *supra* note 56, at p.4-1 (explaining, "[t]he lower Tuolumne River below La Grange Dam is directly affected by the operations of La Grange Dam, the Districts' non-project diversion dam used to divert water into the Districts two irrigation canals. Therefore all flow-related effects of the Don Pedro Project downstream of the La Grange Diversion Dam are, by definition, cumulative effects."); see also *id*. at pp. 4-6, 4-7.

[87] CGs' Comments, *supra* note 4, at p. 34 (italics omitted).

Project (P-2179).[88] Notably, in the OEP Revisions to the Merced ISR, the Director of OEP stated,

> Staff performed a preliminary analysis of [Merced Irrigation District's] *Water Balance/Operations Model Study* and the *Water Temperature Model Study* and reviewed existing information. Regarding potential project effects in the lower Merced River, downstream of [Merced Irrigation District's] Crocker-Huffman diversion dam, staff found that early season project releases from the project's New Exchequer dam have a direct impact on water temperatures. . . . Regarding downstream flows, review of existing information and preliminary staff analysis suggests that, during the non-irrigation season, the magnitude and duration of releases from New Exchequer dam have a direct effect upon flows in the 23-mile downstream reach, *however, during the irrigation season, non-jurisdictional water withdrawals limit the available water supply for instream flow needs, and thus during this time, flows are not directly affected by the project*.[89]

The Director of OEP further explained,

> Regarding downstream water quantity, existing hydrology data, and information in the Pre-Application Document (PAD) suggests that during the non-irrigation season (approximately November – February) *when little or no diversions from Crocker-Huffman are occurring,* the magnitude and duration of releases from New Exchequer dam have a direct effect upon flow-related habitat conditions in the lower Merced River. . . . Existing information indicates that during the irrigation season, non-jurisdictional withdrawals account for up to 52% of the average annual unimpaired discharge from the watershed, limiting the available water supply for instream flow needs. *Therefore, direct hydropower effects are seasonally dependent*.[90]

Thus, the Director of OEP appears to have determined, at least on a preliminary basis, that because diversions at Crocker-Huffman dam are "seasonally dependent," insofar as "little or no" water is diverted during the non-irrigation season, from approximately November through February, flow-related effects below Crocker-Huffman dam during this period are direct effects of the New Exchequer dam located upstream on the Merced River.[91] The CGs rely upon this

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[88] *Id*. (citing *Revisions to Study Plan*, Office of Energy Projects, Federal Energy Regulatory Commission, eLibrary no. 20110401-3042 (April 1, 2011) (referred to below as "OEP Revisions to the Merced ISR"), Appendix B, at pp. 2, 5).

[89] OEP Revisions to the Merced ISR, *supra* note 88, at p. 2 (italics added).

[90] *Id*., Appendix B, at p. 5 (italics added).

[91] *Id*., Appendix B, at pp. 2, 5. See also *Comments on Licensee Initial Study Report Merced River Hydroelectric Project No. 2179-042*, eLibrary Accession No. 20101115-5115, January 30, 2011, at p. 10 (wherein Merced River Conservation Committee, Trout Unlimited, California Sportfishing Protection Alliance, Golden West Women Flyfishers, Northern California Council Federation of Flyfishers, American Rivers, and Friends of the River stated that Merced Irrigation District's Water/Balance Operations Model "confirms that there are no agricultural diversions in the lower Merced River [during the period of November through February, and further explained that] "[i]n many cases, depending on the weather, no agricultural diversions are made in the lower Merced River in most or all of March.").

determination as "precedent on point" for FERC "finding that [Don Pedro] project releases during times when there are little or no diversions from [La Grange dam] are direct effects of the project."[92]

A. OEP's Determination that During the Non-Irrigation Season All Flow-Related Effects Downstream of Crocker-Huffman Dam Are Direct Effects of New Exchequer Dam Wrongly Disregards Other Past and Present Actions that Cumulatively Contribute to the Flow-Related Effects.

OEP's determination that during the non-irrigation season all flow-related effects below Crocker-Huffman dam are direct effects of the New Exchequer Project wrongly disregards other past and present actions that cumulatively contribute to the flow-related effects. Direct effects "are *caused* by the action and occur at the same time and place." (40 C.F.R. § 1508.8(a) (italics added) By contrast, cumulative effects or cumulative impacts[93] are defined as "the impact on the environment which results from the incremental impact of the action when *added to other past, present, and reasonably foreseeable future actions* regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." (40 C.F.R. § 1508.7 (italics added) In the Merced River, there are many other past and present actions that cumulatively contribute to flow-related effects downstream of Crocker-Huffman dam, such as changes in channel morphology and sediment due to mining and operation of Lake McClure by the United States Army Corps of Engineers ("USACE") for flood control.[94] These other past and present actions – such as legacy effects of mining and flood control operations at Lake McClure – contribute to flow-related effects downstream of Crocker-Huffman dam. The effects of these other past and present actions should properly be considered with the additional, incremental effects of the magnitude and duration of releases from New Exchequer dam in order to understand the cumulative impacts on the resources of concern. (40 C.F.R. § 1508.7) Instead, OEP wrongly concluded that during the non-irrigation season, when "little or no" diversions occur at Crocker-Huffman dam, all flow-related effects in the Merced River below Crocker-Huffman dam are direct effects of, or caused by, the New Exchequer dam. But this conclusion disregards the contributions of other past and present actions on flow-related effects below Crocker-Huffman dam, and, in so doing, improperly designates releases from the New Exchequer dam during non-irrigation periods as direct, instead of cumulative, effects.

B. There Are Many Other Past and Present Actions that Contribute to Flow-Related Effects on the Tuolumne River Downstream of the La Grange Dam in Addition to Effects of the Proposed Action.

Similar to the Merced River, many other past and present actions contribute to flow-related effects on the Tuolumne River downstream of the La Grange dam in addition to effects resulting from the Proposed Action, that is, effects resulting from continued hydroelectric generation at the Don Pedro Project. For example, flood control operations at the Don Pedro Project in compliance with USACE flood management guidelines "consist of both pre-releases in anticipation of high runoff and releases during periods of high runoff. Both of these release scenarios occur to balance reservoir levels, forecasted runoff, and downstream flows."[95] Further,

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[92] CGs' Comments, *supra* note 4, at p. 34 (internal quotation omitted).

[93] 40 C.F.R. § 1508.8 (noting that "[e]ffects and impacts as used in these regulations are synonymous.").

[94] *Application for New License – Existing Dam, Merced River Hydroelectric Project*, eLibrary Accession No: 20120227-5055, February 2012, Volume II, Exhibit E, at pp. E3-25, E3-26, E3-27.

[95] DLA, *supra* note 56, Exhibit E, at p. 4-7.

"water elevations and water velocities in the lower Tuolumne River during high flows are affected by past and present in-channel and overbank mining, levee development, agricultural development on the floodplain, and urban development, particularly in Modesto."[96] Therefore, other past and present actions that contribute to flow-related effects in the Tuolumne River below La Grange dam, such as effects of mining and flood control operations at the Don Pedro Project, should properly be considered with the additional, incremental effects of the magnitude and duration of releases attributable to the Proposed Action in order to understand the cumulative impacts on the resources of concern. (40 C.F.R. § 1508.7) Moreover, diversion of water at La Grange dam for the Districts' irrigation and M&I uses should properly be understood as additional, contributing actions to flow-related cumulative effects in the Tuolumne River below La Grange dam, not, as the CGs argue, the decisive factor in determining what is, and what is not, a direct effect of the Proposed Action.[97] Accordingly, as many other past and present actions contribute to flow-related effects in the Tuolumne River below La Grange dam, including effects of mining, flood control operations at the Don Pedro Project, and diversions at La Grange for the Districts' irrigation and M&I uses, the Proposed Action's additional, incremental contribution to such effects are cumulative, not direct, effects.

C. Contrary to the Conservation Groups' Contentions, the Operations of Crocker-Huffman Dam and La Grange Dam Do Not Present Functionally Identical Situations.

Even if OEP's rationale for distinguishing between the flow-related effects of releases from the New Exchequer Project on the Merced River below Crocker-Huffman dam based upon seasonally dependent diversions at Crocker-Huffman was sound and defensible – which, as shown, it is not – any analogy to the Proposed Action would still be unavailing. Contrary to the CGs' argument, seasonally dependent diversion of water for irrigation at Crocker-Huffman dam does not present "a functionally identical situation" to the operation of the La Grange Project[98] because, as noted, the Districts divert water at the La Grange dam for irrigation *and* M&I demands, and therefore, diversions at La Grange are not seasonally dependent and occur year round. As noted, in the Merced River Hydroelectric Project relicensing proceeding, FERC Staff analyzed data from, among other sources, Merced Irrigation District's Water Balance/Operations Model Study, Water Temperature Model Study, and its Pre-Application Document to understand the quantity and frequency of diversions from the Merced River at Crocker-Huffman dam. By contrast, here, the CGs present no evidence in support of their assertion that diversions at La Grange dam are "functionally identical" to diversions at Crocker-Huffman.[99] In fact, United States Geological Survey ("USGS") data from gages at the Modesto Irrigation District ("MID") and Turlock Irrigation District ("TID") canals, which is readily available to the public through

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[96] *Id*. See e.g., *id*. at p. 4-16 (explaining, "[d]ecades of dredge mining in the main channel of the Tuolumne River resulted in the excavation of channel and floodplain sediments and has left a legacy of significant Tuolumne River channel modifications and dredger tailing deposits between RM 50.5 and 38.0."); *id*. at p. 4-17 ("[t]he past in-channel mining has resulted in the replacement of the river channel with a series of large ponds/pools, referred to as Special-Run Pools (SRPs).").

[97] CGs' Comments, *supra* note 4, at p. 34 (italics in original) (stating, "[w]e nonetheless argue here that *at minimum* there is precedent on point that [sic] finding that project releases during times when there are 'little or no diversions' from the intervening diversion dam are direct effects of the [Don Pedro Project].").

[98] *Id*. at p. 33 (italics added) (stating, "Conservation Groups have disputed the direct effects of project operations in a *functionally identical situation* in the relicensing of the Merced River Project . . . .").

[99] *Id*.

the USGS website, demonstrate significant differences between the operations of the two dams.[100] More specifically, the historical data from these gages shows that with very limited, infrequent and intermittent exceptions, water is diverted year round at the La Grange dam by MID and/or TID. Accordingly, because there is no annual, routine period when little or no diversions occur at La Grange dam, and thus, diversion of water at La Grange dam is not seasonally dependent, under the rationale presented in OEP's Revisions to the Merced ISR, flow-related effects below La Grange dam are not directly attributable to the Proposed Action.

[100] *See* USGS, National Water Information System, Web Interface, USGS Water Data for California, *available at* http://waterdata.usgs.gov/ca/nwis/ website. More specifically, see web pages referenced below for real time and historical data from the USGS gauging stations on the Tuolumne River, and the MID and TID canals, all of which are at or below the La Grange dam.

The web pages below provide real-time or current data. There are two inputs that need to be entered or modified on these web pages: (1) to indicate whether data should be displayed in a graph or in a tabular format; and, (2) to specify the time span of the data to be reviewed.

River: http://waterdata.usgs.gov/ca/nwis/uv?site_no=11289650

MID: http://waterdata.usgs.gov/ca/nwis/uv?site_no=11289000

TID: http://waterdata.usgs.gov/ca/nwis/uv?site_no=11289500

The web pages below provide historic daily data. The same two inputs identified above must also be entered or modified on these web pages.

River:
http://waterdata.usgs.gov/ca/nwis/dv/?site_no=11289650&agency_cd=USGS&referred_module=sw

MID:
http://waterdata.usgs.gov/ca/nwis/dv/?site_no=11289000&agency_cd=USGS&referred_module=sw

TID
http://waterdata.usgs.gov/ca/nwis/dv/?site_no=11289500&agency_cd=USGS&referred_module=sw

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PART II

DATE: SEPTEMBER 2017

I. THE DISTRICTS CANNOT ANALYZE THE CURRENT OR REASONABLY FORESEEABLE FRIANT DAM FLOW RELEASES DUE TO THE SJRRP (RESTORATION FLOWS) BECAUSE THE RESTORATION FLOWS HAVE NOT COMMENCED AS EXPECTED, AND CURRENT DATA SUGGEST THAT THE NEITHER THE RESTORATION FLOWS NOR THE UNDERLYING CONSTRUCTION PROJECTS WILL BE COMPLETED IN THE FORESEEABLE FUTURE.

The SJRRP was established in 2006 to implement a comprehensive settlement agreement negotiated by numerous water diverters, regulatory agencies and non-governmental organizations regarding San Joaquin River flows.[1] The SJRRP is a multi-party, long-term effort to restore flows to the San Joaquin River from Friant Dam to the confluence of the Merced River to restore Chinook salmon while ensuring continued flood control management activities and minimizing water supply impacts. The implementing agencies include the U.S. Bureau of Reclamation ("Bureau"), U.S. Fish and Wildlife Service, U.S. Department of Commerce – National Oceanic and Atmospheric Administration/National Marine Fisheries Service, California Department of Water Resources ("CDWR") and California Department of Fish and Wildlife.

The SJRRP targets 153 miles of the San Joaquin River from Friant Dam (RM 267) to the confluence of the Merced River (RM 114) for river habitat and river channel restoration. The first 62 river miles of the San Joaquin River (from Friant Dam to the Mendota Pool) receive reliable water flows; the remaining river stretch from Mendota Pool to the Merced confluence) is essentially dewatered and only experiences intermittent continuity with the upper river during flood periods. Man-made conveyance structures, the Chowchilla Bypass and the Eastside Bypass, have historically conveyed the San Joaquin River water across the approximately 50-miles of intermittently-watered reaches to return the flow back to the San Joaquin River. The program components include, in relevant part, the construction of physical project components to successfully convey and mitigate for Restoration Flows and then the release of the Restoration Flows.

In relevant part, the SJRRP has two sets of flow schedules to it: Interim Flows and Restoration Flows. The status of the SJRRP's construction of the physical project components (e.g., to reestablish channel capacity, to mitigate for seepage, etc.) determines whether the Interim Flows or the Restoration Flows schedule is used.[2] In essence, the Interim Flows schedule is used until the relevant physical project components and mitigation projects can be completed to successfully convey the greater volume of water under the Restoration Flows schedule.[3] The SJRRP is currently studying the Interim Flows, which have been and are creating the anticipated but adverse physical impacts to the existing levees and surrounding environment.

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[1] U.S. Bureau of Reclamation, *San Joaquin River Restoration Program Record of Decision* (September 28, 2012), at Section 2.0. *See also*, 111 P.L. 11, 123 Stat. 991.

[2] U.S. Bureau of Reclamation, San Joaquin River Restoration Program Record of Decision ATTACHMENTS (September 28, 2012), at pp.7-9.

[3] SJRRP Channel Capacity Advisory Group, Technical Memorandum: Channel Capacity Report (2017), *at* Section 4.1, ("Until adequate data are available to determine these Factors of Safety, Reclamation would limit the release of Restoration Flows to those that would remain in-channel." The factors of safety relate to, among other things, levee slope stability and groundwater seepage.)

These impacts must be resolved in order to plan and construct the necessary facilities that begin the Restoration Flows. While none of the physical component construction projects had been completed by 2014,[4] the "Restoration Flows" still commenced in 2014.[5] This state of affairs has not changed notwithstanding the change of name to Restoration Flows in 2014.

On July 30, 2015, the Bureau then released a Final Revised Framework for Implementation ("Rev. Framework") containing a revised budget and schedule. At that time, the Bureau stated that it was "on the verge of major construction projects"[6] and the Rev. Framework would establish a "realistic schedule for the implementation of the [SJRRP] based upon the best available technical, biological, schedule, and funding information."[7]

A. The Restoration Flows are not a reasonably foreseeable future circumstance such that the Districts can attempt to predict or analyze future Friant flow schedules.

As stated above, the original SJRRP program components simply did not occur in the decade between settlement and issuance of the Rev. Framework.[8] As of the SJRRP's Spring 2017 program update,[9] it does not appear that the SJRRP has made any significant progress to accomplishing the timelines from the Rev. Framework. As one example, the most substantial project to date is in its most preliminary stages. As stated in the 2017 Spring Update, the Bureau was prepared to award its first construction contract on one $13 million project that is part of an overall $400 million dollar project slated for that one location of the SJRRP's six intended locations.

Additionally, the 2017 Technical Memorandum details many of the same technical difficulties to constructing the physical program components. Many of these problems were identified during settlement, are identified in the original SJRRP's organizing documents and yet remain unresolved (thereby necessitating the Rev. Framework). These issues include the actual construction of sufficient channel capacity to convey the Restoration Flows as well as adverse seepage effects.[10] The SJRRP can only commit to further study of these issues because any resolution to these threshold feasibility issues has not been identified to date.

Further, and as stated above, it appears that several of the critical physical program components, such as levee stabilization, have not been assigned to any responsible entity at all and therefore necessarily lack a funding source (much less actual funding) to plan and complete the relevant projects.[11] Indeed, the funding and identification of a responsible agency is not yet

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[4] U.S. Bureau of Reclamation, SJRRP Revised Framework for Implementation (July 29, 2015), *available at* http://www.restoresjr.net/wp-content/uploads/Revised-Framework_Final_20150729.pdf, *at* p. ES-4.

[5] However, due to extremely dry conditions 2014 was designated a "Critical-Low" year, which provides for no Restoration Flows. *See* http://www.restoresjr.net/download/ra-recommendations/rar2015/2014%20RA%20Report%20to%20Settling%20Parties%20Final.pdf.

[6] *See* https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=49898, (""This revised document reflects months of coordinated outreach and focused efforts to set out a realistic schedule and budget that prioritizes actions and activities for the Program. We are on the verge of major construction projects that have significant benefits to water supply, flood control, the agricultural community, wildlife habitat and recreation. We are excited about the future of this program and to begin turning dirt," said David Murillo, Reclamation Mid-Pacific Regional Director.")

[7] SJRRP Revised Framework, *supra* note 5, *at* p. ES-1.

[8] SJRRP Revised Framework, *supra* note 5, *at* Appendix A - Program Accomplishments as of June 2015, pp.3-6.

[9] *See* http://www.restoresjr.net/wp-content/uploads/SJRRP_ProgramUpdate_Spring2017_V7_Web-508-Compliant.pdf.

[10] SJRRP Technical Memorandum, *supra* note 3, *at* p. 36.

[11] SJRRP Revised Framework, *supra* note 5, *at* Section 2.2.

settled for one of the most extensive and expensive physical components, stabilizing the existing levee system.[12]

Due to lack of funding and other considerations, operational constraints, such as channel conveyance capacity, ramping rate constraints, scheduled maintenance, reservoir storage, contractual obligations, and downstream seepage concerns, will likely continue to restrict the release of Restoration Flows.[13] The table below summarizes known 2017 operational constraints:

Constraint	Period	Flow Limitation
Levee Stability	Currently in effect	1,120 cfs in Reach 2B
	Currently in effect	580 – 1.070 cfs in Eastside Bypass
Channel Conveyance/Seepage Limitation	Currently in effect	Approximately 300 cfs below Sack Dam/ Reach 4A

For these reasons, the Restoration Flows are not a reasonably foreseeable circumstance to analyze under NEPA.

II. BAY-DELTA WATER QUALITY CONTROL PLAN

A. The CG's recommendation that the Districts analyze alternatives "between 30-60% of February – June unimpaired flow at La Grange gauge [sic]" with such flows able to be "modified in multiple sequential dry year scenarios" appears at Exhibit E in the description of alternatives.

B. The Districts dispute the CGs' contention that analyzing the two factors in its recommendation *is analyzing* the State Water Board's next iteration of proposed amendments to the Bay-Delta Plan[14] ("2016 SED"), more specifically the Lower San Joaquin River ("LSJR") flow objective. The LSJR flow objective is very different than the CGs' comment may imply.

The 2016 SED evaluates four alternatives for LSJR flows during the February to June time frame, including the No Project Alternative (LSJR 1) and three other LSJR alternatives (LSJR Alternatives 2, 3 and 4).[15] There is a base flow requirement under all alternatives and each LSJR Alternative also includes an adaptive range. The new LSJR objective is intended to determine a quantity of water that can be "shaped" and shifted in time (to include outside the February to June time period)[16] to provide functionally useful flows that would be adaptively managed to changing information and changing conditions.[17] The State Water Board intends to approve the adaptive management changes on an annual basis, such changes to "entail a virtually unlimited

[12] SJRRP Revised Framework, *supra* note 5, *at* p. ES-6, ("This Revised Framework includes cost estimates for actions that are likely not the financial responsibility of the SJRRP. Specifically, responsibility for levee stability costs is currently unknown.")

[13] *See* http://www.restoresjr.net/wp-content/uploads/20170710_SJRRP-Restoration-Allocation-1.pdf.

[14] State Water Resources Control Board, *Recirculated Draft of the Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the San Francisco Bay–Sacramento San Joaquin Delta Estuary San Joaquin River Flows and Southern Delta Water Quality*, State Clearinghouse #2012122071 (September 2016), *available at* http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2016_sed/index.shtml#sed ("2016 SED").

[15] 2016 SED, *supra* note 14, *at* p. 3-8.

[16] 2016 SED, *supra* note 14, *at* p. 3-12.

[17] 2016 SED, *supra* note 14, *at* p. 3-16.

number of possible functional flow regimes…"[18] All alternatives authorize the State Water Board to modify the LSJR flow objective "at its discretion" for as-yet-undefined emergency situations.[19]

The 2016 SED explains that LSJR Alternative 1, the No Project Alternative, represents baseline conditions that assume the continuation of existing requirements into the foreseeable future.[20] LSJR Alternative 2 requires a range of unimpaired flows from 20% to 30%;[21] LSJR Alternative 3 requires unimpaired flows ranging from 30% to 50% with a "starting point" of 40%;[22] and LSJR 4 requires unimpaired flows ranging from 50% to 60% with a starting point of 50% unimpaired flow.[23] Additionally, four different methods of adaptive implementation are analyzed under each LSJR alternative.[24]

The 2016 SED identifies LSJR Alternative 3 with adaptive implementation as the environmentally superior alternative.[25] LSJR Alternative 3 could also include, but not be limited to, (i) minimum base flows at Vernalis between 800 cfs and 1,200 cfs respectively, (ii) minimum reservoir storage demands on one or all of the three reservoirs in the plan area, (iii) adaptive implementation for each alternative resulting in a "virtually unlimited number" of flow scenarios to include environmental flows outside the February to June time period, (iv) an October pulse flow, (v) establishment of the Stanislaus Tuolumne Merced ("STM") Working Group[26] to establish an annual operational plan that requires State Water Board approval[27] each January,[28] and (vi) the addition of compliance locations on each of the three San Joaquin River tributaries that will be in addition to, or perhaps in lieu of, the existing compliance location at Vernalis on the San Joaquin River.[29] Additionally, the adaptive implementation plan can be modified after adoption to "…meet any biological goals" (as opposed to the 2016 SED's stated goal to "support and maintain the natural production of…fish…migrating through the Delta")[30] so the very goals of the LSJR objective can be changed at any time by an unspecified process.

More specifically, the 2016 SED requires a unique (to the 2016 SED) version of adaptive management, which explicitly allows for an unlimited variation of flow schedules over the entire

[18] 2016 SED, *supra* note 14, *at* p. ES-17.
[19] 2016 SED, *supra* note 14, *at* p. 3-18.
[20] 2016 SED, *supra* note 14, *at* p. 3-13. As the 2016 SED explains, the No Project Alternative "assumes continued implementation of, and full compliance with, the 2006 Bay-Delta Plan as implemented through State Water Board's Water Right Decision D-1641." Notably, the No Project Alternative conditions differ from the baseline because [D-1641 has never] been fully implemented and [is] not part of the baseline because of implementation of the SJRA and VAMP. The VAMP flows…are thus included in the baseline." *See also* San Joaquin Tributaries Authority, "Comments on the Draft Substitute Environmental Document" (Mar. 17, 2017), *available at* http://www.waterboards.ca.gov/public_notices/comments/2016_baydelta_plan_amendment/tim_olaughlin2.pdf, *at* p. 211 (explaining that inclusion of VAMP flows misrepresents the allocation of responsibility of San Joaquin River flows, mischaracterizes the physical environment, and underestimates the environmental impacts of the proposed alternative).
[21] 2016 SED, *supra* note 14, *at* p. ES-15.
[22] 2016 SED, *supra* note 14, *at* pp. 3-9, ES-16.
[23] 2016 SED, *supra* note 14, *at* p. ES-16.
[24] 2016 SED, *supra* note 14, *at* p. 4-8.
[25] 2016 SED, *supra* note 14, *at* p. 18-27.
[26] 2016 SED, *supra* note 14, *at* p. ES-18.
[27] 2016 SED, *supra* note 14, *at* p. ES-17 (stating that "…different levels of approval are required depending on the nature of the change.").
[28] 2016 SED, *supra* note 14, *at* App. K, p.34.
[29] 2016 SED, *supra* note 14, *at* p. ES-4.
[30] 2016 SED, *supra* note 14, *at* p. ES-11.

year by a group of regulators and stakeholders,[31] the STM Working Group.[32] At this time, the STM Working Group is not yet established and, once established, only then will the LSJR flow objective's biological goals be identified and a flow schedule set to benefit them. Indeed, the U.S. Fish and Wildlife Service specifically commented that "…relying on the STM working group to further develop specific goals and measureable objectives related to flow management is a concern. The Service recommends additional development of the adaptive management process and the inclusion of a more detailed adaptive management framework in the revised draft SED."[33] The sheer number of speculative guesses that a party would need to conjure up to try and predict the biological goals and corresponding flow schedules of the STM Working Group is not required nor desired by NEPA and NEPA's mandates for meaningful analyses.

As described, the LSJR flow objective is specifically designed to defy predictions since the parties who are to set the project goals have not yet consented[34] nor convened to the State Water Board's proposed working group; the goals may change at any time during the project; the flow schedule is expected to change each year and requires several levels of discretionary approval to do so; there is an explicit reservation to change the flow schedule under 'emergency' conditions, which can include an individual water right holder simply petitioning for relief from water quality conditions placed on the right or license to divert.[35] At base, the State Water Board acknowledges all that is stated above when it limited the 2016 SED analysis to approximately five variations of the potentially thousands of ad hoc arrangements of the project components.[36]

Notwithstanding this lack of credible information from the State Water Board's environmental documentation and its corresponding public outreach process, the Districts have used the best scientific information available in this relicensing process to provide sufficient

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[31] Even the composition of the STM working group remains open-ended. The members of the STM Working Group could include representatives from the State Water Board, California Department of Fish and Wildlife, U.S. Department of Commerce NOAA/NMFS, U.S. Fish and Wildlife Service, water users on the Merced, Tuolumne, and Stanislaus rivers, and "any other representatives as deemed appropriate by the Executive Director" [of the State Water Board]. *Id., at* p. ES-18.

[32] 2016 SED, *supra* note 14, *at* App. K, p. 32.

[33] U.S. Fish and Wildlife Service, "U.S. Fish and Wildlife Service comments on the [2016 SED]" (March 2017), *available at* http://www.waterboards.ca.gov/public_notices/comments/2016_baydelta_plan_amendment/donnie_ratcliff.pdf, *at* p. 3.

[34] U.S. Environmental Protection Agency, California Department of Fish and Wildlife, U.S. NOAA/National Marine Fisheries Service and U.S. Fish and Wildlife Service panel, Transcript from the January 3, 2017, Public Hearing regarding the 2016 SED, *available at* http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/2016_sed/docs/transcript_day5_01032017.pdf, at pp. 85-. 147. *See also*, California Natural Resources Agency -Department of Fish and Wildlife, "Comments regarding [2016 SED]" (March 2017), *available at* http://www.waterboards.ca.gov/public_notices/comments/2016_baydelta_plan_amendment/scott_cantrell.pdf, *at* p. 4; U.S. Fish and Wildlife Service, "U.S. Fish and Wildlife Service comments on the [2016 SED]" (March 2017), *available at* http://www.waterboards.ca.gov/public_notices/comments/2016_baydelta_plan_amendment/donnie_ratcliff.pdf, *at* pp. 3-4; *and* U.S. Department of Commerce National Oceanic and Atmospheric Administration – National Marine Fisheries Service, "Response to the [2016 SED]", *available at* http://www.waterboards.ca.gov/public_notices/comments/2016_baydelta_plan_amendment/maria_rea.pdf, *at* p. 3.

[35] 2016 SED, *supra* note 14, *at* App K., p. 35.

[36] 2016 SED, *supra* note 14, *at* p. 4-9, "Because the analysis includes a wide range of unimpaired flows for each of the LSJR alternatives with adaptive implementation, the analysis inherently covers the different mixes of adaptive implementation methods 1, 2, 3 and 4 that could occur."

information about the State Water Board's proposed amendments for the requisite "hard look" under NEPA.[37]

III. DUE TO RECENT CHANGES TO THE BAY DELTA CONSERVATION PLAN ("BDCP"), THE CGS' RECOMMENDATION THAT THE DISTRICTS ANALYZE "A SUITE OF REASONABLE DELTA EXPORT OPERATIONS … UNDER BDCP (NORTH DELTA DIVERSION) SCENARIOS"[38] IS MOOT. ADDITIONALLY, BDCP'S SUCCESSOR PROJECT, THE CALIFORNIA WATER FIX ("CWF"),[39] IS NOT REASONABLY FORESEEABLE DUE TO SPECIFIED FACTORS.

The BDCP was first initiated in 2006, and the CGs' recommendation was based on their review of a 2012 Draft Environmental Impact Statement. The public comment period for the 2012 Draft EIS closed in July 2014 and the BDCP-proponents have since incorporated the public comments and substantially revised the project.[40]

The original BDCP was conceived as a global habitat conservation planning process to satisfy requisite Endangered Species Act ("ESA") permitting requirements for the proposed project.[41] In 2015, the project proponents, the Bureau and CDWR, modified the project by splitting it into two separate components: CWF to pursue the primary project permitting via a water rights change petition with the State Water Board and EcoRestore to pursue approximately 30,000 acres of habitat conservation.[42]

Since 2015, the California Natural Resources Agency (parent agency to CDWR) has started planning for construction of approximately 7,000 acres as part of EcoRestore.[43] The project proponents have singularly pursued the CWF component by way of a change petition to their respective water rights before the State Water Board. The CWF proceeding commenced with Phase 1 of the proceedings in 2015 and Phase 2 (of 2) began in September 2017.

The CWF Final EIS was released in December 2016 and the state project proponent, CDWR, certified the environmental review by a Notice of Determination in July 2017. To date, two significant lawsuits have been filed to challenge the preliminary environmental documentation.[44]

The CWF Final EIR/EIS is comprised of two components.[45] To date, there is no schedule to determine when the federal project proponent, the Bureau, will address the outstanding issues

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[37] *Save Our Cabinets v. USDA*, 2017 U.S. Dist. LEXIS 82326, *52-53, (to describe the project proponents' "hard look" standard under NEPA in the context of analyzing the proponents' baseline description, the Court identifies that gathering and reviewing the relevant environmental data are likely sufficient to support an agency's finding that an analysis was not warranted because it would be too speculative. Under that circumstance, the agency's finding would be supported by a review of the gathered-information. "In *Northern Plains Resource Council*, the court held that the agency failed to take the requisite "hard look" under NEPA when it blamed its inability to obtain baseline data on rough terrain and private land ownership… had the agency attempted to obtain the data, that likely would have been sufficient.")

[38] CGs' Comments on Draft License Application and Updated Study Report, Project No. 2299-075, February 24, 2014, *at* p. 39.

[39] California Department of Water Resources and U.S. Bureau of Reclamation, Bay Delta Conservation Plan/California Waterfix Final Environmental Impact Report/Environmental Impact Statement, *available at* https://www.californiawaterfix.com/resources/planning-process/eir-eis/, *at* p.ES-3. ("CWF Final EIR/EIS")

[40] CWF Final EIR/EIS, *supra* note 39, *at* p. ES-3.

[41] Federal Endangered Species Act, 16 U.S.C. § 1531 et seq. California Endangered Species Act, Cal. Fish & G. Code, § 2050 et seq.

[42] *See* http://resources.ca.gov/ecorestore/.

[43] *See* http://resources.ca.gov/docs/ecorestore/ECO-FS-ProgressY2-V11-FINAL-20170601.pdf.

[44] *See* https://mavensnotebook.com/2017/08/21/this-just-in-more-lawsuits-filed-against-california-water-fix-project/ and *also see* https://www.courthousenews.com/sacramento-county-starts-avalanche-lawsuits-delta-tunnels-plan/.

presented in the certified CWF Final EIR/EIS that have already been analyzed by the CDWR, the co-project proponent. Correspondingly, it remains unknown when the Bureau intends to execute a corresponding Record of Decision to adopt the CWF Final EIR/EIS and be bound to further action. The federal actions to finalize the environmental documentation are not reasonably foreseeable to predict without engaging in baseless speculation.

A. California Waterfix is a project to construct new facilities and there is no flow proposal to analyze.

The CWF Final EIR/EIS does not offer any "operational criteria" (e.g., water delivery operations plans) for any of the alternatives,[46] and so there are no data in the CWF Final EIR/EIS upon which to predict or detail the timing, source or conveyance of water that would ultimately serve California WaterFix operations.[47] Consistent with the goals of NEPA for a meaningful review of information, the Districts cannot wholesale speculate about potential flow scenarios that may ultimately result from the California WaterFix water right petition process or its corresponding habitat conservation obligations while there are none under consideration. Indeed, both the U.S. Fish and Wildlife Service as well as the U.S. Department of Commerce NOAA/NMFS West Coast Region have reserved their rights in their preliminary Biological Opinions for further ESA consultation until after those operational criteria can be provided so as to perform such a meaningful review.[48] Also, the California Department of Fish and Wildlife issued an incidental take permit on July 28, 2017 for the construction of the CWF in compliance with Section 2081(b) of the California Endangered Species Act. The issuance of that permit has been challenged by various environmental groups and other stakeholders.[49]

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[45] *See* Bay Delta Conservation Plan/California WaterFix Developments after Publication of the Proposed Final Environmental Impact Report, July 2017, *available at* http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Developments_after_Publication_of_the_Proposed_Final_EIR.sflb.ashx, *at* p. 3, "The December 22, 2016, proposed Final EIR, along with this document, is considered the full Final EIR for purposes of CEQA… This document has been prepared by the California Department of Water Resources (DWR), the CEQA lead agency, as a CEQA-only document. Reclamation will separately address issues with the Final EIS."

[46] California Department of Water Resources, Supplemental Information for Petition for Change in Point of Diversion, August 25, 2015, *at* p. 1, "It proposes only to add points of diversion and rediversion within the Sacramento/San Joaquin Delta Estuary (Delta) of the permits listed above. This Petition does not propose to change any other aspect of the existing SWP/CVP permits."

[47] U.S. Fish and Wildlife Service, Biological Opinion for the California WaterFix, June 23, 2017, Cover Letter, *at* p. 2, (stating that the Biological Opinion only covered specified construction activities but that further consultation would be required for specific, contemplated construction projects; when the project proponents adopted 'operational criteria' (e.g., an operations plan) with their California WaterFix approval; and when the project proponents fleshed out the proposed adaptive management plan.)

[48] U.S. Fish and Wildlife Service, Biological Opinion for the California Water Fix, June 23, 2017, *available at https://www.fws.gov/sfbaydelta/HabitatConservation/CalWaterFix/documents/Final_California_WaterFix_USFWS_Biological_Opinion_06-23-2017.pdf and see also* U.S. Department of Commerce NOAA/National Marine Fisheries Service, Biological Opinion [for the California WaterFix], June 16, 2017, *available at* http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/CAWaterFix/WaterFix%20Biological%20Opinion/cwf_final_biop.pdf.

[49] *See* http://www.biologicaldiversity.org/news/press_releases/2017/delta-tunnels-09-25-2017.php.

B. The California Water Fix is in such preliminary stages of development and permitting that the Districts do not have sufficient details about the proposed project nor its proposed operations to offer a meaningful review under NEPA.

NEPA does not require the Districts to "do the impractical"… if not enough information is available to permit meaningful consideration of an issue.[50] Here, the California WaterFix project may identify its preferred alternative[51] but it still tries to analyze 14 very different alternatives in the CWF Final EIR/EIS. Notably, each alternative has the potential to encompass up to 15 different components.[52]

Additionally, and to compound the uncertainty in project details, the project explicitly incorporates varied and to-be-determined flow schedules to describe its future operational criteria. As stated, California WaterFix has committed to "adaptively managing the ongoing operation of the CVP and the SWP and future implementation and operation of the California WaterFix"[53] in order "…to make long-term changes in initial operations criteria to address uncertainties about spring outflow for…species."[54] The CWF Final EIR/EIS highlights the uncertainty by stating, "…Existing obligations on the CVP-SWP system (water demands, biological opinions and other regulatory requirements) in combination with climate change and sea level rise could result in operational conditions that rely upon real-time decision making. Under stressed operating conditions, operators will likely consider all options legally available to them in order to balance critical water needs."[55]

Perhaps one of the most critical pieces of information that is not available for review is the intended duration of the project. California WaterFix has not resolved the fundamental issue of whether the project will be approved with a 50-year or 15-year environmental mitigation plan to resolve the project's ESA obligations.[56] A project's duration is simply a critical and fundamental piece of information, and the Districts would be engaging in baseless speculation to arbitrarily choose one to perform the impact analyses.

The CWF Final EIR/EIS explicitly acknowledges the uncertainty surrounding the present project description by stating that "…should the Project be approved but then be modified…the lead agencies will comply with applicable provisions of the CEQA Guidelines and NEPA regulations…"

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[50] *Envtl. Prot. Info. Ctr. v. United States Forest Serv.* (9th Cir. 2006) 451 F.3d 1005, 1014, stating that "…nor do "we require the government to do the impractical,"…" if not enough information is available to permit meaningful consideration.."" (internal citations omitted)

[51] CWF Final EIR/EIS, *supra* note 39, *at* pp. ES-22, ES-30.

[52] CWF Final EIR/EIS, *supra* note 39, *at* p. ES-28.

[53] CWF Final EIR/EIS, *supra* note 39, *at* p. ES-37.

[54] CWF Final EIR/EIS, *supra* note 39, *at* p. ES-8.

[55] Developments after Publication of the Proposed Final Environmental Impact Report, July 2017, *supra* note 44, *at* pp.96-97.

[56] CWF Final EIR/EIS, *supra* note 39, *at* p. ES-3, ("…Alternatives 4A, 2D, and 5A, which are called non-HCP alternatives in the Final EIR/EIS, embody a different implementation strategy that would not involve a 50-year HCP/NCCP approved under ESA 18 Section 10 and the NCCPA. Instead, the non-HCP alternative would achieve incidental take authorization under ESA Section 7 and California Endangered Species Act (CESA) Section 2081(b) assuming a shorter project implementation period.")

C. California WaterFix is not a reasonably foreseeable future project because of its current procedural posture at the State Water Board and the total lack of project financing.

The CDWR certified the CWF Final EIR/EIS on July 21, 2017.[57] Notably, as of October 2017, the Bureau has not made any explicit plans to pursue a corresponding Record of Decision to bind the federal agency to the CWF Final EIR/EIS.[58]

Also, as of September 2017 California WaterFix has not secured financing for the proposed project. The project proponents are mandated by state law to secure financing for the project prior to construction.[59] As California WaterFix is entirely focused on the construction aspects of building the project, the timing to secure this funding is now should the project proponents intend to meet the proposed schedule for construction in their water right petition. The project proponents have not provided any data to inform parties about how they intend to dovetail this statutory requirement with the ongoing water rights petition before the State Water Board.

CDWR filed a "validation action" with the Sacramento County Superior Court regarding CDWR's authority to, among other things, issue revenue bonds to finance the planning, design, construction and other capital costs of California WaterFix. Although CDWR has existing legal authority to finance and construct the proposed project under the Central Valley Project Act, a validation action is necessary to provide the requisite assurance to the financial community for the sale of the California WaterFix revenue bonds.[60] Most notably, as of September 2017, the water agencies that are eligible to fund the project have neither agreed nor committed to do so.[61] Indeed, the largest Bureau customer and the first eligible water agency to have the opportunity to commit to financing, the Westlands Water District, declined to do so.[62] While CDWR has attempted to create certainty in the financial markets by validating its ability to issue the revenue bonds necessary to fund California WaterFix, CDWR has instead only highlighted the lack of underlying funding to those revenue bonds, which in turn casts significant doubts about the fundamental viability of the project.

In light of the above, the Districts cannot perform any level of substantive analysis as required by NEPA without engaging in baseless speculation. Further, the Districts' pragmatic judgment can only conclude that it is unable to gather sufficiently detailed or firm information to "…[foster] informed decision making and informed public participation" about the Don Pedro Project's cumulative effects vis-à-vis California WaterFix.[63]

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[57] *See* http://baydeltaconservationplan.com/NoticeofDetermination.aspx.

[58] *See* http://www.nossaman.com/Fixing-Finances-Department-Water-Resources-Seeks-Bonds-Fund-CA-WaterFix.

[59] California Water Code §85089, "Construction of a new Delta conveyance facility shall not be initiated until the persons…[that] receive water from the State Water Project and the federal Central Valley Project…have made arrangements…to pay for…[t]he costs of the environmental review, planning, design, construction, and mitigation…required for the construction, operation, and maintenance of any new Delta water conveyance facility [and] …full mitigation of property tax[es]…for land used in the construction, location, mitigation, or operation of new Delta conveyance facilities."

[60] *See* http://cms.capitoltechsolutions.com/ClientData/CaliforniaWaterFix/uploads/CWF_eBlast_Validation_072117.pdf.

[61] http://www.sfgate.com/bayarea/article/Gov-Brown-s-delta-water-tunnels-facing-12207654.php

[62] http://www.sacbee.com/news/business/article174225006.html

[63] *State of Cal. v. Block* (9th Cir. 1982) 690 F.2d 753, 761; *Churchill County v. Norton* (9th Cir. 2001) 276 F.3d 1060, 1071.

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ATTACHMENT A
DISTRICTS' RESPONSE TO COMMENTS ON DRAFT LICENSE APPLICATION

APPENDIX C

RESPONSE TO TUOLUMNE COUNTY BOARD OF SUPERVISORS' COMMENTS ON THE DISTRICTS' SOCIOECONOMIC STUDY REPORT

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WATER & POWER
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Modesto Irrigation District
The Power to Grow

April 16, 2014

Mr. Evan Royce, Chairman
Tuolumne County Board of Supervisors
2 South Green Street
Sonora CA 95370

Dear Mr. Royce:

On February 18, 2014, the County of Tuolumne's Board of Supervisors ("Tuolumne County") submitted a response to TID and MID's Socioeconomic Study Report ("Study") filed with the Federal Energy Regulatory Commission ("Commission" or "FERC") on January 6, 2014. Tuolumne County states that the Study adequately describes the direct benefits provided by the water stored in Lake Don Pedro to irrigation, municipal, and industrial uses to Central Valley farmland, business, and residences, "while ignoring the fact that as the steward of this watershed, Tuolumne County receives very little benefit from this project."

Tuolumne County recognizes that the Study addresses the estimated $10 million to $15 million per year of economic benefits, and the estimated 100 jobs, created by users of Lake Don Pedro and their economic spinoff to Tuolumne County.[1] Notwithstanding, Tuolumne County suggests that "these benefits are miniscule" compared to the much larger total regional economic benefit attributable to water storage at Lake Don Pedro. Because of this differential between the local benefits from recreation at Lake Don Pedro received by Tuolumne County and the total regional economic benefit, which also includes Tuolumne County and the greater Central Valley, Tuolumne County believes it deserves compensation because Tuolumne County's "responsibility outweighs its benefit."

Tuolumne County identifies three direct services – law enforcement (including boat patrol), fire suppression, and road maintenance on County-maintained roads – for which Tuolumne County states that it cannot conclude from the Study whether the costs for these direct services are "recouped by Tuolumne County in the form of sales tax, transient occupancy tax, or property tax." Tuolumne County further states that during the recent Rim Fire, it "worked tirelessly" with myriad Federal, State, and local agencies to protect the "watershed" without any direct water supply benefit to Tuolumne County. Tuolumne County explains that it has no adjudicated water right, and therefore receives no financial benefit or water supply benefit from Lake Don Pedro.

[1] In the letter from Tuolumne County, the economic benefit from recreation at Lake Don Pedro was cited at $25.4 million, which is the estimated economic value of recreation, and not the amount of money flowing into the regional economy. Economic value is measure of a consumer's willingness to pay for recreation. As described in Section 5.3.2 of the report, *if visitors to Don Pedro Reservoir are willing to pay $50 to fish for a day, but the actual cost of their fishing trip is only $20, they receive a net economic benefit of $30 per day from their fishing experience.* The regional economic impact of recreation is described in Section 6.3.3 of the report.

Tuolumne County also faults the Study because it does not mention the current practice within Tuolumne Utilities District's main water system to divert an average of 7,000 acre feet of water from the South Fork Stanislaus River to storage in Lake Don Pedro as part of the PG&E main canal system and Phoenix Powerhouse operations. Tuolumne County asserts that "[t]his routine operation benefits the downstream users with no return consideration to Tuolumne County."

Tuolumne County concludes that "[a]s the origin of this water source, it is imperative that Tuolumne County work with MID and TID and examine how Tuolumne County can be remunerated for its responsibility to protect the water source and provide municipal services to Lake Don Pedro." Therefore, Tuolumne County seeks "revisions" to the Study "to more clearly see the benefit of this water storage facility to its host County."

The goal of the Study was to quantify baseline economic values and socioeconomic effects of current Don Pedro Project operations so that the effect of proposed changes in operations in the relicensing proceeding on the socioeconomic resource could be assessed. The baseline economic values quantified in the Study included the monetary benefits to Tuolumne County from recreation and ancillary services related to recreation at Lake Don Pedro. Therefore, Tuolumne County is incorrect in asserting that it receives "very little benefit" from the Project; in fact, it receives at least $10 million annually from recreation alone at Lake Don Pedro.

The "responsibilities" identified by Tuolumne County for which it believes it should be compensated by the potential licensee are normal municipal services. The Commission has clearly stated that Commission licensees like the Districts are not responsible for the provision of law enforcement or public safety services on project lands and waters; rather, law enforcement is the responsibility of County and State agencies. *County of Butte, California v. California Department of Water Resources*, 129 FERC ¶ 61,133, at

P 19 (2009) ("[N]othing in the FPA . . . or our precedent suggests that licensees are responsible for the provision of law enforcement or safety services."), *appeal denied sub. nom, County of Butte, California v. FERC*, 445 Fed.Appx. 928 (9th Cir. 2011) (unpublished). Accordingly, the Commission has consistently rejected proposals to require licensees to pay for local personnel or to subsidize local services. *See, e.g., Avista Corp.*, 127 FERC ¶ 61,265, at P 193 (2009); *Public Utility County District No. 2 of Grant County, Wash.*, 123 FERC ¶ 61,049, at P 79 (2008); *Portland General Electric Co.*, 117 FERC ¶ 61,112, at P 83 (2006); *Policy Statement on Hydropower Licensing Settlements*, 116 FERC ¶ 61,270, at P 24 (2006). Likewise, the Districts also are not responsible for fire suppression in the "watershed," which in this case includes much of the Stanislaus National Forest which is managed by the United States Department of Agriculture and Yosemite National Park which is managed by the United States Department of the Interior, because the "watershed" is not within the Project Boundary of the Don Pedro Project.

Wildland fire suppression on private lands within the Tuolumne Watershed is the primary responsibility of CalFire (Resources Agency) and not the County Fire Department. It is further supported by a Helitack and Air Attack Base operated by CalFire at Columbia Airport during wildfire season. Therefore, the primary responsibility for wildland fire protection within the Tuolumne Watershed would not rest with the County of Tuolumne.

Tuolumne County's suggestion that the licensees of the Don Pedro Project should be responsible for the cost of "road maintenance on County-maintained roads" also is incorrect. In general, roads primarily serving non-project purposes and only incidentally providing access to project facilities are not considered necessary for project purposes. *Portland General Electric*, 117 FERC ¶ 61,112, at P 45 (2006) ("While the extent to which roads may be found necessary for project access may vary from case to case, as a general matter, the concept of roads being 'necessary' for a project must be restricted to roads used solely by a project."). Tuolumne County has not identified any County-maintained road used to provide access to project facilities that is used *solely* by the project. FERC does not have the authority to regulate land or facilities outside the Project Boundary. *See Sierra Club v. Nebraska Public Power District*, 53 FPC 1836, 1837-38 (1975); *Central Maine Power Co.*, 40 FERC 61,075 (1987), *reh'g denied*, 42 FERC ¶ 61,387 (1988), *aff'd sub nom. Kokajko v. FERC*, 873 F.2d 419 (1st Cir. 1989); *South Carolina Electric & Gas Co.*, 7 FERC ¶ 61,180 (1979), *order on reh'g*, 8 FERC ¶ 61,161 (1979). Therefore, the Districts have no responsibility to maintain general purpose roads not included within the Project Boundary.

Finally, Tuolumne County seems to suggest that because it cannot discern whether the Study concluded that Tuolumne County's direct costs for law enforcement, watershed fire suppression, and maintenance of non-project County-maintained roads are recouped by Tuolumne County through its sales tax, transient occupancy tax, or property tax, the licensees should "remunerate" Tuolumne County in lieu of these taxes. The Commission has rejected such payment-in-lieu-of-taxes, explaining that the Commission is not a taxing authority and nothing in the FPA indicates that Congress intended for the Commission to assume the responsibility for overseeing the provision of local safety and law enforcement. *County of Butte*, 129 FERC ¶ 61,133, at P 25 (2009); *see also New York Power Authority*, 120 FERC ¶ 61,266, at P 33 (2007). The Commission has further stated that while tax-related issues are important for local communities, reviewing all tax information related to the project and surrounding communities is beyond the scope of a licensing proceeding. *Public Utility District No. 1 of Douglas County, Wash.*, 122 FERC ¶ 61,032, at P 9 (2008).

We appreciate your continuing interest in the Don Pedro Hydroelectric Project relicensing.

Sincerely,

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