CALIFORNIA Water Boards

EDMUND G. BROWN JR. GOVERNOR

MATTHEW RODRIQUEZ SECRETARY FOR ENVIRONMENTAL PROTECTION

State Water Resources Control Board

In Reply Refer to:
JCC: 12919A et al.

March 10, 2017

Sonoma County Water Agency
c/o Jessica Martini-Lamb
404 Aviation Boulevard
Santa Rosa, CA 95403

COMMENTS ON THE SONOMA COUNTY WATER AGENCY DRAFT FISH HABITAT FLOWS AND WATER RIGHTS PROJECT ENVIRONMENTAL IMPACT REPORT (SCH 2010092087) IN SUPPORT OF PETITIONS FOR EXTENSION OF TIME AND CHANGE UNDER PERMITS 12947A, 12949, 12950, AND 16596 (APPLICATIONS 12919A, 15736, 15737, AND 19351) IN MENDOCINO AND SONOMA COUNTIES

Thank you for the opportunity to comment on the draft Fish Habitat Flows and Water Rights Project Environmental Impact Report (DEIR). Staff from the State Water Resources Control Board (State Water Board), Division of Water Rights (Division)[1] and the North Coast Regional Water Quality Control Board (Regional Water Board) have reviewed and developed comments on the DEIR. Comments are included in an attachment to this letter and are generally organized chronologically. In addition, for each comment, the commenting Board or Section is identified to facilitate follow up discussions between and amongst staff. Should you have questions or topics for discussion regarding these comments please contact the appropriate staff identified below.

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[1] Permitting and Licensing Section and Instream Flows Unit

In addition to the attached comments, the following statements are intended to provide a general overview of the State Water Board and Regional Water Board roles and perspectives regarding the proposed project.

STATE WATER BOARD (PERMITTING AND LICENSING SECTION)

The DEIR was prepared, in part, to support the petitions for change and extensions of time filed under Permits 12947A, 12949, 12950, and 16596 (Applications 12919A, 15736, 15737, and 19351). The petitions, filed on August 17, 2016, request the following modifications to permit terms and conditions: (1) modification of the Russian River minimum instream flow requirements in Permits 12947A and 16596; (2) modification of the required bypass flows in Permits 12949 and 12950, consistent with the requested minimum instream flows; (3) modification of the hydrologic index used to classify water supply conditions in Permits 12947A, 12949, 12950, and 16596; and (4) extension of the deadline for full application of water in Permits 12949, 12950 and 16596.

The Division is tasked with acting on these petitions. Prior to taking action on these petitions, the Division will complete a review which includes, but is not limited to, the steps identified below.

ENVIRONMENTAL REVIEW

Consideration of environmental effects is required by the California Environmental Quality Act (CEQA) before a petition can be approved. The State Water Board, as Responsible Agency under CEQA, will review and consider the environmental document prepared by Sonoma County Water Agency (SCWA) for this project. Accordingly, the Permitting and Licensing Section comments herein are intended to assist in development of a robust CEQA document capable of supporting the petition process. In addition to any obligation the State Water Board may have under CEQA, the State Water Board has an independent obligation to consider the effect of the petitions on public trust resources and where feasible, avoid or minimize harm to those resources (*National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419 [189 Cal.Rptr. 346, 658 P.2d 709].). Public trust resources may include, but are not limited to, wildlife, fish, aquatic dependent species, streambeds, riparian areas, tidelands, and recreation in navigable waterways, as well as fisheries located in non-navigable waterways. This requirement is independent from CEQA, and the CEQA baseline should not be construed as the appropriate baseline for consideration of public trust resources. In addition, it is the policy of this state that all state agencies, boards, and commissions shall seek to conserve endangered species and threatened species and shall use their authority in furtherance of the purposes of the California Endangered Species Act. State agencies should not approve projects which would jeopardize the continued existence of any endangered species or threatened species if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy. (Fish & Game Code, §§ 2053 & 2055.)

COMPLIANCE WITH APPLICABLE POLICIES

The SCWA water right permits are located within the geographic area of the Policy for Maintaining Instream Flows in Northern California Coastal Streams (Policy). Accordingly, the Division is required to comply with the Policy when considering these petitions. The Policy establishes principles and guidelines for maintaining instream flows in Northern California Coastal Streams for the purposes of water right administration (Wat. Code, § 1259.4 subd. (b).). The Policy contains guidelines for evaluating whether a proposed water diversion, in

combination with existing diversions in a watershed, may affect instream flows needed for the protection of fishery resources. For more information about the Policy, please visit this web site:

http://www.waterboards.ca.gov/waterrights/water_issues/programs/instream_flows/

PROTEST RESOLUTION

Public notice for the petitions was issued on September 23, 2016. Any interested person may file a written protest against approval of the petitions. Protests will be received until March 10, 2017. As part of the petition process, it is the responsibility of SCWA and any protestant(s) to make a good faith effort to resolve protest(s). If both parties can agree to mutually acceptable conditions, the protest is resolved at this point in the process. In the event it is not resolved the issue may be addressed through a State Water Board hearing.

HYDROLOGIC ANALYSIS

Before taking action on the petitions, the State Water Board will evaluate whether and how the requested modifications could have the potential to impair instream beneficial uses or cause injury to other legal users. The petitioner, State Water Board staff, or an engineering consultant may perform an analysis to facilitate this evaluation if needed.

REVISED PERMIT ISSUANCE

The State Water Board is required to make specific findings prior to issuance of amended permits pursuant to these petitions, including the following findings:

Petitions for Change in Permit Terms and Conditions

- The changes do not initiate a new water right;
- The changes can be made without injuring other legal users of water;
- The changes are in the public interest;
- The changes will not unreasonably harm fish, wildlife, or other instream beneficial uses.

Petitions to Extend the Deadline for the Full Application of Water

- Due diligence has been exercised by the petitioner;
- Failure to comply with previous time requirements has been occasioned by obstacles which could not reasonably be avoided;
- Satisfactory progress will be made if the time extension is granted; and
- Approval of the petition is in the public interest

In addition, the State Water Board must consider potential impacts to public trust resources and impose conditions to avoid or minimize the harm where feasible.

The State Water Board may consider these findings through a hearing. In addition to the subject petitions, the State Water Board may consider during the course of such a hearing additional changes to the various orders and decisions associated with the Russian River Project after providing appropriate notice of the scope of the issues to be considered during the hearing. For example, staff may recommend that the State Water Board consider closing, revising, or clarifying the Sonoma County 10,000 acre-foot reservation, which was established in Decision 1030, adopted August 17, 1961, to reserve water to meet the needs of users within the Russian River Valley. Also, terms and conditions may be imposed on SCWA permits as part of the petition approval process.

The Division has determined that the petitions submitted by SCWA are high priority due to: (1) the potential enhancement of fish and wildlife habitat; (2) the advanced stage of the CEQA review process; and (3) the regional significance of the proposed project. It is expected, based on the complexity of the proposed changes and the volume of protests already received, that these petitions will likely require several years of processing time culminating in a decision on this matter at a future State Water Board hearing.

If SCWA needs an immediate, short-term change to their water rights, submitting temporary urgency change petitions (TUCPs) may be an option. SCWA has filed TUCPs in the past that were approved by the Division. The Division's Permitting and Licensing Section is supportive of identifying a long term solution to improve the water supply reliability of Lake Mendocino and maintain instream flows in the Russian River and Dry Creek that are beneficial to fish, wildlife, and other instream beneficial uses, and is available to discuss the above outlined petition process as well as the attached comments.

REGIONAL WATER BOARD

The quality of surface and ground waters in the North Coast Region of California is governed by the Water Quality Control Plan for the North Coast Region (Basin Plan) and state-wide Policies. The Basin Plan identifies the existing and potential beneficial uses of water within the North Coast Region and the water quality objectives necessary to protect those uses. The relevant existing beneficial uses that apply to the project area include: Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Groundwater Recharge (GWR), Water Contact Recreation (REC1), Non-Contact Water Recreation (REC2), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), Estuarine Habitat (EST), Rare, Threatened, or Endangered Species (RARE), Migration of Aquatic Organisms (MIGR), and Spawning, Reproduction, and/or Early Development (SPWN). Together water quality objectives, beneficial uses, and the anti-degradation policy constitute the water quality standards that projects must achieve.

The Regional Water Board understands that the proposed project consists in part of the management of water supply releases from Lake Mendocino and Lake Sonoma to provide instream flows in the Russian River and Dry Creek. The project proposes to modify SCWA's existing water right permits to change the minimum instream flow requirements, consistent with the National Marine Fisheries Service's Russian River Biological Opinion dated September 24, 2008.

The Regional Water Board recognizes the benefits of the proposed project goals, including improved habitat for threatened and endangered fish species in the Russian River watershed. The proposed project outlines a series of changes to the way project reservoirs are operated that are intended to result in:

- Suitable depth, velocity, and cover for rearing juvenile salmonids in the upper reaches of the Russian River;
- Preservation of a cold water pool in Lake Mendocino to benefit adult salmonids in the Fall;
- Greater potential for maintaining freshwater lagoon conditions near the mouth of the Russian River to benefit juvenile salmonid growth and survival.

Though the proposed project seeks to support beneficial uses, there are also potential risks to water quality that must be fully considered and evaluated in the EIR. Decreased flows in the Russian River may exacerbate biostimulatory conditions, depress dissolved oxygen concentrations, increase temperatures and pathogen concentrations, and alter mercury and

aluminum loading to the river. A range of project alternatives should be considered that will avoid and minimize and then mitigate these potential impacts while maintaining the project goals.

MOVING FORWARD

The need to understand the water quality implications of Russian River water management is shared between the Regional Water Board and SCWA. The Regional Water Board is interested in partnering with the SCWA in efforts to increase the scientific understanding of the issues identified in the Regional Water Board's enclosed comments.

The Regional Water Board recognizes that water resource management of the Russian River involves careful balancing of the various uses of the water - for municipal drinking water supply, fisheries, and recreation, among others. The Regional Water Board requests that SCWA consider a process whereby instream flows can be modified as necessary to respond to instream water quality, public health, and fisheries/aquatic life needs, based on available monitoring and assessment data and information. Under such a framework, instream flows can be considered a management "tool" to optimize resource protection and beneficial use support. To accomplish this, the Regional Water Board requests that SCWA consider a consultation process whereby temporary increases in flow to support fisheries and water quality needs would be implemented following consultation with the Regional Water Board, California Department of Fish and Wildlife, and National Marine Fisheries Service. The Regional Water Board understands that such a process can be assessed using analyses already presented in the DEIR.

Some of these issues may require multi-year monitoring and assessment efforts, beyond the scope and timing of this particular project. The Regional Water Board remains committed to working with SCWA to develop and implement a science program for the Russian River watershed. Such a program could inform water and fisheries resource management decisions within an adaptive management framework.

The Independent Science Review Panel (Panel) Conceptual Model of Watershed Hydrology, Surface and Groundwater Interactions and Stream Ecology for the Russian River Watershed (RRISRP, 2016), is a conceptual framework and general characterization of the physical conditions of the watershed. The Panel has identified several questions to address data gaps for fish habitat, streamflows and groundwater, to gain more basin-specific information through applied science. Understanding the complex hydrology of the Russian River watershed will be critical for the successful management of reservoirs, streamflow, habitat needs, and groundwater.

In partnership with the Russian River Watershed Association and its members, which includes SCWA, the Regional Water Board is in the process of developing the Russian River Regional Monitoring Program (R3MP). The Regional Water Board is in contract with the San Francisco Estuary Institute/Aquatic Science Center to develop the governance structure for the R3MP, which once implemented, in time could serve as the framework for a science program for the Russian River watershed.

In the meantime, the Regional Water Board staff is available to assist SCWA in clarifying any of the comments presented here. We are also available to assist SCWA with application of the CA NNE for the biostimulatory conditions assessment.

CLOSING

We appreciate the opportunity to participate in the environmental review process. If you have any questions regarding these comments please contact the appropriate staff identified above.

Sincerely,

Leslie F. Grober, Deputy Director
Division of Water Rights

Matthias St.John
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Matthias St. John
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Attachment: Comments on draft Fish Habitat Flows and Water Rights Project Environmental Impact Report

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ENCLOSURE

COMMENTS ON DRAFT FISH HABITAT FLOWS AND WATER RIGHTS PROJECT ENVIRONMENTAL IMPACT REPORT

ACRONYMS AND ABBREVIATIONS USED IN COMMENT TABLE

af	Acre-feet
CA NNE	California Numeric Nutrient Endpoints
CCHAB	California Cyanobacteria and Harmful Algal Bloom
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
cfs	cubic feet per second
DEIR	Draft Fish Habitat Flows and Water Rights Project Environmental Impact Report
Division	Division of Water Rights
E. Coli	Escherichia Coli
eWRIMS	Electronic Water Rights Information Management System
HSI	Habitat Suitability Index
HSPF	Hydrologic Simulation Program Fortran (a water quality computer simulation model)
IFU	State Water Board, Division of Water Rights, Instream Flow Unit
mg chl-a/m2	Milligrams of Chlorophyl-a per square meter
mg/l	Milligrams per liter
NCRWQCB	North Coast Regional Water Quality Control Board
NNE	Numeric Nutrient Endpoint
NSE	Nash-Sutcliffe Efficiency
NMFS	National Marine Fisheries Service
PALS	State Water Board, Division of Water Rights, Permitting and Licensing Section
pH	Potential of Hydrogen
POD	Point of Diversion
Policy	Policy for Maintaining Instream Flows in Northern California Coastal Streams
QUAL2Kw	A water quality computer simulation model
RDS	Russian River Diversion Structure
REC-1	Contact Recreation (beneficial use)
Regional Water Board	North Coast Regional Water Quality Control Board
RMA	A water quality computer simulation model
SCWA	Sonoma County Water Agency
SPATT	Solid Phase Absorption Toxin Tracking

State Water Board	State Water Resources Control Board
SWAMP	Surface Water Ambient Monitoring Program
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorous
TUCP	Temporary Urgency Change Petition
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WASP7	Water Quality Analysis Simulation Program (a water quality computer simulation model)
WSE	Water Surface Elevation
WUA	Weighted Usable Area

DEIR COMMENT TABLE

COMMENTERS: PERMITTING AND LICENSING SECTION (PALS); NORTH COAST REGIONAL WATER QUALITY CONTROL BOARD (NCRWQCB); INSTREAM FLOW UNIT (IFU)

Comment No.	Page No.	Paragraph No.	Table, Figure or Bullet No.	Comment	Commenter
Time Extensions					
1	—	—	—	SCWA filed petitions for extensions of time under Permits 12949, 12950, and 19596 (a time extension was not filed for Permit 12947A). The DEIR submitted to the Division in support of the requested time extensions notes that the potential effects of extending the deadline for beneficial use is included in Chapter 6. However, the analysis presented in Chapter 6, along with other chapters throughout the DEIR, appears to assume the time extensions will be granted. None of the no project alternatives include an alternative in which the petitions for extension of time are not approved. For example, the No Project 1 Alternative is comprised of the hydrologic index and minimum instream flows required under Decision 1610 with a maximum annual use of 75,000 af. The incremental increase (including rate and volume) that would be authorized if the petitions for extension of time are approved should be considered and evaluated as part of the project.	PALS
Thresholds of Significance					
2	—	—	—	The DEIR does not appear to clearly identify all of the thresholds of significance or explain the criteria used to identify whether and how an impact is above or below that threshold. A threshold of significance is an identifiable quantitative, qualitative, or performance level of a particular environmental effect. (Cal. Code Regs., title 14, § 15064.7.) Pursuant to the California Code of Regulations, title 14, Section 15064(b), the determination of whether a project may have a significant effect on the environment should be based on scientific and factual data to the extent possible. Please provide additional information about the thresholds of significance used. Specific comments have been incorporated below to identify instances for which additional clarification and description should be incorporated.	PALS NCRWQCB

Significant and Unavoidable Findings					
3	—	—	—	For the findings of significant and unavoidable impacts a brief explanation of the rationale should be provided. (Cal. Code Regs., title 14, § 15091.) Based on the information provided it is unclear if potential mitigation measures or project modifications were considered and eliminated. Pursuant to California Code of Regulations, title 14, Section 15126.2(b), "impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described." Please clarify the basis for the significant and unavoidable determination and provide additional description of the potential mitigation measures that were considered. Specific comments have been incorporated below to identify instances for which additional clarification and description should be incorporated.	PALS NCRWQCB
Operational Buffer					
4	—	—	—	Throughout the DEIR models are used to analyze potential impacts of the project and to make findings of significance. The models incorporate an operational flow (buffer) in addition to the minimum instream flows, while the petitions for change only include the minimum instream flows. For example, the Russian River ResSIM model incorporates the following operational buffers: (1) an instantaneous rate of 20 cfs and a 5-day running average of 9 cfs in the upper Russian River; (2) an instantaneous rate of 34 cfs and a 5-day running average of 14 cfs in the lower Russian River; and (3) an instantaneous rate of 13 cfs and a 5-day running average of 7 cfs in Dry Creek. The analysis of impacts of the project in the DEIR includes the operational buffer in the evaluation of the requested minimum flows. For instance, the flow as requested in the lower Russian River in June under the petitions is 105 cfs (Flow Schedule 1); however, the flow as evaluated in the DEIR with inclusion of the instantaneous rate is 140 cfs. Therefore, the DEIR does not appear to evaluate the potential impacts of the minimum instream flows requested in the petitions. The State Water Board recommends either: (1) adding an evaluation of the potential impacts as a result of reducing the minimum instream flows as reflected in the petitions for change to the DEIR; or (2) revising the petitions for change to reflect the minimum instream flows as evaluated in the DEIR. Ideally, the DEIR would include an evaluation of the Proposed Project with consideration of the buffer and without the buffer. This would allow for a range of flows and associated findings. Please note that the	PALS NCRWQCB

				State Water Board may only approve a project after environmental analysis of that project has been conducted as required by CEQA.	
Mechanism of Impacts					
5	—	—	—	The DEIR relies on modeling to support impact assessments, but explanations of the causal relationships incorporated into the models are not included in the text. Many of the impact discussions rely on the quantitative results of the modeling (e.g., lower monthly average water temperature than baseline), but do not explain the underlying mechanisms that would create those conditions (e.g., higher flows, delayed cold water pool releases). Omission of these descriptions makes it more difficult for the reader to understand how the different components of the project and alternatives translate into potential impacts. In particular, clear explanations of the mechanisms behind significant and unavoidable impacts could facilitate development of feasible mitigation. Specific comments have been incorporated below to identify instances for which additional clarification and description should be incorporated.	PALS
Biological Opinion Studies					
6	—	—	—	The DEIR appears to rely heavily on observational studies conducted since the Biological Opinion was released (such as the 2009 Russian River Recreational Assessment) and does not include studies leading up to and relied upon in the Biological Opinion (15 years of data). What is the rationale for not also including the extensive analysis completed for the Biological Opinion as part of the evaluation of potential environmental impacts?	PALS
Baseline					
7	—	—	—	The DEIR uses average Russian River flows from 2006-2013 to reflect baseline conditions. Regional Water Board staff contend that this approach is problematic as in many of these years SCWA received a TUCP order to alter Decision 1610 flows to implement the Biological Opinion. A clear understanding of what is represented as the baseline scenario is difficult, given the overlap of reduced flows during the period analyzed to characterize baseline. Representing the baseline condition by utilizing data from years when flows were altered to implement the Biological Opinion appears to skew the evaluation of impacts. Through conversations with SCWA staff, Regional Water Board staff has	NCRWQCB

				developed a better understanding of the combination of analyses that are used to characterize the baseline conditions. However, in speaking with other agency personnel and the public, it is clear that there is considerable confusion about how the baseline condition is represented. Regional Water Board staff recommend SCWA develop a table that clearly shows the analysis components that went into characterizing the baseline and each of the alternatives.	
Water Quality					
8	—	—	—	The DEIR doesn't evaluate the effects of altered flows on suspended sediment and turbidity conditions in the Russian River and Dry Creek. Lake Mendocino is a source of turbid waters that results in elevated downstream turbidity conditions. The suspended sediment and turbidity impacts associated with altering flow releases should be evaluated.	NCRWQCB
9	—	—	—	The DEIR doesn't evaluate the impacts of the project on toxicity, despite the identification of cyanotoxins associated with cyanobacteria as a concern. The Final EIR may be improved by incorporating in the water quality monitoring section discussion of the 2016 cyanobacteria and cyanotoxin monitoring conducted by the Regional Water Board and Sonoma County Department of Health Services. Both organizations collected water samples for toxin analysis and Regional Water Board staff deployed SPATT bags and collected algae in the river for toxin analysis. The recommended analyses associated with Biostimulatory Substances (*see comment 53*) could also address how changes in flow under the various project alternatives may affect cyanotoxin production and may result in violation of the toxicity objective.	NCRWQCB
Comment No.	**Page No.**	**Paragraph No.**	**Table, Figure or Bullet No.**	**Comment**	**Commenter**
Chapter 1: Executive Summary					
10	1-3	1	—	The DEIR describes and evaluates impacts using the combined limits of Permits 12947A, 12949, 12950, and 16596: a maximum direct diversion rate of 180 cfs and volume of 75,000 af per year. The terms as written in the water rights are more complex and include additional restrictions beyond what is described in the DEIR. For example, the direct diversion	PALS

				and rediversion under Permits 12947A, 12949, and 12950 shall not exceed 92 cfs (per Terms 00000005 and 00000114). Any amended rights issued pursuant to the pending petitions will include limitations to reflect the requirements of the permits and the scope of the appropriations analyzed under CEQA.	
11	1-3	3	—	The DEIR states the "the new minimum instream flow requirements proposed by the Fish Flow Project were developed to meet the requirements of the Biological Opinion to improve habitat for threatened and endangered salmonid species. The DIER describes the flows recommended in the Biological Opinion. However, these flows were not carried through as an alternative. Please clarify the basis for not including the flows as recommended in the Biological Opinion.	PALS NCRWQCB IFU
12	1-9	—	Table 1-1	Executive Summary Table 1-1 does not include Impact 4.2-5. Changes to minimum instream flows could result in a violation of water quality standards or waste discharge requirements or otherwise degrade water quality relating to bacteria in the Russian River on page 4.2-60.	NCRWQCB
13	1-11	1	—	SCWA currently holds Permits 12947A, 12949, 12950, and 19596. Each of the permits include deadlines by which SCWA was to complete full beneficial use of water, which deadlines have expired. The language in the DEIR indicates that petitions were filed in 1999 to extend the deadline for the full application of water to beneficial use. SCWA withdrew these petitions and concurrently filed petitions for extension of time for Permits 12949, 12950, and 19596 in August 2016. According to the Division's records, SCWA has not filed a petition for extension of time for Permit 12947A. Once the deadline to complete full beneficial use and complete construction has expired, the right holder should take one of the following actions: (1) notify the State Water Board that the permitted project is complete and ready for licensing; (2) file a petition for an extension of time to extend the development schedule if the construction and use of water under the permit has been diligently pursued and additional time is necessary to complete full anticipated beneficial use of water; or (3) request revocation of the permit if the project has been abandoned or cannot be diligently completed due to personal or financial reasons.	PALS

Comment No.	Page No.	Paragraph No.	Table, Figure or Bullet No.	Comment	Commenter
Chapter 3: Background and Project Description					
14	3-13	1	—	The DEIR describes the required minimum instream flows authorized under Normal, Dry Spring 1, and Dry Spring 2. The description provided in the DEIR does not correspond with the language in Decision 1610. The flows identified in Attachment A: Comparison Table of Existing and Proposed Minimum Flow Requirements reflects Division staff's understanding of flows allowable under each water year type.	PALS
15	3-16	1	—	The DEIR states that riparian water rights allow contiguous property owners to directly divert and use only the natural flow of water in a stream or lake for beneficial purposes without a permit from the State Water Board. While it is correct that riparian users do not need an appropriative water right permit, they are required to file a Statement of Water Diversion and Use with the State Water Board.	PALS
16	3-17	1	—	The DEIR notes that Term 17 in Permits 12949 and 12950 require SCWA to maintain specific minimum instream flows in the Russian River. This description is not entirely accurate. Please note that Term 17 specifies flows that SCWA must bypass at its PODs and the hydrologic index used to determine the appropriate bypass flows.	PALS
17	3-18	—	Table 3-1	Table 3-1 provides an estimate of the allocation of the 10,000 af Sonoma County Reservation as of January 2013. Please clarify that these estimated values are based on draft calculations that have not been reviewed for accuracy or approved by the State Water Board.	PALS
18	3-23	1	—	The project objectives, as defined by the DEIR, include managing Lake Mendocino and Lake Sonoma water supply releases to provide instream flows that improve habitat for threatened and endangered species, and to update SCWA's existing water rights to reflect current conditions. Currently, the State Water Board is also considering the petitions for extension of time submitted by SCWA. The petitions cannot be approved unless evaluated pursuant to CEQA. *See comment 1 for additional information*.	PALS

19	3.28	2	—	The DEIR describes the Proposed Project as meeting the requirements of the Biological Opinion. SCWA should provide documentation from NMFS that indicates that the Proposed Project meets the requirements of the Biological Opinion.	PALS
20	3-34	1	—	Under certain circumstances, the calculation of the cumulative inflow is proposed to be adjusted if the cumulative inflow to Lake Mendocino exceeds specific thresholds. If the USACE Guide Curve is permanently changed would it affect the hydrologic index and the cumulative inflow limit values noted in the DEIR?	PALS
21	3-28 through 3-38	Section 6.6.1	—	The description of the hydrologic index for the preferred alternative in the DEIR differs slightly from the hydrologic index submitted with the petitions for change. It is the Division's understanding that the attached description of the requested hydrologic index (Attachment B) is the most current and correct description.	PALS
22	3-37	—	Bullet 4	It is the Division's understanding that Lake Mendocino storage would be calculated from the WSE on the first day of each month from June through December using the most recent reservoir volume surveys. This value would be used to determine the applicable storage condition number. Please describe whether and how sedimentation rates are considered when determining the storage in Lake Mendocino. If sedimentation is not a consideration, please expand on the basis for this recommendation.	PALS
23	3-38	1	—	The DEIR indicates that the “Development of the Russian River Hydrologic Index for the Fish Habitat Flows and Water Rights Project” report is in Appendix C; however, it is actually in Appendix G.	IFU
24	3-42	3	—	The DEIR provides a demand analysis through 2040. Did this projected growth undergo CEQA review (e.g. in a county or city general plan)? As discussed in comment 1, the incremental increase that would be authorized if the petitions for extension of time are approved should be considered and evaluated as part of the project.	PALS

25	3-42	4	—	The DEIR provides a future demand analysis through 2040. The model estimated an approximate demand of 75,565 af per year. The DEIR should explicitly state the amount of water put to full beneficial use prior to the deadline for complete application under the water rights to make clear what amount of water is being evaluated in the subsequent analyses. Also, the projected demand is greater than the authorized amounts in the water rights. The DEIR does not reflect how SCWA intends to meet the additional 565 af demand. *See comment 1 for additional information*.	PALS
26	3-44	4	—	The No Project 1 and 2 Alternatives consider a maximum volume of diversion and rediversion of 75,000 af per year. This appears to assume the petitions for extension of time will be approved by the State Water Board. *See comment 1 for additional information*.	PALS
Comment No.	**Page No.**	**Paragraph No.**	**Table, Figure or Bullet No.**	**Comment**	**Commenter**
Chapter 4.0: Introduction to Environmental Setting, Impact, and Mitigation Measures					
27	4.0-4	—	Figure 4.0-1	This map has reaches of the river missing and issues with the legend that should be corrected.	NCRWQCB
28	4.0-6	4	—	The text describes the minimum inflow to Lake Mendocino as 60,000 af in 1977; however Lake Mendocino storage peaked at 51,112 af in 2014, with a carryover storage of 24,525 af, suggesting that 2014 cumulative inflow was near historic lows. How does the cumulative inflow in water year 2014 compare to water year 1977? This is important, given that 2014 is within the baseline condition period.	NCRWQCB
29	4.0-8	2	—	The DEIR notes that the total direct diversion and rediversion is limited to a maximum instantaneous rate of 180 cfs and to a maximum annual volume of 75,000 af. The DEIR further indicates that neither of these amounts was reached prior to the deadline for complete application of water under the permits. What is the maximum instantaneous rate and volume that SCWA reached under each permit? *See comments 1 and 10 for additional information*.	PALS

30	4.0-10	4	—	The document states "…the model assumes that all the demands in the watershed are satisfied with its simulated flow releases, not just the demands of the Water Agency." This appears incorrect. Doesn't the model determine the releases necessary to meet the assumed demands?	NCRWQCB
31	4.0-11, 12	—	—	A table detailing the differences between the baseline condition and each of the alternatives would aid the reader in understanding the analyses performed. Similarly, a table showing the minimum instream flow requirements of the Proposed Project and No Project 2 Alternative would be helpful.	NCRWQCB PALS
32	4.0-11	3	—	"The Water Agency's water diversions are based on average water year 2009 to 2013 water diversions of 55,211 acre-feet per year (AFY) (51,588 AFY reported by the Water Agency and 3,623 AFY reported by Russian River customers). Water Agency diversions from 2009 to 2014 were selected as these years include the Water Agency and its contractor's compliance with SB7x7 and meeting the required goals to reduce per capita water use 20 percent by the year 2020 with an interim goal of a 10 percent reduction by 2015." The text above appears contradictory by saying SCWA diversions are based on 2009-2013, but 2009-2014 were selected. Is 2014 included in the baseline condition period?	NCRWQCB
33	4.0-12	1 and 2	—	The DEIR states that the No Project 1 and 2 Alternatives represent the operations of Lake Mendocino and Lake Sonoma with diversions under SCWA's permits of 75,000 af. As previously noted, this statement appears to assume the petitions for extension of time will be approved. *See comments 1 and 10 for additional information.*	PALS
34	4.0-15, 16	Section 4.0.7	—	Section 4.0.7 Plans and Consistency should acknowledge the Water Quality Control Plan for the North Coast Region.	NCRWQCB
35	4.0-15, 16	1 and 2, 1 and 2	—	The DEIR provides a general discussion of the Policy and concludes that the Proposed Project would comply with the Policy. Please provide more of the analysis and support for this conclusion, especially with respect to Policy sections 2.1 and 3.3.2, if such a statement is to be included within the DEIR.	PALS
36	4.0-16	2	—	Approval of the petitions for extension of time would authorize SCWA to make full beneficial use of water under the permits. If the full beneficial use of water results in a corresponding decrease in Lake Mendocino reservoir storage volume, the hydrologic index could shift, as the index is tied in part to storage in Lake Mendocino. Please include an evaluation of	PALS

				the potential impacts of this shift. In particular, the Division would like to understand whether full beneficial use of water could impact minimum instream flows required by the schedule. See comment 40 for additional information.	
Comment No.	**Page No.**	**Paragraph No.**	**Table, Figure or Bullet No.**	**Comment**	**Commenter**
Chapter 4.1: Hydrology					
37	4.1-6, 8	1, 2	Table 4.1-3, Table 2-1 (Appendix G)	The DEIR lists USGS gage No. 11465390 (Russian River near Windsor) as a gage located in the upper Russian River under Table 4.1-3. This gage is located in the lower Russian River and should be corrected. In addition, please explain why USGS gage No. 11467002 (Russian River at Johnsons Beach) was not considered in the analysis.	PALS
38	4.1-16	2	—	The DEIR states that one of the primary water control objectives of Coyote Valley Dam is to maintain a discharge of 150 cfs or the rate of inflow to the reservoir, <u>whichever results in the lower reservoir release at the junction between the east and west forks of the Russian River</u>. This statement is unclear to the Division. Please provide additional detail and explanation, including the basis for this requirement; and whether and how this requirement was considered in the analysis.	PALS
39	4.1-20	1	—	The DEIR explains that SCWA complies with the minimum instream flow requirements by monitoring downstream gages, or compliance points. While monitoring at the downstream gages may be one component of SCWA's efforts to comply with the terms in their water rights, SCWA is responsible for maintaining instream flows throughout the East Fork Russian River (below Coyote Valley Dam), the Russian River (below the confluence of the forks), and Dry Creek (below Warm Springs Dam). The permits as written do not specify compliance points.	PALS
40	4.1-39 through 94	All	—	The DEIR impact analysis assumes a change in releases from Warm Springs Dam could occur due to a higher rediversion at Mirabel and Wohler for all project alternatives. This assumption is only made when evaluating instream flows for Dry Creek and the lower Russian River. According to the DEIR, water is only released from Coyote Valley Dam to meet upper Russian River minimum instream flows. This is because of the long travel time for releases from Coyote Valley Dam to the lower Russian River. Therefore, all the water supply for rediversion at Mirabel	PALS

				and Wohler is considered released from Lake Sonoma. It is not clear if the DEIR modeled the entire 75,000 af to be rediverted at Mirabel and Wohler, or if some of the demand was modeled to occur at the other PODs authorized under the SCWA permits. For instance, were the PODs located on the upper Russian River analyzed (Healdsburg wells)? There are pending extensions of time under Permits 12949 and 12950, which allow rediversion from the upper Russian River in addition to other locations on the lower Russian River. How was the increased demand in the upper Russian River and at the other authorized PODs on the lower Russian River and Dry Creek analyzed? The Division also notes that the introduction chapters, specifically Chapters 1 (page 1-15) and 3 (page 3-44) do not disclose the assumptions discussed above. If the DEIR analyzes the entire 75,000 af per year as being diverted at Mirabel and Wohler, the water rights may need to be conditioned to ensure that a project approval does not exceed the scope of the project analyzed under CEQA. *See comments 1 and 10 for additional information*.	
41	4.1-46	3	—	The DEIR notes that during the summer months releases from Coyote Valley Dam increase to maintain minimum instream flows and to ensure water delivery to Wohler and Mirabel. This information conflicts with the statement made on page 4.1-39 (*see comment 40*). The Division notes this statement occurs throughout the DEIR, see page 4.1-52 for example.	PALS
42	4.1-54	3, 4	— , —	The DEIR states that surface flows would be reduced under the Proposed Project. These surface flows are a source of groundwater recharge but impacts to the groundwater table were found to be less than significant. The DEIR does not clearly address whether the reduced flow could alter the recharge rate. The DEIR should include additional description and analysis of these potential impacts. *See comment 2 for additional information.*	PALS
43	4.1-46, 52, 54, 57, 60, 63, 66, 76, and 81	Impact Findings	—	The referenced pages include an evaluation and determination of both "no impact" and "less than significant" impact finding for the same impact (i.e. paragraph one states no impact, paragraph two states less than significant). Please clarify. *See comment 2 for additional information.*	PALS

44	60	2	—	The DEIR notes that under the Proposed Project, diversions from Wohler and Mirabel would increase to meet the 75,000 af maximum diversion volume. As such, the DEIR concludes that contributions to groundwater would be similar under the Proposed Project as Baseline Conditions. SCWA is authorized to divert and redivert at multiple PODs throughout the Russian River and Dry Creek. Would any other PODs see an increase in the amount of water diverted/rediverted as a result of approval of the petitions for extension of time? Would these increased diversions at other PODs change groundwater contributions? *See comments 40 and 42 for additional information.*	PALS
45	4.1-63, 76	1-3; 1-3	—	Impact 4.1-2 finds that erosion impacts resulting from approval of the Proposed Project would be less than significant. Please provide an explanation for these determinations, including the thresholds of significance. *See comment 2 for additional information.*	PALS
Comment No.	**Page No.**	**Paragraph No.**	**Table, Figure or Bullet No.**	**Comment**	**Commenter**
Chapter 4.2: Water Quality					
46	—	—	—	The water quality analysis contained in the DEIR relies too heavily on qualitative descriptions of impacts rather than quantitative analysis. As was noted in the 2010 letter from the Regional Water Board (Kuhlman 2010) the final EIR needs to include "…quantitative (i.e. statistical) assessment of whether the Project will cause violations of water quality standards…." Although a great amount of hydrologic and water quality modeling of the project was conducted in preparation for the DEIR, few of the quantitative results were carried forward from Appendix G to the water quality chapter in a way that allows for a rigorous comparison of the potential impacts of the alternatives. This point is illustrated in the discussion of Impact 4.2-3 on pages 4.2-46 and 47, where the temperature and dissolved oxygen impacts are described in qualitative terms. For example, the DEIR states: "Temperatures under the No Project 2 Alternative would be slightly higher at the downstream modeled nodes from May to July down to the Hopland node than Baseline Conditions, but would be several degrees cooler during the second half of the summer into October when seasonal temperatures are typically highest." Despite dozens of pages of graphs in Appendix G presenting temperature model output, the impacts are described using terms such as "slightly higher",	NCRWQCB

				and the timeframe of the impacts are defined in halves of summers. The term “slight” or “slightly” is used to describe impacts 15 times on these two pages alone, yet the term is not defined. Similarly, the DEIR describes alternatives “shifting the timing of water quality impacts” without describing the magnitude, duration, or direction of those shifts in time. The Final EIR should provide a quantitative assessment (i.e., statistical analysis) and structure the discussion of impacts around tables and graphs of model output summarizing the quantified difference in results of alternative scenarios relative to the baseline condition. The reliance on qualitative analysis prevents determination of the Proposed Project and alternative scenarios’ compliance with water quality standards. The DEIR states that violation of any water quality standard or waste discharge requirement is one of the criteria for determining if an impact is significant. However, the analysis is not presented in a manner that allows for this determination. For instance, changes in temperature are not compared to the 5 ^{o}F limit defined by the intrastate water quality objective for temperature. Similarly, dissolved oxygen results are not compared to the numeric limits defined by water quality standards and presented in Table 4.2-1. The final EIR should evaluate how the project complies with the applicable numeric water quality objectives. *See comment 2 for additional information.*	
47	4.2-4, 5	Water Temperature Section	—	The temperature impacts associated with the Proposed Project represents a tradeoff between juvenile rearing flow temperatures and adult migration and spawning temperature. The Proposed Project results in temperature improvements for migrating and spawning Chinook salmon, due to the preservation of Lake Mendocino’s cold-water pool through the warm season. The improved temperatures in the fall come at the expense of juvenile rearing temperatures, however the Proposed Project will slightly increase monthly average stream temperatures for juvenile rearing ($\leq$3 ^{o}F) and result in temperatures in a range that is still generally supportive of juvenile salmonids. In either case, stream temperatures are likely cooler than what would be expected in a natural, unimpaired state. Despite the obvious temperature benefit to migrating and spawning adult Chinook, it is still unclear what the overall impact on temperatures will be on salmonids given the fact that the analysis is based on monthly averages. Many of the temperature criteria reported in the DEIR are based on instantaneous temperatures, which make evaluation of impacts based on monthly averages problematic. Similarly, the possible impacts of the Proposed Project associated with temperature are associated with the	NCRWQCB

				maximum temperatures, which aren't reported. The temperature validation plots in Appendix G indicate SCWA's water quality model does not predict minimum and maximum temperatures well at many locations, however maximum temperatures could at least be estimated based on the diurnal change in temperatures observed in past years, using a regression or other similar, simple analysis, as the maximum and average temperatures are often well correlated and consistent for a site or reach.	
48	4.2-4	2	—	A list of the "water quality parameters of primary concern for the NCRWQCB" is presented, however this list is incomplete. The DEIR should also include assessment of additional parameters associated with the Sediment and Toxicity related objectives including turbidity, suspended and settleable sediment, and cyanotoxins.	NCRWQCB
49	4.2-5, 6	Dissolved Oxygen Section	—	The plots of observed and modeled dissolved oxygen concentrations presented in the "model demonstration" in Appendix G indicate that either the model is poorly calibrated, the calibration data is suspect, or both. Regardless, the poor fit of observed and modeled dissolved oxygen concentrations casts doubt on the results presented in the DEIR. Some of the sites presented (Hopland, Digger Bend, RDS inflatable) show large diurnal swings in dissolved oxygen, indicating either productivity associated with high levels of benthic algal biomass, or fouling of the dissolved oxygen sensor. The data for these sites also show dissolved oxygen concentrations lower than the minimum concentration specified by the water quality objective for Dissolved Oxygen (6.0 mg/l). The Final EIR should present more lines of evidence (e.g. empirical data) in addition to the modeling analysis to support the assessment. In the long term, SCWA should invest in the data collection and modeling work to improve the existing model so that it can predict maximum and minimum dissolved oxygen concentrations with a reasonable degree of accuracy.	NCRWQCB
50	4.2-5	4	—	The last paragraph of page 4.2-5 suggests that nutrient impacts on dissolved oxygen are limited to standing waters, which is not the case. An example of biostimulatory conditions in flowing water is illustrated in the dissolved oxygen data collected in the Russian River and presented in Appendix G of the DEIR. These data show large diurnal swings in the concentration of dissolved oxygen, which suggest biostimulatory conditions are present and driving excessive algal growth.	NCRWQCB
51	4.2-5	5	—	Biostimulatory conditions and the excessive respiration of algae can also drive harmful changes in pH.	NCRWQCB

52	4.2-7	—	Table 4.2-1	Table 4.2-1 is incomplete. The November 15, 2010 letter from the Regional Water Board with the Subject "Comments on the Notice of Preparation of an Environmental Impact Report for the Fish Habitat Flows and Water Right Project SCH No. 2010092087" (Kuhlman 2010) identified water quality objectives that could be violated under the Proposed Project along with an explanation of why the Regional Water Board believes that the objectives may be exceeded, and potential impacts should be assessed. Objectives listed in that letter but not evaluated in the DEIR are as follows: Toxicity, Sediment, Turbidity, Suspended Material, and Settleable Material. The potential impacts of the proposed project on these objectives and the beneficial uses they protect should be assessed in the Final EIR. Additionally, temperature objectives for the Russian River estuary are described in the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California*. Those objectives should also be included in the Table.	NCRWQCB
53	4.2-8 10	Biostimulatory Substances Section	—	The DEIR acknowledges that except for in extreme cases, nutrients alone (TP and TN) do not impair beneficial uses and that algal productivity depends on additional factors including channel morphology, flow, temperature, and light availability, however the document does not assess these additional factors and their potential role in creating biostimulatory conditions. Additionally, the DEIR states that there is no model available to simulate algal biomass or nutrient and chlorophyll-a concentrations at different flows, and thus the DEIR assesses nutrients (TP and TN) and water column chlorophyll-a as surrogate measures of whether biostimulatory conditions are occurring under the various project alternative flows (as compared to baseline flows). The use of water column chlorophyll-a data as the only measure to represent aquatic growth (and biostimulatory conditions) in the Russian River is not appropriate. During 2010 scoping for the Fish Flows EIR, "algae growth" was identified as one of the water quality issues that needed to be evaluated in the EIR. Given that aquatic growth, including algae and blue-green algae, in the Russian River originates on the benthos it is important to measure chlorophyll-a via benthic algal biomass (mg chl-a/m2) and compare values to the nutrient numeric endpoints for secondary indicators presented in the 2006 document titled *Technical Approach to Develop Nutrient Numeric Endpoints for California* (CA NNE) (Creager et al. 2006). The CA NNE presents thresholds against which to evaluate benthic algal biomass (chlorophyll-a), dissolved oxygen, and pH	NCRWQCB

				to determine the risk of beneficial use impairment related to biostimulatory conditions. The assertion that there are no models that can simulate benthic algal biomass in the Russian River is misleading. Water quality models exist that can be calibrated and corroborated for the Russian River if river-specific data were available (e.g. QUAL2Kw, WASP7, RMA, and HSPF). It is more accurate to State that SCWA's water quality simulation model of the Russian River does not adequately represent benthic algal biomass and dissolved oxygen concentrations. The issue is that SCWA has not collected the data necessary to calibrate a model that can simulate benthic algal biomass. A good example of an analysis of a river with productivity also driven by benthic algae (not planktonic chlorophyll) can be found at: http://www.deq.state.or.us/wq/tmdls/docs/umpquabasin/umpqua/chpt4nut.pdf Additionally, there are numerous papers in the scientific literature evaluating the effect of stream velocity/flow on benthic algae growth and sloughing. The Final EIR should utilize the empirical data available on the relationship between benthic algae and stream flow/velocity to discuss the potential impacts of flows changes expected in the Russian River from the project alternatives and Proposed Project. The Final EIR should include a comprehensive assessment of the risk factors affecting algal productivity, including channel morphology and light availability, and provide an explicit biostimulatory conditions assessment (utilizing the NNE endpoints for secondary indicators including maximum benthic algal biomass) to determine if the proposed project will result in any significant effects as compared to baseline conditions. The Final EIR should utilize modeling and scientific literature to discuss how changes in flow may affect benthic algal biomass in the Russian River. Until the above issues are addressed there is insufficient evidence to make any science based conclusions about impacts to biostimulatory conditions and water quality from the proposed project and project alternatives. The finding that impacts are "significant and unavoidable" has not been shown with scientific evidence and any statement of potential impact should be determined through rigorous scientific analysis which will reflect whether impacts are or are not significant as compared to baseline conditions. Regional Water Board staff are available to consult with SCWA staff on correct application of the NNE analysis methodology. If the final EIR identifies significant impacts to biostimulatory conditions, the assessment of these impacts should also be discussed in the fisheries	

				and recreation analyses. Biostimulatory conditions can result in harmful algal blooms, fish kills, nuisance odors, and aesthetic impacts could harm fish and wildlife, and impact recreational opportunities along the river. These secondary impacts are not identified.	
54	4.2-28	6	—	The analysis of effects on bacteria and biostimulatory substances relies on data collected during the time frame of 2006-2014. Various TUCP orders were in effect authorizing reduced instream flows during most of the time frame referenced. Flows that occurred during this time frame that the DEIR noted as being similar to Baseline Conditions were compared to flows that were similar to the Proposed Project to make specific findings throughout this chapter. However, the flows observed may have been less than Baseline Conditions as the TUCP order was in effect. It is unclear if potential impacts were overlooked due to comparing reduced flows to the Proposed Project.	PALS
55	4.2-11 and 12, 16	Indicator Bacteria Section, 2	—	The analysis of indicator bacteria should be revised to include Regional Water Board data that shows statistically significant relationships between indicator bacteria concentrations and flow. The second paragraph of page 4.2-16 discusses “Appendix C - The Effect of Russian River Dry Season Stream Flow Management on E. coli Bacteria Concentrations” in the Draft Staff Report for the Action Plan for the Russian River Watershed Pathogen Indicator Bacteria TMDL (NCRWQCB, 2015). However, the paragraph does not present or discuss the findings of Appendix C. In the evaluation of E. coli bacteria concentrations and stream flows in the Russian River presented in Appendix C, Regional Water Board staff present findings regarding E.coli concentrations in years managed under TUCP orders, which had reduced flows, and years without reduced flows. The findings are the results of two statistical analyses, the first looking at the correlation of flow and E.coli concentrations, and the second evaluating whether a difference exists between E.coli concentrations in years the TUCP orders were and were not implemented. None of the Russian River locations evaluated showed any statistically significant correlation between E. coli bacteria concentrations and daily mean stream flows. The second analysis showed that the distributions of E.coli concentrations were not significantly different from reduced stream flows due to the TUCP orders at Camp Rose Beach, Veteran’s Memorial Beach, Steelhead Beach, and Johnson’s Beach. The distribution of E.coli concentrations in TUCP and non-TUCP years showed statistically significant differences at Monte Rio Beach, however. The distribution of E.coli concentrations at Monte Rio Beach was significantly lower than the	NCRWQCB

				distribution during normal stream flow years with no TUCP. The information should be included in the assessment of Impact 4.2-5 (Changes to minimum instream flows could result in a violation of water quality standards or waste discharge requirements or otherwise degrade water quality relating to bacteria in the Russian River). The DEIR mischaracterizes the state of science for enterococci. The third paragraph of page 4.2-11 discusses a personal communication with Regional Water Board staff (NCRWQCB 2013) that needs clarification. It is correct that the Sonoma County Department of Health Services is currently not measuring enterococci bacteria concentrations to advise beach advisories in the Russian River. It is also correct that the Integrated Report did not use enterococci bacteria concentrations to assess impairment of REC-1 beneficial use. However, in 2012 the USEPA established freshwater criteria for enterococci bacteria for the protection of REC-1. As such, the Regional Water Board has included, with other lines-of-evidence of pathogens, an assessment of enterococci bacteria concentrations in the assessment of impairment for the Draft Staff Report for the Action Plan for the Russian River Watershed Pathogen Indicator Bacteria TMDL (NCRWQCB, 2015). The DEIR also discusses the fact that the enterococci bacteria can come from natural sources and are not always associated with fecal waste and potential pathogens. The paragraph does not discuss that E. coli bacteria also occur naturally and are also not always associated with fecal waste and potential pathogens. Both fecal indicator bacteria, E. coli and enterococci, naturally occur in a variety of environmental habitats and influence stream and river microbial communities from storm water runoff. These naturalized populations confound the use of E. coli and enterococci bacteria as indicators of fecal waste contamination (Dubinsky and others 2016). As such, the Regional Water Board (2015) used multiple lines of evidence to assess impairment in the Russian River watershed. Regional Water Board staff are available to consult SCWA staff and encourage the use of other lines-of-evidence of pathogen indicators in the DEIR impact assessment to assess potential impacts to public health resulting from a change in stream flow management.	
56	4.2-10, 12	— , Mercury Section	Table 4.2-2, —	The third and fourth paragraphs of page 4.2-12 describe the sources of mercury to Lake Sonoma and Lake Mendocino that are listed as impaired for high mercury levels in fish tissues. The discussion correctly identifies mines, erosional and airborne sources of inorganic mercury. The Regional Water Board suggests some discussion on the Skaggs Hot Springs	NCRWQCB

				mercury mine and large amount of mine tailings that were impounded behind Warm Springs Dam (USACE, 1973). The DEIR acknowledges the mercury impairments for Lake Mendocino and Lake Sonoma; however, the impairment is for the concentration of methylmercury in fish tissue, not inorganic mercury in the sediments as identified in Table 4.2-2 (Page 4.2-10). Multiple factors influence methylmercury concentrations in fish tissue including the amount of total inorganic mercury in the sediment, methylmercury production, and bioaccumulation processes. The DEIR may be improved by considering these factors. Annual reservoir water level fluctuations were found to be one of the most important factors influencing methylmercury production in California reservoirs (SWRCB, 2016). The DEIR should also evaluate whether alterations of lake level pursuant to the project alternatives will have impacts on mercury and mercury methylation in Lakes Sonoma and Mendocino and any potential downstream impacts. It may be that there are no potential impacts to mercury, but that should be generally addressed in the document. If further analysis identifies significant mercury impacts, the Final EIR should discuss mitigation measures and/or project alternatives to assess their effect on methylation of mercury in the reservoirs. If mitigation measures are appropriate, the Final EIR should include discussion of possible use of hypolimnetic aeration, artificial circulation, and/or sediment removal (Cooke and others, 1986).	
57	4.2-13	1	—	The first paragraph of page 4.2-13 correctly discusses the nonpoint sources of aluminum in the Russian River watershed. However, for completeness the point source contributions of aluminum should also be identified. The City of Santa Rosa and Town of Windsor both use aluminum sulfate for domestic wastewater treatment whose effluent is discharged into a tributary of the Russian River. The Cities of Ukiah and Cloverdale, and the Redwood Valley County Water District use aluminum for treatment of water supply facilities.	NCRWQCB
58	4.2-13	3	—	The last paragraph of page 4.2-13 identifies only animal waste as a source of specific conductance and dissolved solids. There are many other sources of dissolved solids in the watershed that could also contribute specific conductance and dissolved solids that should be discussed and considered. The Fish Hatchery at Warm Spring Dam uses a salt compound as a pesticide in the rearing ponds. Agriculture using irrigation	NCRWQCB

				increase the dissolved solids concentration in surface waters through evaporation in irrigation holding ponds and increased leaching of salts from the soils into shallow groundwater	
59	4.2-16	3	—	The DEIR didn't consider all of the data available through the SWAMP. The following SWAMP data should be assessed when considering background data for the development of the models and the preparation of the EIR. In addition to the Mercury sampling, the Regional and Statewide components of the SWAMP program have completed a multitude of monitoring efforts since 1998: • Various Regional and Statewide bioassessment programs: 202 site visits between 1995 – 2015 • Statewide SWAMP Stream Pollution Trends program: 15 site visits between 2008 - 2015 • Statewide SWAMP Fish Tissue Bioaccumulation study: 19 site visits between 2007 – 2015 • Regional Water Board SWAMP Status and Trends Study: 251 site visits between 2001 - 2009 • Regional Water Board SWAMP Nutrient Study: 155 site visits between 2010 - 2011	NCRWQCB
60	4.2-29	1	—	The first paragraph states that the analyses of the effects of mercury, aluminum, and specific conductance rely on modeled data that simulates surface elevations in Lake Mendocino and Lake Sonoma, and stage height in the Russian River downstream of the reservoirs and refers the reviewer to Chapter 4.1, Hydrology, for a detailed discussion. There is no mention of mercury, aluminum, or specific conduction in Chapter 4.1.	NCRWQCB
61	4.2-31 through 4.2-65	All	—	It appears that data collected by SCWA was only used to analyze impacts from biostimulatory substances. Some of the other water quality impact analysis sections, including temperature and dissolved oxygen, use models and other information to make impact findings. It is the Division's understanding that SCWA collected data in the Russian River as a result of the TUCP orders. The DEIR should disclose this data and either evaluate or provide a basis for not evaluating this data in analyzing other water quality impacts. Furthermore, the DEIR should clarify whether and how the models used within this chapter were verified (including clarification with respect to whether and how collected data was used for the verification or the basis for not using the collected data in the verification). *Refer to NCRWQCB comment 49 for additional information*.	PALS

62	4.2-32	3	—	Impact 4.2-1 concludes that under No Project 1 Alternative an additional area of shoreline at Lake Sonoma will be exposed. However, the additional shoreline would only be exposed infrequently during the driest years. The DEIR should consider the additional water released from storage as a result of approval of the petitions for extension of time and whether and how these additional releases may expose additional shoreline at Lake Sonoma. Furthermore, the DEIR should evaluate and disclose whether and how this additional area could impact water quality. *See comment 1 for additional information.*	PALS
63	4.2-33 to 4.2-38	Impact Analysis 4.2-2	—	Impact 4.2-2 discusses stage increases and decreases and how these changes could lead to greater erosion. River width is not mentioned in the impact analysis. Other chapters indicate that a reduction in river width of up to 80 feet could occur as a result of project implementation (see Chapters 4.4, 4.9 and Appendix C). The DEIR should consider the changes to river width as part of the analysis. In addition, the DEIR should disclose whether and how the additional exposed streambank has the potential to lead to additional erosion once the rainy season starts.	PALS
64	4.2-38	1 and 2	—	The DEIR identifies different impacts related to changes in stage in the lower Russian River that appear to be similar. The stage changes of 0.6 to 0.9 foot compared to overall stage height of 2 feet are identified as unlikely to lead to greater erosion from surface runoff. However, changes of 1.9 feet compared to overall stage height of 5 feet are identified as having the potential to cause bank erosion. The thresholds used in this assessment are not clear. Please provide additional information regarding the thresholds used to identify impacts. *See comment 2 for additional information.*	PALS
65	4.2-47	1	—	The text states that the larger retention of the cold water pool will shift the timing of water quality changes. The text should describe the direction and magnitude of the shift.	NCRWQCB
66	4.2-48	1	—	Impact 4.2-3 generally discusses the dissolved oxygen concentrations caused by the Proposed Project when compared to Baseline Conditions. The DEIR notes whether the values of dissolved oxygen concentrations would be higher or lower. It is unclear how this analysis compares to the thresholds discussed on page 4.2-5. Page 4.2-5 states that dissolved oxygen concentrations of less than 5-6 milligrams per liter are considered to be unsuitable for most fish species, including steelhead. *Please see NCRWQCB's comment 46 for additional information.*	PALS

67	4.2-49 through 60	Impact 4.2-4		The DEIR identifies significant and unavoidable impacts associated with biostimulatory conditions. However, no mitigation measures are identified. Instead, the DEIR states that mitigation measures are not available, without any discussion. If the Final EIR maintains a finding of significant and unavoidable impacts associated with biostimulatory conditions, the document should justify why no mitigations are available, identify measures that were considered, and evaluate the feasibility of employing mitigation methods used in other similar situations. Regional Water Board staff suggests investigating measures such as source remediation or nutrient offset to reduce nutrient inputs, or enhanced riparian buffers and wetlands to filter and assimilate nutrients. Other measures to address harmful algae blooms may include short-term reductions in flow to desiccate algae on channel margins, or short-term increases in flow to change temperatures, nutrient concentrations, or to simply add water turbulence to disrupt cyanobacteria production. Similarly, posting recreational beaches can mitigate public exposure to toxins associated with cyanobacteria. *Please see comment 3 for additional information.*	NCRWQCB
68	4.2-49	4	—	The statement that Dry Creek is not on the 303(d) List for biostimulatory conditions and therefore there will be no impacts to Dry Creek is not a sufficient justification that there will be no impacts. The Final EIR must conduct a biostimulatory conditions assessment on Dry Creek in order to determine if there will be any impacts to water quality from implementation of the project.	NCRWQCB
69	4.2-51 and 4.2-55	—	Tables 4.2-3 and 4.2-4	The median, mean and range of flows are provided in Tables 4.2-3 and 4.2-4. When was the data collected? Is this the flow range throughout the entire year, summer, etc.? It is also noted that the tables exclude 2014. The DEIR should include an explanation for the years and time periods selected.	PALS

70	4.2-57, 58, 59, and 60	Impact 4.2-4	—	Impact 4.2-4 concludes that the Proposed Project and the No Project 1 and 2 Alternatives may result in violation of water quality standards or waste discharge requirements or otherwise degrade water quality relating to biostimulatory substances in the Russian River. This impact was found to be significant and unavoidable. It is unclear with this finding of significant and unavoidable impacts, how the Proposed Project achieves the most basic purpose of the project to improve fish habitat. If significant and unavoidable impacts were found for water quality, the assessment of these impacts should also be discussed in the fisheries and recreation analyses. *See comment 3 and NCRWQCB comment 53 for additional information.*	PALS
71	4.2-61	1	Table 4.2-5	The first paragraph discusses Table 4.2-5 and describes that the data presented do not exceed the CDPH recommended concentrations for freshwater beaches described earlier. It would be useful to the reader for the CDPH recommended concentrations to also appear in the Table with the measured concentrations.	NCRWQCB
72	4.2-62, 63	4, —	—, Table 4.2-6	The last paragraph discusses Table 4.2-6 and describes that the data presented do not exceed the CDPH recommended concentrations for freshwater beaches. It would be useful to the reader for the CDPH recommended concentrations to also appear in the Table with the measured concentrations.	NCRWQCB
Comment No.	**Page No.**	**Paragraph No.**	**Table, Figure or Bullet No.**	**Comment**	**Commenter**
Chapter 4.3: Fisheries					
73	4.3-3		Figure 4.3-1	It is not clear whether these baseline temperatures are modeled or observed temperatures. Please provide the appropriate reference for this figure.	IFU
74	4.3-28, 30	—	—	The WUA of summer rearing habitat for steelhead and Chinook salmon fry and juveniles was estimated for four reaches based on the Russian River River2D Modeling. However, this chapter does not include a map of the modeled reaches, making it difficult to consider the changes to rearing habitat WUA within the geographical context of other impacts to rearing salmonids (e.g., impacts based on water quality modeling, mapped in Figure 4.3-2). A figure should be added, describing the location of the	PALS

				Russian River River2D modeled reaches, to permit an evaluation of overall fisheries impacts in the different reaches of the upper Russian River.	
75	4.3-29 through 37	Methodology Section	—	Is there documentation of the development of the Russian River River2D model and the HSI that were used for this evaluation?	IFU
76	4.3-30	1	—	Please summarize the HEC 5Q model assumptions and show calibrations to support the impacts analysis.	IFU
77	4.3-30, 45, and 80	3, —, 3	— , Table 4.3-14, —	The methodology section includes a discussion of how potential impacts to summer rearing habitat for steelhead and Chinook salmon fry and juveniles was analyzed. In addition, the Impacts and Mitigation Measures section notes that rearing habitat variability between individual reaches based on how they react to flow changes were overcome by combining all Russian River River2D reaches for each alternative. The effects of the alternatives were considered as a whole rather than the variable effect the change in flow may have on individual reaches. It is unclear from the information provided if certain reaches have historically been more important for summer rearing habitat for salmonids (i.e. are there certain reaches where available habitat is used more frequently?). Increases in WUA in a reach that isn't commonly used by rearing salmon may not negate decreases in WUA in more frequently used reaches. This section also notes that depths and velocities predicted by the Russian River River2D model were linked to a HSI to estimate quantity and quality of summer rearing habitat in each reach. Please describe how the HSI was developed. This information was provided for spawning habitat suitability criteria in Table 4.3-14; however it is not provided for summer rearing habitat.	PALS
78	4.3-30, 36, and 37	3, 2, —	— , — , Table 4.3-7	The methodology section notes that the Russian River River2D model estimated depths and velocities within reaches of the Russian River over a range of flows. These predicted values were then linked to a summer rearing HSI for steelhead and Chinook salmon fry and juveniles. The quantity of habitat was then expressed as WUA. The Russian River flows used in the model were not disclosed in the DEIR. However, the monthly median flows that represent baseline for the mouth of Dry Creek were provided (Table 4.3-7). Similarly, the WUA is only provided for reaches on the Russian River, not Dry Creek. Please explain why the discussions for the Russian River and Dry Creek differ. For transparency, can a table be included that references both the baseline flows and WUA for both the Russian River and Dry Creek?	PALS

79	4.3-35, 36	—	Figures 4.3-5 and 4.3-6	The figure title incorrectly identifies these WUA curves as applying to steelhead juveniles, however they should refer to Chinook juveniles.	NCRWQCB
80	4.3-31	3	Table 4.3-5	The DEIR describes the amount of WUA for steelhead and Chinook fry and juveniles that occurs from May through November. The values provided do not appear to reflect the values shown in Table 4.3-5.	PALS
81	4.3-40	—	Figure 4.3-7	Figure 4.3-7 depicts the number of adult Chinook observed in the Russian River. The figure also shows when the river mouth is closed and when it is restricted. What is the definition of "restricted" as it is used in the DEIR?	PALS
82	4.3-41	—	Table 4.3-9	Table 4.3-9 provides the total number of Chinook salmon redds observed in Dry Creek in 2014. It appears that the DEIR may be connecting flow with redd observation; however, the average gage readings for the day of survey was not provided in the table. Adding the daily average gage readings to the table would help clarify the relationship between flows and redd observations.	PALS
83	4.3-42	—	Figure 4.3-8	Based on the information presented in the figure, the Chinook salmon run appears to begin earlier (starting in August, with 25% done in mid-October) than the proposed release of Lower Russian River salmonid winter passage flows (start in mid-October). It appears the proposed release would miss approximately 25% of the Chinook salmon run. Please discuss and justify this schedule.	IFU
84	4.3-43	3	—	The DEIR notes that "based on habitat modeling Chinook and steelhead spawning habitat is present in sufficient quantities when flow in the Russian River is approximately 130 cfs." Please provide additional information regarding this statement, including the criteria and threshold used in making this determination. *See comment 2 for additional information.*	PALS
85	4.3-30 to 37, and 43 to 48	All	Figures 4.3-9 and 4.3-10	In general, this chapter would benefit from additional explanation of why different methodologies were used to evaluate the different types of impacts (e.g., comparing median values versus upper/lower quartile values, comparing frequency of flows at or above a certain level versus comparing WUA, etc.). For example, the DEIR analysis appears to rely on Russian River River2D data for its impact discussions of both spawning and juvenile rearing habitat for salmonids in the upper Russian River. For its analysis of spawning conditions, however, the DEIR compares the frequency of flows at or above 130 cfs (because the WUA of spawning habitat was found to increase with flow until flattening out at approximately	PALS

				130 cfs), while the analysis on summer rearing habitat compares the sums of WUA of rearing habitat for each of the alternatives based on median monthly flows. The DEIR does not explain why different methodologies were used when there appears to be similar information available for both the spawning and juvenile rearing habitat analyses. Please clarify the rationale of inverting the WUA analysis approach for spawning (identifying a flow with a high WUA and seeing how often that occurs) as compared to the WUA analysis for rearing (identifying the square feet of WUA for each flow). It seems like the latter would give a better idea of what is area gained or lost with each alternative, as flows below 130 cfs have reduced WUA, not zero WUA (see Figures 4.3-9 and 4.3-10).	
86	4.3-37 through 48	Salmonid Upstream Migration and Spawning Section	Figures 4.3-9, 10	The analysis of spawning flows appears inconsistent with the proposed flow schedule. The DEIR states on page 4.3-40 that surveys indicate flows of 110 cfs provide sufficient depths for migrating adult salmonids. However, page 4.3-47 indicates 130 cfs is a threshold for adult migration in the upper watershed. Regardless, the minimum flow for the adult migration and spawning period is proposed as 105 cfs. Based on this, the flow schedule does not appear to provide adequate flows for migrating adult salmon. Furthermore, Figures 4.3-9 and 4.3-10 indicate the spawning habitat for Chinook and steelhead are maximized at 125 cfs, consistent with the Biological Opinion. These differences between the proposed project minimum flows, the DEIR analysis, and Biological Opinion should be acknowledged, explained, and justified. *See comment 4 for additional information.*	NCRWQCB
87	3-45	—	Table 4.3-14	The term “SI” should be described.	NCRWQCB
88	4.3-48	Spawning Section	Tables 4.3-16 and 4.3-17	Tables 4.3-16 and 4.3-17 provides the percent occurrence that flows adequate for spawning habitat for Chinook salmon and steelhead occur in the Russian River and Dry Creek based on modeling results. It is unclear if the table depicts the percent occurrence the flows were met or exceeded for this percent of days.	PALS
89	4.3-49	2	—	This text describes a hypothesis that fish reared in California streams that reach high temperatures are adapted to higher temperatures than fish reared in the pacific northwest. The text references unpublished findings from the Tuolumne River relating aerobic scope of fish to high temperatures. What is the significance of "peak aerobic scope" and how does it relate to sub-lethal temperature effects? The text continues and	NCRWQCB

				states that thermal criteria from more northern (and snowmelt driven streams) was used out of necessity. This assertion that Russian River salmonids, or other California salmonids, are adapted to higher temperatures is not supported by peer-reviewed literature, including the paper by Welsh and others cited on page 4.3-59. Their results, from the Mattole River watershed, are consistent with similar research conducted in Mendocino coastal streams (Hines and Ambrose, unpublished). None of those streams are driven by snowmelt, and they all experience the same hot California summers that the Russian River experiences. This discussion should be supported with peer-reviewed literature or deleted.	
90	4.3-48 through 50	Water and Temperature and Dissolved Oxygen Requirements	—	For consistency and comparison purposes, please keep measurement units consistent in the DEIR (e.g. Celsius and Fahrenheit), or annotate this information to show that 20°C equals 68°F, etc.	IFU
91	4.3-59	Coho Salmon Section	—	The section describing coho salmon temperature thresholds does not contain any literature citations.	NCRWQCB
92	4.3-59	3	—	The first sentence in the paragraph titled “Rearing” contradicts itself.	NCRWQCB
93	4.3-74	—	Table 4.3-45	Table 4.3-45 provides a descriptive rating for the potential impacts to sunfish spawning success associated with a decrease in WSEs in the lakes. The unit of measurement for WSE is not disclosed.	PALS
94	4.3-80	3	—	When assessing rearing habitat the Russian River River2D model was "calibrated to model habitat over a range of flows encompassed by the proposed releases from the three project alternatives and releases under Baseline Conditions." Additional clarification is needed for this statement. Specifically, the model inputs should be disclosed and an explanation as to whether and how the range of alternatives can be effectively evaluated under Baseline Condition releases.	PALS
95	4.3-80	4	—	The analysis of habitat area averages the results of all evaluated reaches; however, some reaches may have greater fisheries benefits than others, based on the temperatures in those reaches in critical times. For instance, a reach upstream of Hopland, where temperatures are more supportive may have greater benefit to the fishery than a reach near Cloverdale, where temperatures negatively affect habitat in critical times of the year. Consider weighting the reaches based on temperature suitability.	NCRWQCB

96	4.3-81	2	—	Impact 4.3-1 determines that there would be no impact to the quantity of rearing habitat for steelhead fry in the upper Russian River under the No Project 1 Alternative. This finding was based on the assumption that monthly median flows in the upper Russian River would be the same as Baseline Conditions. However, petitions for extension of time have been filed for three water rights. Permits 12949 and 12950 have PODs located on the upper Russian River. If the petitions for extension of time are approved, could additional diversions occur at these locations? *See comment 1 and 40 for additional information*.	PALS
97	4.3-82	1	—	The DEIR makes a point in distinguishing between total habitat area and the velocity WUA as a percentage of wetted area, but never states why the velocity WUA as a percentage of wetted area is significant. Isn't the total habitat area all that matters here? This point should be more clearly made or dropped.	NCRWQCB
98	4.3-83	2	—	Impact 4.3-2 determines that because the one to two percent decrease in WUA of habitat for rearing juvenile steelhead in the upper Russian River under the Proposed Project is within the natural variability of habitat there would be no impacts to the quantity of juvenile steelhead rearing habitat. Please provide information regarding what percent change is considered natural variation. What is the rationale for this conclusion? *See comment 2 for additional information*.	PALS
99	4.3-86	—	Table 4.3-47	Table 4.3-47 provides the monthly median flows estimated by the Russian River ResSim for the mouth of Dry Creek. Has a similar table been prepared for the study points on the upper Russian River?	PALS
100	4.3-80 through 86	Rearing Habitat Section	—	The DEIR should clarify the basis for the difference in approach between the Rearing Habitat section and the Biostimulatory Conditions section in the water quality chapter (starting on page 4.2-54). The No Project 1 Alternative was found to have no impact to the quantity of rearing habitat while the No Project 1 Alternative was found to have a significant and unavoidable impact on water quality related to biostimulatory conditions. In both cases the baseline conditions appear to encompass significant effects. Per the discussion in the water quality chapter, elevated concentrations of biostimulatory substances exist under Baseline Conditions. In the case of rearing habitat, according to the Biological Opinion maintaining current operations (i.e., Baseline Conditions) will have a significant adverse effect on summer rearing habitat for steelhead and coho salmon.	PALS

101	4.3-80 through 283	Impact Analysis Section (all)	—	The information that is referenced in many of the fisheries impacts is scattered throughout the document and the reader has to spend a great deal of time going back and forth to different tables and figures, and conducting additional searches, to understand the analysis. Each impact analysis should include all the information, or indicate where the information is specifically located in the DEIR. It would be helpful if each impact was listed in one place (e.g., table of contents, appendix, etc.).	IFU
102	4.3-85	1	—	In regard to Impact 4.3-4, the peak of Chinook salmon smolt out-migration is April and May. The Proposed Project flow decreases in April and May could create a negative impact to smolt out-migration that should be identified and analyzed in the document.	IFU
103	4.3-85	4	—	In the analysis for Impact 4.3-5, please provide the full range of expected flows for both Baseline and the Proposed Project or a reference to where this information is in the DEIR. Exceedance tables or figures are recommended for this type of analysis. Comparing Proposed Project monthly median flows and Baseline monthly median flows is not helpful in understanding the amount of time that lower and higher flow conditions occur under the different alternatives.	IFU
104	4.3-86, 87	Impact 4.3-6	Table 4.3-48	In Impact 4.3-6, the minimum passage flows for salmonid upstream migration in the upper Russian River listed in Table 4.3-48 are 110 cfs. Proposed Flow Schedules 1 and 2 in Figure 3-7, and described in pages 3-29 to 3-32, of the DEIR are all lower than the minimum passage flows indicated for salmonids in the upper Russian River for every month of the year. Based on the information under Adult Passage on page 4.3-86, adult salmonid migration occurs from October through March. Information in Special-Status Species Life Histories (pages 4.3-15 to 4.3-19 of the DEIR) indicates the peak migration period for adult Chinook salmon is October and November, the coho salmon adult migration period is November and December, and the steelhead adult migration period is December through March. The Proposed Project provides additional flows for salmonids for the months of October and November and remains relatively similar to Baseline Conditions for the months December through March. So, while Proposed Project flows may provide a benefit for Chinook salmon during peak adult migration months, the flows may not provide benefits to migrating adult steelhead because the proposed flow increases are outside of the adult steelhead migration period. Therefore, the last sentence in the first paragraph in this impact analysis should be more specific about the benefits. The last statement currently reads “The	IFU

				Proposed Project increases flows during the months of adult migration and provides a benefit for salmonids in the Upper Russian River", which could be misunderstood as the Proposed Project benefits all salmonids in the upper Russian River during the entire salmonid migration period. In addition, please include an exceedance table or figure that provides the full range of expected flows for both Baseline and the Proposed Project, or a reference to where this information is in the DEIR, so the reviewer can gain a better understanding of the amount of time that lower and higher flow conditions occur.	
105	4.3-87	—	Table 4.3-49	Table 4.3-49 provides the percent occurrence that flow provides suitable conditions for upstream migration of anadromous salmonids in the lower Russian River. The DEIR does not disclose which gage was used to compare migration flow.	PALS
106	4.3-87, 88	Impact 4.3-8	Table 4.3-50	In Impact 4.3-8, it is unclear in the impact analysis and Table 4.3-50 what the frequency of occurrence of passage flows is based from. For example, are the flow exceedances based from daily average flows or daily minimum flows? How many years are modeled to generate these exceedance values? In addition, please include an exceedance table or figure that provides the full range of expected flows for both Baseline and the Proposed Project, or a reference to where this information is in the DEIR, so the reviewer can gain a better understanding of the amount of time that lower and higher flow conditions occur. In the impact analysis, minimum Proposed Project flows do not appear to be beneficial to Chinook salmon at the beginning of their upstream migration period compared to minimum passage flow and minimum baseline requirements and do not appear to be beneficial to steelhead during most of the adult upstream migration period compared to minimum passage flow and baseline requirements. The minimum passage flow for salmonid upstream migration in the Upper Russian River is identified as 90 cfs (Table 4.3-50 and Impact 4.3-8 discussion). Proposed Flow Schedules 1 and 2 in Figure 3-7, and described in Pages 3-29 to 3-32, of the DEIR are 105 cfs from October 15 through December, which is greater than the minimum passage flow of 90 cfs. However, the minimum Proposed Project flow from October 1 through October 15 is 50 cfs, which is below the minimum passage flow of 90 cfs, is also below existing baseline requirements, and occurs at the beginning of the Chinook salmon adult upstream migration period. The proposed flow of 75 cfs from January through March, is during three of the four months of the steelhead adult upstream migration (December through March) and is below the minimum passage flows for	IFU

				that period of 90 cfs. However, minimum baseline requirements from January through March are above minimum passage flows.	
107	4.3-88	3	—	Impact 4.3-9 concludes that no impact would occur to the quantity of spawning habitat for salmonids in the upper Russian River under the No Project 1 Alternative. Similar to *comment 96*, this finding was based on the assumption that monthly median flows in the upper Russian River would be the same as Baseline Conditions. However, petitions for extension of time have been filed for three water rights. *See comments 1, 40, and 96 for additional information.*	PALS
108	4.3-88, 89	Impact 4.3-9	—	In Impact 4.3-9, it is unclear in the impact analysis what the frequency of occurrence of spawning flows is based from. For example, are the flow exceedances based from daily average flows or daily minimum flows? How many years are modeled to generate these exceedance values? In addition, please include an exceedance table or figure that provides the full range of expected flows for both Baseline and the Proposed Project, or a reference to where this information is in the DEIR, so the reviewer can gain a better understanding of the amount of time that lower and higher flow conditions occur. This does not appear to be a beneficial impact because proposed Flow Schedules 1 and 2 in Figure 3-7 on page 3-30 of the DEIR are below minimum flows for suitable salmonid spawning for the entire spawning period of November through March in the upper Russian River when compared to Baseline Conditions in Figure 3-4 on page 3-12 of the DEIR and the suitable salmonid spawning flows indicated in Table 4.3-15 on page 4.3-48 of the DEIR.	IFU
109	4.3-89	Impact 4.3-10	—	Regarding impact 4.3-10, it is unclear what the frequency of occurrence of spawning flows is based from. For example, are the flow exceedances based from daily average flows or daily minimum flows? How many years are modeled to generate these exceedance values? In addition, please include an exceedance table or figure that provides the full range of expected flows for both Baseline and the Proposed Project, or a reference to where this information is in the DEIR, so the reviewer can gain a better understanding of the amount of time that lower and higher flow conditions occur.	IFU

110	4.3-90 through 232	Water Temperature Section	—	Impact 4.3-11 discloses that an increase in water temperature could occur under the Proposed Project in November and December. However, no impacts to upstream migration of Chinook salmon were identified from the increase in temperature. Similar findings of "no impact" in spite of temperature changes were noted throughout the water temperature section. What are the thresholds for "no impact" versus "less than significant" findings in this section? *See comment 2 for additional information.*	PALS
111	4.3-90 through 232	Water Temperature Section	—	In Impact 4.3-11 through 4.3-22, computed (or modeled) stream temperatures from Coyote Valley Dam (Figure 4-25 of the Temperature Model Results in Appendix G) downstream to the River Diversion Structure (Figure 4-34 of the Temperature Model Results) frequently do not correspond to observed temperatures. Computed (or modeled) stream temperatures vary as much as 15° F lower than observed temperatures. This is a concern because lower water temperatures are usually beneficial to salmonids and the model results show temperatures that are lower than what is actually observed. It is questionable whether the model is adequately calibrated. Therefore, it is not possible to accurately evaluate impacts on fish with the temperature modeling results provided in the DEIR. The numeric values for suitable temperature ranges for particular life stages that are provided in the Species Specific Temperature Criteria (page 4.3-52 of the DEIR) section should be referenced in this impact discussion to assist the reviewer in evaluating the magnitude of the impact on the species.	IFU
112	4.3-94, 101, 108, and 112	—	Tables 4.3-53, 56, 59, and 62	Plots of mean monthly modeled water temperature are displayed for discussions on temperature impacts. Maximum monthly temperatures are not displayed and no observed data are shown for the Baseline Condition. Given the importance of maximum temperatures, both modeled maximum temperatures and real data are necessary to assess temperature impacts to fish and should be included in these tables.	IFU
113	4.3-90 through 270	Water Temperature and Dissolved Oxygen Sections	—	Potential impacts to different salmonid life stages from changes in water temperature are estimated based on modeled changes in water temperature under the different alternatives; however, the section, starting on page 4.3-90, has little explanation of the physical changes to the system responsible for these changes in water temperature (e.g., lower flows in a given month, conservation of reservoir cold water pools). In contrast, the section on dissolved oxygen impacts on salmonids (starting	PALS

				on page 4.3-233) begins with a system-wide description of the physical influences to dissolved oxygen levels in the Russian River and Dry Creek, and a brief discussion of what areas would change the most as a result of the evaluated alternatives. The Division recommends a similar description be added to the water temperature section to help the reader understand the cause of the changes described by the modeling results. *See comment 5 for additional information*.	
114	4.3-102	—	Table 4.3-58	Table 4.3-102 provides the frequency of occurrence of modeled water temperatures deemed stressful to upstream migrating Chinook salmon. The DEIR states that flows in the upper Russian River are the same under Baseline Conditions and the No Project 1 Alternative as they both operate under Decision 1610 flows. The DEIR also states that water from Lake Mendocino was not modeled to contribute to increased diversions at Mirabel and Wohler. If flows in the upper Russian River under Baseline Conditions and the No Project 1 Alternative are the same, why would there be a change in percent occurrence as shown in the table? *See comment 40 for additional information*.	PALS
115	4.3-127, 140, 161, 163, and 241	—	Tables 4.3-73, 82, 100, 103, and 164	The referenced tables provide the frequency of occurrence of modeled water temperatures deemed stressful to anadromous fish under Baseline Conditions, Proposed Project, and the No Project 1 and 2 Alternatives. The percent change was determined by adding the frequency of occurrence values for tolerance, resistance, and lethal conditions for the range of alternatives. This approach may not reveal an accurate depiction of potential impacts. For example it was noted that in Table 4.3-82 lethal temperatures for Chinook salmon smolts were exceeded in June at Healdsburg 31.33% of the time under Baseline Conditions and 46.88% of the time under the Proposed Project. However, because values provided in the tolerance and resistance columns are higher under Baseline Conditions, the percent change in stressful temperatures at Healdsburg is only 1.16%. The DEIR therefore determined there was no impact. When evaluating the individual values in the table it appears that the Proposed Project would exceed lethal temperature levels approximately 40% more than the Baseline Conditions. Could this type of change be considered significant? This same type of issue was noted on multiple tables throughout the DEIR.	PALS

116	4.3-137, 139	3, —	—, Table 4.3-82	The DEIR states changes in minimum instream flow from the Proposed Project would have "no impact" on quality of habitat for Chinook salmon smolts by elevated water temperatures in the Russian River and Dry Creek. However, Table 4.3-82 shows increases in the frequency of occurrence of stressful water temperatures in the upper Russian River of up to 18.87% in May and up to 21.72% in June. Please clarify the significance thresholds used to arrive at the "no impact" determination. *See comment 2 for additional information.*	PALS
117	4.3-197	1	—	Impact 4.3-20 notes that the temperature model does not take into account the intra-gravel water temperatures which tend to be cooler than surface temperatures. However, the DEIR determines that the impacts of the Proposed Project on spawning and egg incubation of steelhead through elevated water temperatures in the months December through May is less than significant. Please describe how the gravel temperatures differ from surface water temperatures, and whether or how this would impact spawning and egg incubation. Additional justification for the finding should be provided. *See Comment 2 for additional information.*	PALS
118	4.3-213, 220	2, —	Table 4.3-151	Impact 4.3-21 concludes that the No Project 2 Alternative improves rearing habitat conditions for juvenile steelhead in the months of April through November in the Russian River; therefore no impact would occur. This is evidenced in Table 4.3-151. The table shows that in September at Cloverdale (upper Russian River) the percent change is -32.24. If there is an overall habitat improvement it is unclear why the finding was not beneficial. Please provide clarification for the no impact finding versus beneficial. *See comment 2 for additional information.*	PALS
119	4.3-233, 234	All	—	The dissolved oxygen discussion provides details (e.g., cold-water pool management in Lake Mendocino and Lake Sonoma) that may be useful as background information and context in the temperature section.	PALS
120	4.3-238 through 248	Impact 4.3-23	—	In Impact 4.3-23 there seems to be too few observed data for adequate calibration of the dissolved oxygen model for several areas, such as the area below Coyote Valley Dam (Figure 4-39 of the Dissolved Oxygen Model results) and the East and West Fork Russian River confluence (Figure 4-40 of the Dissolved Oxygen Model Results). At the RDS inflatable dam location there are many instances where observed levels of dissolved oxygen are much higher or lower than what is modeled (Figure 4-43 of the Dissolved Oxygen Model results). Calibration is poor for this model location and actual dissolved oxygen levels are not well represented by the model. Because it is uncertain whether the	IFU

				temperature model is adequately calibrated this also makes the dissolved oxygen model results questionable due to the influence of water temperature on dissolved oxygen. Therefore, it is not possible to accurately evaluate impacts on fish with the dissolved oxygen model results provided in the DEIR.	
121	4.3-249, 255	1, —	— , Table 4.3-173	The DEIR notes that during October, the modeled occurrence of stressful dissolved oxygen conditions for juvenile steelhead would increase by less than five percent. Impact 4.3-24 therefore concludes there would be no impact under the Proposed Project. However, Table 4.3-173 shows a 48.1% change in frequency of occurrence of stressful dissolved oxygen levels at the Coyote Valley Dam in October, largely due to a higher frequency of occurrence of lethal levels. Likewise, the percent changes at the Forks and the initial two miles of the Russian River (downstream of the Forks) are greater than five percent (45.36% and 5.52% respectively). Please provide justification for this finding. *See comments 2 and 123 for additional information.*	PALS
122	4.3-249 through 267	Impact 4.3-24	—	Dissolved oxygen model results do not appear to be accurate enough for evaluating Impact 4.3-24.	IFU
123	4.3-249	1	—	SCWA's 2003 Upper Russian River Steelhead Distribution Study identified most of the juvenile steelhead just below Coyote Dam (including approximately two miles downstream of the Forks) and a reach upstream of Cloverdale. As noted in *comment 121*, stressful dissolved oxygen conditions for rearing juvenile steelhead under the Proposed Project are modeled to occur in October 5.52% more frequently two miles downstream of the Forks, 45.36% more frequently at the Forks, and 48.1% more frequently at Coyote Valley Dam; however, the Proposed Project is expected to improve dissolved oxygen conditions both at the Forks in August as well as two miles downstream of the Forks in both August and September. Given the greatest dissolved oxygen impacts would occur in the reaches where most juvenile steelhead were observed in 2003, the impact analysis should clarify the functional effects of improving dissolved oxygen conditions in August and, two miles downstream of the Forks, in September, but substantially increasing stressful conditions in October.	PALS
124	4.3-268	2	—	The analysis notes that the low point of dissolved oxygen is changed by approximately one month. The DEIR should disclose whether and how this change in timing has the potential to impact native warmwater fish.	PALS

125	4.3-269, 270	Impact 4.3-26	—	For Impact 4.3-26, when and for how long does WSE in the reservoir drop below the outlet structure under the Baseline Condition during the drought of 1977? What are modeled flows, water temperatures, and dissolved oxygen during this same time period for the Proposed Project?	IFU
126	4.3-274	Impact 4.3-29	—	For Impact 4.3-29, it is uncertain whether the water temperature model is adequately calibrated. Please see comment 111 for additional information.	IFU
127	4.3-274, 275	Impact 4.3-30	—	It is difficult to assess whether the "No Impact" statement is appropriate for Impact 4.3-30. Based on information in the DEIR, optimal temperatures for steelhead smolts are ≤ 52 °F and suitable temperatures are up to 55.0 °F (Tables 4.3-40 to 4.3-41 on Page 4.3-70). Based on plotted observed temperature data (Figure 25 HEC-5Q Russian River Basin Model Demonstration) it is difficult to assess whether water temperatures are within the suitable range for steelhead during the entire smolting period. See comment 126 for additional information.	IFU
128	4.3-275	Impact 4.3-31	—	In Impact 4.3-31, temperature model results for the Warm Springs Dam Outlet at Don Clauson Fish Hatchery do not appear to be well calibrated and may be inadequate for impact analyses. Model results for 2002 and 2003 show temperatures as much as 5°F to 10 °F below observed temperatures and for one instance in 2009 with a spike of 10 °F higher than the observed temperature (Figure 4 – 36 in HEC-5Q Russian River Basin Model Demonstration). For 2012 and 2013, the model shows temperatures as much as 2°F to 3 °F below observed temperatures.	IFU
129	4.3-276, 277	Impacts 4.3-32, 33	—	For Impacts 4.3-32 and 4.3-33, what water temperature metric (e.g. daily average, daily max, instantaneous) was used for the analysis? Exceedance tables or figures are recommended for this type of analysis to show potential changes to the full range of temperatures.	IFU
130	4.3-277, 278	Impact 4.3-35	—	The time period referred to in Impact 4.3-35 is during the coho juvenile rearing period, the smolting period, and the very end of the incubation period. It is not during the spawning period or most of the incubation period, as indicated in the impact statement. The spawning period is primarily from December to January (Page 4.3-18 of the DEIR). The coho egg incubation period is 8 to12 weeks (Moyle 2002). Therefore, it is assumed the egg incubation period would extend into April. Coho juveniles spend approximately one year in freshwater and then emigrate as smolts the following March through May (Page 4.3-18 of the DEIR).	IFU

131	4.3-282, 283	Impact 4.3-40	—	The following information should be included in the analysis for Impact 4.3-40. In the Reasonable and Prudent Alternatives Section of the Biological Opinion (cited as NMFS 2008 in DEIR), one of NMFS estuary management targets is to have the beach barrier along the lagoon breached open after October 15. This should be considered because it may affect adult salmonid migration that begins in October. In addition, the Biological Opinion indicates that SCWA should manage WSEs in the Russian River estuary by conserving beach sands and encouraging formation of a more extensive beach complex capable of forming an elongated and elevated outlet channel during the low flow season (approximately mid-May through mid-October) that will: (1) maintain the estuary's water surface above the high tide line; and (2) avoid flooding.	IFU
132	4.3-283	Impact 4.3-42	—	There are two different impacts being evaluated in Impact 4.3-42: (1) the quantity and quality of juvenile steelhead habitat; and (2) steelhead susceptibility to avian predation. This should be split into two separate impact analyses. There was not enough detail in this impact analysis to evaluate the magnitude of the impact. In this impact there was little discussion on what the changes in monthly median flow would be into the Estuary from the Proposed Project and how this, and a reduction in breaches of the barrier beach, would affect the aquatic ecology of the Estuary and impact the quantity and quality of steelhead habitat in the Estuary. In the analysis for Impact 4.3-40, there is a discussion on how the Russian River ResSim model for the Proposed Project would have monthly median flows of 75 to 89 cfs lower than Baseline. Lower inflows into the Estuary may prolong the duration of beach barrier closures. The analysis for Impact 4.3-42 should include this information, and other relevant information, and elaborate on how these factors would affect steelhead in the Estuary.	IFU

Comment No.	Page No.	Paragraph No.	Table, Figure or Bullet No.	Comment	Commenter
Chapter 4.4: Vegetation and Wildlife					
133	4.4-1	3	—	The riparian zone is defined as "the Russian River and Dry Creek to the top of the bank." According to the DEIR this riparian zone was included because riparian trees and shrubs can be deep rooted and dependent on subsurface waters. Please clarify the basis for limiting the analysis to this definition of the riparian zone and whether and how impacts to riparian vegetation located beyond the top of the bank were considered.	PALS
134	4.4-15, 16	Coastal and Valley Freshwater Marsh section		SCWA provides a discussion on water primrose in the environmental setting section. Please clarify whether and how the DEIR evaluates the potential for the proposed changes and alternatives to result in a substantial increase or threat from invasive, non-native plants and wildlife.	PALS
135	4.4-62	3	—	The DEIR identifies the WSE range that typically occurs under Baseline Conditions and provides the minimum and maximum elevations. However, the minimum and maximum elevations are not provided for the No Project 1 and 2 Alternatives, or the Proposed Project. Rather, the elevation range change is provided. Accordingly, it is not possible to fully comprehend the differences between and among the No Project 1 and 2 Alternatives and the Proposed Project. Please include additional context for these statements.	PALS
136	4.4-62 through 65	Impact 4.4.1	—	The DEIR discloses that changes in the minimum instream flows during the plant growing season could shift the distribution of hydrophytic species slightly down onto the lower stream banks and active stream channel resulting in a less than significant impact to sensitive natural communities. It is further noted that the active stream channel could experience a reduction in wetted width from 3 to 80 feet. The threshold of significance is not clear, particularly with respect to whether and how movement due to a reduction of up to 80 feet is considered "slight". In addition, potential short term effects were not disclosed. For example, with a reduction in width of up to 80 feet is an initial die off of vegetation as a larger shoreline will be exposed expected? Could invasive species become established in the newly exposed shoreline? *See comment 2 for additional information.*	PALS

137	4.4-63	3 and 4	—	The DEIR notes that the maximum observed stage change between the Proposed Project and Baseline Conditions ranges from 2 inches in Dry Creek, 3 inches in the upper Russian River, and 7 inches in the lower Russian River. The river width resulting from the decrease in stage height is noted as varying widely across riffles, and having little effect in runs or pools and negligible effect on underflow. Impact 4.4-1 concludes that no impact would occur to woody and deep-rooted riparian plants as a result of the Proposed Project because changes in shallow riparian aquifer that supports this community would not be affected. Please provide additional information regarding the timing of these observations in stage change and whether and how this affects river width. In addition, please provide additional context for this determination. The environmental setting is unclear. *See comment 2 for additional information.*	PALS
138	4.4-65	1	—	Impact 4.4-1 notes that the analysis provided "demonstrates that changes in hydrophytic vegetative assemblages would likely be towards no change in riparian communities and slight shifts along the shoreline of sensitive coastal and valley freshwater marsh immediately adjacent to fluvial-ruderal habitats." How was this determined? The DEIR should provide the environmental setting and the context of this statement. *See comment 2 for additional information*.	PALS
Comment No.	**Page No.**	**Paragraph No.**	**Table, Figure or Bullet No.**	**Comment**	**Commenter**
Chapter 4.5: Recreation					
139	—	—	—	Chapter 4.5 (Recreation) does not clearly explain whether and how community outreach for input was conducted. The Division is concerned that the requested changes will be highly protested by recreational users of the Russian River (as of March 1, 2017, the Division has received over 500 protests related to recreational concerns). Additional input by these users would be helpful in assessing the changes that may occur. In addition, Chapter 4.5 doesn't appear to address impacts by factors other than stream depth – for example, flow rate – on recreation, and how recreational opportunities will change under reduced flows.	PALS

140	4.5-2	4	—	The environmental setting section describes the optimal WSE for recreation in Lake Mendocino. This section notes that late in the recreation season the WSE would be so low it could impact recreation. It is further stated that USACE has recently allowed SCWA to store additional water in Lake Mendocino during the summer. As described, it reads as if USACE approved the additional storage to improve recreation. Please clarify the basis for the USACE approval and specifically identify whether the approval was related to the need to store water during the drought.	PALS
141	4.5-13	4	—	Recreational impacts should be assessed year round as the beneficial use applies year round and not just during the summer (i.e. not just June – September).	NCRWQCB
142	4.5-14	3	—	Throughout the DEIR, WSE is provided and analyzed; however, a comparison is not made to af and/or capacity at the reservoirs. It would aid the reader when reviewing various impacts if this information was disclosed. For instance, Impact 4.5-1 evaluates access to Lake Mendocino at the South Boat Ramp. This finding uses mean sea level. However, the corresponding capacity is unclear. *See comment 2 for additional information.*	PALS
143	4.5-11	3	—	The Environmental Setting notes that WSEs at the recreational dams along the Russian River are set by the height of the dams. It is further explained that the depths in the inundated sections caused by the recreational dams remain relatively unchanged when flow is reduced as long as flows are high enough for surface flow to remain connected. Please clarify whether and how the reduced flows will cause the areas of the Russian River upstream of the recreational dams to take longer to become inundated thus reducing the length of the recreation season. In addition, please identify and provide an explanation for the threshold at which surface flow is expected to become disconnected. *See comment 2 for additional information.*	PALS
144	4.5-18	1	—	The DEIR makes several assumptions regarding flows that affect recreation in the Russian River. These assumptions were based on the 2009 Russian River Recreational Assessment and the 2016-2017 California Freshwater Fishing Regulations. The DEIR also notes other observational studies were conducted in 2011, 2013, 2014, and 2015. Chapter 4.9 pg. 4.9-15 states "recent photos of the Russian River at a variety of instream flows were taken in addition to the photos taken in the 2009 Russian River Recreational Assessment." Chapter 4.9 also states,	PALS

				"photos taken opportunistically or during other studies were compiled to analyze the effect of summer flow reductions on the visual character of the river (page 4.9-15)." Please (1) provide additional description of the opportunistic and other studies referenced; and (2) clarify the basis for not including this data in development of the assumptions in this chapter.	
145	4.5-18, 19, 20	All	—	The DEIR indicates that data collection for the 2009 Russian River Recreational Assessment occurred before and after a TUCP order went into effect. In addition the DEIR states, "flows observed during the 2009 Russian River Recreation Assessment are similar to Baseline Conditions and the flow alternatives". In 2009 SCWA filed a TUCP to request minimum instream flow requirements for the Russian River be established based on Dry Water Supply Conditions (2009 was classified as a Normal Water Supply Condition). The associated TUCP order approved a reduction of instream flows commencing on April 6, 2009. The flows SCWA observed in June occurred during a time period when the TUCP order was in place and in some survey reaches appear to be less than Baseline Conditions (flows required by Decision 1610 in addition to the operational buffer). This is evidenced by the tables presented in Chapter 4.5 (see Table 4.5-1 for example, specifically Rio Linda to Healdsburg Memorial Beach survey reach and the mouth of Dry Creek).	PALS
146	4.5-20	1	—	The methodology section notes that all longitudinal profiles measured for the 2009 Russian River Recreational Assessment had depths equal to or greater than 0.5 foot. It is further stated that the USFWS recommends depths of 0.5 foot as a minimum for canoeing. Appendix C states that depths of 0.6 to 0.7 foot is the minimum depth required for recreational boating as kayaks scrape the bottom and get stuck at depths of 0.5 foot. Several instances are recorded in the 2009 Russian River Recreational Assessment in which the depth was at or below 0.6 foot in July 2009. Please clarify the thresholds, basis for the thresholds, and associated analysis. To the extent the depth identified above are factors in identifying the thresholds, it would be helpful for the impact analysis to include analyses related to depth. *See comment 2 for additional information.*	PALS

147	4.5-20	3	—	The DEIR states, "summer dams set the water elevation for the pool that backs up behind the dam, and as long as water is still flowing over the dam, the pool area available for boating remains relatively unchanged under different instream flows." Similar to *comment 143*, it is unclear if the reduced flows will cause the areas of the Russian River upstream of the recreational dams to take longer to become inundated. In addition, it is unclear if the Proposed Project would change the amount of time water is flowing over the dams.	PALS
148	4.5-32	3	—	Impact 4.5-12 evaluates whether and how changes to the minimum instream flows could impact swimming and sunbathing in the Russian River. As part of the analysis, the DEIR evaluated the difference in stage between Baseline Conditions, the Proposed Project, and the No Project 1 and 2 Alternatives. The stage was modeled using the Russian River ResSim. The Division notes that the model includes the operational buffer in addition to the minimum instream flow, which is higher than the flow requested in the petitions. For example, under Flow Schedule 1 in June in the upper Russian River the model incorporates an instantaneous buffer of 20 cfs (125 cfs total). However, the petitions request a flow of 105 cfs. It is unclear whether and how the stage change was evaluated as requested in the petitions. *See comment 4 for additional information.*	PALS
149	4.5-32, 33	3, 2	—	Impact 4.5-12 determines that since pools in the upper Russian River that are used for swimming are several feet deep, a decrease of up to 0.6 feet caused by the Proposed Project would not substantially alter or inhibit access to recreational activities such as swimming and sunbathing. The threshold of significance is not clear, particularly with respect to how deep "several feet" is and what depth the upper Russian River would experience under the Proposed Project. Likewise, the DEIR notes that under the Proposed Project and Alternatives, the depths of pools in the lower Russian River would not change substantially enough to impact swimming at many popular recreation sites because they are either relatively deep or within impounded sections of the river. What is the threshold of significance? It is unclear what depth is considered "relatively deep". Please provide additional information related to the environmental setting. *See comment 2 for additional information.*	PALS

150	4.5-32 through 34, and 39 through 41	Impacts 4.5-12, 17, and 18	—	These recreational impact assessments should include discussion of if there would be changes to blue-green algae / cyanotoxin levels under the Proposed Project (as compared to baseline) and if those resulting toxin levels would result in restrictions to recreation due to posting of public health advisories restricting contact and/or non-contact recreation. Posting of a "Warning" sign would close the river to swimming and posting of a "Danger" sign would essentially close the river to swimming, wading, boating, and fishing. (See the CCHAB guidance for posting thresholds utilized by the Sonoma County Department of Health Services and North Coast Regional Water Quality Control Board under the heading: "Products: CyanoHAB Guidance for Recreational Water Uses" http://www.mywaterquality.ca.gov/monitoring_council/cyanohab_network/index.html).	NCRWQCB
151	4.5-33	2	—	The impact analysis states the available pool area for swimming and sunbathing remains relatively unchanged under different flows so long as water is flowing over the dam. However, it is unclear If these areas take longer to become inundated due to the reduced flows and, accordingly, whether and how this delay has the potential to impact the length of the recreational season. Please clarify the foregoing and describe whether and how water would continue to flow over the dam if minimum requirements are reduced and at what flow water would cease flowing over the dam. *See comments 143 and 147 for additional information.*	PALS
152	4.5-33, 34	3, 1	—	The DEIR notes that extremely low flows of 0 cfs in the Russian River would cause pools in the river to become disconnected and pool depth could lower significantly. Would pools only become disconnected under zero flow? It is unclear if this definition of disconnect applies to the findings analysis discussed in Impact 4.5-12. Please include additional clarification.	PALS
153	4.5-33	3	—	Impact analysis 4.5-12 indicates disconnected flows (0 cfs) in the upper Russian River occur at the same frequency or less often under the Proposed Project and No Project 1 and 2 Alternatives when compared to Baseline Conditions. The DEIR should disclose the reasons why the Proposed Project, which has lower flows, result in disconnected flows less often than Baseline Conditions.	PALS

154	4.5-35 through 39	Impacts 4.5-14, 15, and 16	—	The impact analysis appears to evaluate the minimum instream flows in combination with the operational buffer. As such, the flows as evaluated in the DEIR are greater than the flows as requested by the petitions. An analysis of whether and how the flows requested in the petitions may impact recreation should be provided. Specific examples have been included below. *See comment 4 for additional information*. Impact 4.5-14 evaluates potential impacts to boating in the upper Russian River, specifically from Rio Lindo to the confluence with Dry Creek. As indicated in the methodology section, the DEIR determined that a flow of 70 cfs is sufficient for boating within this specific reach. The minimum flows within this reach during the recreation season under the Proposed Project would be 105 cfs, 85 cfs, 65 cfs, 45 cfs, and 25 cfs (Schedules 1-5 respectively). The DEIR determines that the impact would be less than significant, in part because the operational buffer will bump schedule 3 above the 70 cfs threshold. However, the operational buffer is not incorporated into the petitions. Impact 4.5-15 evaluates a flow of 180 cfs in the lower Russian River, specifically from the confluence with Dry Creek to the Wohler diversions. According to the DEIR flows in this reach are higher due to reservoir releases from Lake Sonoma for rediversion at the Wohler POD. However, the petitions request flows ranging from 35 cfs to 70 cfs. Impact 4.5-16 determines that impacts to recreational activities in the lower Russian River (from Wohler to the Pacific Ocean) would be less than significant. This was based on the finding that the occurrence of flows below 80 cfs (flow found to be sufficient in this reach) occurs about 3% more frequently under the Proposed Project. The petitions as filed request flows ranging from 35 cfs to 70 cfs in this reach during the specified time. Please provide justification of a less than significant finding for a flow ranging from 35 cfs to 70 cfs in the lower Russian River.	PALS

Comment No.	Page No.	Paragraph No.	Table, Figure or Bullet No.	Comment	Commenter
Chapter 4.9: Aesthetics					
155	4.9-15	1	—	In the methodology section, the DEIR states the 2009 TUCP order reduced flows in the Russian River in the month of July, thereby allowing for the comparison of aesthetics between the Proposed Project, the No Project 1 and 2 Alternatives, and Baseline Conditions. As discussed in *comment 145*, a TUCP order was in effect from April 6, 2009 through October 2, 2009. It is unclear if observed conditions occurred under Baseline Conditions or if flows as authorized under the TUCP order were compared to flows similar to the Proposed Project.	PALS
156	4.9-15	3	—	The methodology section notes that "photos taken opportunistically or during other studies were compiled to analyze the effect of summer flow reductions on the visual character of the river." Similar to *comment 144*, please provide additional description of the opportunistic and other studies referenced.	PALS
157	4.9-15	4	—	The DEIR states that changes in river stage that may occur from alterations to the minimum instream flow requirements range from decreases of 1.5 feet to increases of 2.5 feet when compared to Baseline Conditions. This statement appears to be in conflict with page 4.4-63. Here, the DEIR states that maximum observed stage change between the Proposed Project and Baseline Conditions ranges from 2 inches in Dry Creek, 3 inches in the upper Russian River, and up to 7 inches in the lower Russian River. Please clarify.	PALS
158	4.9-16 through 24	Impacts and Mitigation Measures Section	—	The impact analysis relies on the median stage change in Lake Mendocino and Lake Sonoma. The impact analysis in Chapter 4.5 (recreation) relies on the minimum and maximum WSEs in Lake Mendocino and Lake Sonoma. Please provide an explanation for the difference in methodologies.	PALS

159	4.9-18	1	—	Impact 4.9-1 notes the slight WSE fluctuations at Lake Mendocino and Lake Sonoma under the Proposed Project and the No Project 1 and 2 Alternatives when compared to Baseline Conditions are due to the Russian River ResSIM hydrologic model's accounting for SCWA's full face value of 75,000 af. By accounting for the full face value in the No Project scenarios, potential impacts that could occur if the petitions for extension of time are not approved by the State Water Board may not be fully disclosed and/or analyzed. *See comment 1 for additional information*.	PALS
160	4.9-18	1	—	This section describes the Russian River ResSim model as using the estimated water demands for 2040 when modeling the Proposed Project and the No Project 1 and 2 Alternatives and averages of water demands between 2009 and 2014 when modeling Baseline Conditions. This appears to be inconsistent with discussion in Appendix G. Please clarify.	PALS
161	4.9-18	2	—	The DEIR states that monthly median instream flows in the upper Russian River would range from 114 cfs to 121 cfs from June through September under the Proposed Project. It is unclear how these values were calculated. The requested minimum flow in the upper Russian River during the referenced time period of June through September ranges from 25 cfs to 105 cfs.	PALS
162	4.9-18, 20	2, 4	—	Several of the impact analysis discussions note that if minimum instream flows are reduced, the width of the water in the channel could shrink, streamflow could become disconnected between pools, and pools could shrink in size. It is further noted that this could result in an alteration of the visual character of the river. The analysis appears to discuss the range of flows the river would experience but does not analyze the width of the channel and the impacts to visual character that could occur due to the reduction in width. Appendix C and Chapter 4.4 both note a potential reduction in width ranging from 3 to 80 feet and said reduction could expose sparsely or unvegetated land.	PALS

163	4.9-19	—	Figure 4.9-7	Figure 4.9-7 was included to illustrate similar visual characteristics at instream flows of 70 cfs and 249 cfs in the upper Russian River. Please clarify the basis for using this specific photograph to support the impact determination and explain whether and how the other photos provided in Appendix E were evaluated or considered as part of this analysis. One component of this explanation should focus on changes to width and stage. As stated in the DEIR, the reduction in width and stage varies widely. Does Figure 4.9-7 depict a location that experiences a large change or a small change? Were the large changes noted to occur in specific areas?	PALS
164	4.9-20, 21	1 and 2, 1	—	The DEIR states "under Baseline Conditions, the monthly median instream flow in the lower Russian River at Hacienda ranges between 159 cfs and 226 cfs during the months of June through September." Decision 1610 requires minimum flows ranging from 35 cfs to 125 cfs in the lower Russian River. The reason for flow ranges in excess of the required minimum, and whether other nodes along the lower Russian River were evaluated in addition to the Hacienda gage, should be discussed. Were areas heavily used for recreation considered in this analysis? What was the frequency of viewing these flow ranges?	PALS
165	4.9-23	1	—	The DEIR states, "under Baseline Conditions, the monthly median instream flow in Dry Creek is 93 cfs during the months of June through September. Under the Proposed Project, the monthly median instream flow would range between 84 and 114 cfs." The DEIR therefore concluded that the change in instream flows between the Proposed Project and Baseline Conditions is slight and therefore no substantial adverse effects on a scenic vista or degradation of visual character would occur. Decision 1610 requires a minimum instream flow ranging from 25 cfs to 80 cfs during the specified time frame. Under the Proposed Project, SCWA has proposed minimum flows of 50 cfs. Please provide a description of the flows evaluated in the DEIR and why they differ from the minimum flows requested by SCWA. In addition, the threshold of significance is not clear. *See comments 2 and 4 for additional information.*	PALS

Comment No.	Page No.	Paragraph No.	Table, Figure or Bullet No.	Comment	Commenter
Chapter 4.10: Public Services and Utilities					
166	4.10-3	5	—	Term 60 and Term 204 are the current standard bypass terms. Special terms may also be used in the Russian River watershed for bypass purposes. Term 68 Is no longer standard or included on permits issued for water rights on the Russian River. In 1985, SCWA and CDFW signed a stipulation (that supersedes the 1959 protest dismissal agreement), which set firm minimum instream flows in the Russian River and Dry Creek based on hydrologic and reservoir conditions. SCWA agreed that it would maintain the minimum flows set forth in the stipulation. These flows were later incorporated into SCWA's permits pursuant to Decision 1610. In Decision 1610 section 15.10, the State Water Board found that, in light of the signed stipulation, term 68 can be deleted from individual post-1949 permits and licenses. In the decision, the State Water Board gave notice of intent to delete term 68 or its predecessor terms, from existing permits and licenses for diversion from the Russian River commencing after January 28, 1949. Terms 60, 68, 204 and special terms can apply year round or only during a specified diversion season.	PALS
167	4.10-7, 13	1, 1	—	Impact 4.10.1 notes that 59 water right permits contain Term 60 or 68. The DEIR concludes that implementation of the Proposed Project and the No Project 2 Alternative would cause significant and unavoidable impacts to water right holders while complying with minimum bypass terms. The DEIR should describe whether and how potential impacts are limited to water right holders with bypass terms included in their permits and whether other potential impacts to diverters were considered, such as impacts to locations of diversion works.	PALS
168	4.10-5	1	—	The DEIR concludes that because the Proposed Project wouldn't need any water supplies, criteria one of the significance criteria doesn't apply. SCWA has filed petitions for extension of time to make full beneficial use of water under the water right Permits 12949, 12950, and 16596. Approval of these petitions for extension of time could result in an incremental change in the amount of water diverted from the Russian River. *See comment 1 for additional information.*	PALS

169	4.10-5	3	—	The methodology section notes that a search of the State Water Board's eWRIMS database was conducted to identify permits that authorize diversions from the Russian River. Please describe the methods in detail. In particular, please clarify whether and how: (1) the search was limited to water right permits; and (2) individual rights were reviewed to determine if bypass terms were incorporated (including other terms noted in *comment 166*).	PALS
170	4.10-7	1	—	The DEIR appears to evaluate the potential for the reduction in instream flows to impact other water right holders with bypass terms included in their water right permits (68 permit holders total). The Division recommends expanding the scope of the evaluation to include the potential impact to other users, including users with a license, permit, pending application, riparian claim, registration, etc. Consideration of indirect impacts resulting from actions taken by right holders, whose water rights are rendered unusable (e.g. pumping groundwater, pursuing a petition for change, relying on a riparian claim, imported water, or recycled water etc.) should also be disclosed.	PALS
Comment No.	**Page No.**	**Paragraph No.**	**Table, Figure or Bullet No.**	**Comment**	**Commenter**
Chapter 5: Cumulative					
171	5-4	—	A-F	A brief overview of the related, reasonably foreseeable, relevant programs, project and water management actions in the project area are included in this section. Please provide additional information on the basis for the scope of reasonably foreseeable projects considered. It is unclear why the DEIR only considers the City of Ukiah's pending water right amendment and not other pending applications and/or petitions. (Cal. Code Regs., title 14, §15144.)	PALS
172	5-13	1	—	The DEIR identified the Stream Maintenance Program as a related project that may contribute to cumulative impacts. Please clarify if there are any locations in which the channel maintenance activities, combined with lower minimum instream flows, would affect fish passage or areas of available fish habitat.	PALS

173	5-12 through 17	Section 4	—	The DEIR identified the Dry Creek Enhancement Project as a related project that may contribute to cumulative impacts. Please provide an additional description of the analysis conducted in the Dry Creek Enhancement Project CEQA document. In particular, was the Dry Creek Enhancement Project designed to handle lower flows made possible by the Fish Flow Project (i.e. did the impacts identified in the various CEQA documents consider the proposed flow schedules?).	PALS
174	5-32, 33	4, 1	—	The DEIR notes that gravel mining conducted under the Sonoma County Gravel Mining and the Aggregate Resources Mining Plan (related program) may cause channel incision. Channel incision may in turn create migration barriers at the mouths of tributaries and lower the water table which in turn impacts perennial stream flow. The DEIR concludes that the Proposed Project would not include any operational impacts that would contribute to bed erosion or resource extraction associated with gravel mining. Therefore, the related projects were not considered to have a cumulative impact. Please explain if there is a possibility for the proposed reduction of summertime instream flows, in combination with future gravel extraction, to cumulatively impact fish passage/stranding or water quality.	PALS
175	5-39	3	—	The DEIR states, "[u]nder most conditions, diversions of water from the river and pumping of groundwater that affects river flows will increase the amounts of water that the Water Agency must release from Lake Mendocino to maintain these required minimum flows, and such increased releases will affect that amounts of water that remain in Lake Mendocino storage to meet future instream flow requirements and the needs of water users that depend on the Russian River. The DEIR should evaluate the cumulative effects of such effects to river flows and the amounts of water the Water Agency must release from Lake Mendocino to maintain required minimum flows." The associated analysis considers increased diversions under SCWA permits and the City of Ukiah project demands. The DEIR should clarify whether and how this scope of analysis is appropriate and in particular should add an explanation as to why the pending applications for appropriative rights and pending petitions for extending development periods of existing permits are not included. *See comment 171 for additional information.*	PALS
176	5-52	4	—	The discussion associated with Impact 5.7.1-1 indicates that under the cumulative 1 scenario, impacts on hydrology would be cumulatively significant and unavoidable (no mitigation is available). Please clarify the basis of the significant impact finding and provide additional description of	PALS

				the potential mitigation measures or project modifications that were considered, including but not limited to: (1) increased conservation; (2) construction of a parallel water supply pipeline along Dry Creek to increase use of Lake Sonoma; (3) restoration of incised channels to raise overall water table near the channel; and (4) bank plantings. In addition, please identify and provide an explanation for the thresholds at which this determination was made. *See comment 3 for additional information.*	
177	5-83	2	—	Under Impacts 5.7.1-4.5, the DEIR determined that under cumulative 1 scenario, impacts on hydrology would be cumulatively significant and unavoidable. Please clarify the basis of the significant impact finding and provide additional description of the potential mitigation measures or project modifications that were considered. *See comments 3 and 176 for additional information.*	PALS
178	5-52 through 178	Impact Findings Section	—	The impact findings analyses presented in this chapter do not include the thresholds of significance that are being used. Please clarify the basis for each finding and include the threshold of significance for each impact, including an explanation of the criteria used to identify whether and how an impact is above or below each threshold. *See comment 2 for additional information*.	PALS
Comment No.	**Page No.**	**Paragraph No.**	**Table, Figure or Bullet No.**	**Comment**	**Commenter**
Chapter 6: Other Statutory Requirements					
179	6-1 through 7	Sections 6.1 and 6.2	—	The analysis included in this chapter doesn't clearly evaluate the potential effects of the petitions for extension of time. *See comment 1 for additional information*.	PALS
180	6-12, 3	4, 4	—	The project description as provided in the DEIR appears to assume the petitions for extension of time will be approved. *See comment 1 for additional information.*	PALS
181	6.3	1	—	The DEIR notes that the proposed changes modify the minimum instream flow requirements, but do not increase water supply availability. Please note that if the petitions for extension of time are not approved by the State Water Board, the water rights will include a maximum diversion rate and volume not exceeding the amount put to full beneficial use prior to the deadline for complete application of water. Therefore, approval of the	PALS

				petitions for extension of time will allow for an incremental increase in water use, thereby increasing water supply availability. *See comment 1 for additional information.*	
Comment No.	**Page No.**	**Paragraph No.**	**Table, Figure or Bullet No.**	**Comment**	**Commenter**
Chapter 7: Alternatives					
182	7-11	1	—	During the technical advisory group process a number of hydrologic index alternatives were developed. Upon further evaluation, conducted by SCWA, the Russian River Hydrologic Index was developed. This index was identified as the preferred hydrologic index and was subsequently used when evaluating potential minimum instream flow alternatives. Pursuant to the California Code of Regulations, title 14, Section 15126.6(a), "an EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project and would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." The DEIR currently does not include a range of alternatives for the hydrologic index.	PALS
183	7-11, 14, 15	4, 1, 2	—	The DEIR notes that in the second phase of the screening process, the minimum instream flow alternatives were combined with the Russian River Hydrologic Index. These values were compared against the initial screening criteria to determine the alternative that best met the objectives of the project. Please provide rationale for not carrying through the "second-best" alternative to the CEQA process. The DEIR should include a range of alternatives that could feasibly accomplish most of the basic project objectives, not just the alternative that best meets the objectives. (Cal. Code Regs., title 14, § 15126.6(c).) It is unclear whether and how the DEIR considered alternatives that mostly met the project objectives and if those alternatives could have reduced impacts outside of considerations included in the screening criteria.	PALS
184	7-12	—	Item 2	The DEIR specifies that in order for an alternative to meet the screening criteria for rearing habitat, spawning habitat, and flow reliability two specific results must be achieved. The second result that must be achieved is maximizing the preservation of cold water in Lake Mendocino. By creating a required result of maximizing the preservation of cold water the DEIR is	PALS

				inherently limited to one instream flow requirement project proposal (and no alternatives). The range of alternatives shall include those that could feasibly accomplish most of the basic objectives of the project and avoid or substantially lessen one or more significant effects. (Cal. Code Regs., title 14, § 15126.6(c).) By using the specified result identified above, alternatives that may feasibly accomplish the basic objectives may have been eliminated.	
185	7-13	2	—	A single criterion was provided in the DEIR for flow reliability. This criterion evaluated reliable flow conditions, which reflected that water stored in Lake Mendocino would be available to maintain minimum instream flows of 25 cfs in the upper Russian River. However, the DEIR does not provide information regarding how and why this criterion was selected. What is the rationale for using a minimum flow versus the WSE at Lake Mendocino? How does maintaining a flow of 25 cfs account for reservoir supply reliability?	PALS
186	7-14	3	—	Upon completion of the initial screening process, 14 of the 21 flow alternatives were eliminated. The DEIR notes the elimination occurred because these flows did not meet screening criteria for suitable passage in the lower Russian River and Dry Creek and/or resulted in declines in the number of days the temperatures were less than 68 degrees Fahrenheit in Dry Creek. For transparency the Division recommends including a matrix that displays the major characteristics and significant environmental effects of each alternative. (Cal. Code Regs., title 14, § 15126.6(d).)	PALS
187	7-15	6	—	The DEIR notes that a summary of the results of the evaluation of alternatives is included in Table 7-A. The Division is unable to locate this table. Without the comparison table, the Division is unable to determine why six of the remaining alternatives were eliminated.	PALS
188	7-19	—	Item 2 under Significant and Unavoidable	The DEIR concludes that the Proposed Project could result in a violation of water quality standards or otherwise degrade water quality related to biostimulatory substances in the Russian River. Elevated nitrogen and phosphorus concentrations would exceed USEPA criteria, in addition depressed and supersaturated dissolved oxygen concentrations would occur. How does the Proposed Project achieve the basic purpose of the project to improve fish habitat if there are significant impacts to water quality or water quality remains significantly impaired? *See comment 70 for additional information.*	PALS

189	7-23	1, 3	—	It does not appear that the minimum instream flows as recommended in the Biological Opinion were carried forward as an alternative. The Division notes that the Biological Opinion Alternative meets the basic objectives of the project and would minimize the project's significant and unavoidable impacts related to changes in minimum instream flows that could adversely affect other legal users of water (specifically permit holders). When selecting a range of reasonable alternatives, the DEIR should include those that could feasibly accomplish most of the basic project objectives and could avoid or minimize one or more of the significant affect. (Cal. Code Regs., title 14, § 15126.6(c).) Please provide the rationale for not including the flows as recommended in the Biological Opinion as a project alternative.	PALS
190	7-24	1	—	The DEIR notes that the environmentally superior alternative would not avoid significant and unavoidable impacts associated with risk of flooding from tsunami or water quality as these conditions occur under Baseline Conditions. It is unclear how significant impacts are identified as a result of the Proposed Project if they were found to exist under Baseline Conditions.	PALS
Comment No.	**Page No.**	**Paragraph No.**	**Table, Figure or Bullet No.**	**Comment**	**Commenter**
Appendix B: Permit Terms					
191	1	—	Item 2	The terms provided for Permit 12947A appear to include a term that extends the development period for full beneficial use. However, a petition for extension of time has not been filed for Permit 12947A.	PALS
192	1 through 14	Entire Appendix	—	The terms as written in the Appendix are subject to review and amendment by the State Water Board.	PALS

Comment No.	Page No.	Paragraph No.	Table, Figure or Bullet No.	Comment	Commenter
Appendix C: Russian River Assessment 2009					
193	14	1-4	—	Appendix C provides study results from the 2009 Russian River Recreational Assessment. The results indicate that river width ranged from increasing by three feet to decreasing by 80 feet. Please include an assessment of whether and how this large change in width could impact recreation.	PALS
Comment No.	**Page No.**	**Paragraph No.**	**Table, Figure or Bullet No.**	**Comment**	**Commenter**
Appendix F: Stipulated Judgement					
194	7 through 11	Proposed Project section	—	The impact analysis provided in Appendix F appears to mirror Chapter 4.2, specifically Impact 4.2-4. *See comment 70 for additional information.*	PALS
195	9	—	Table 4.2-4	The table provided in Appendix F is the same as the table included in Chapter 4.2. *See comment 69 for additional information*.	PALS
Comment No.	**Page No.**	**Paragraph No.**	**Table, Figure or Bullet No.**	**Comment**	**Commenter**
Appendix G: Modeling Report					
196	—	—	—	While Appendix G contains a great number of plots, tables containing statistics for scenarios and their simulated flows or constituents would be more useful in comparing between Baseline, No Project, and Proposed Project scenarios. In particular, the RMA Russian River Basin Model Demonstration's water quality outputs had no goodness-of-fit statistics, only plots. Were the reader to rely on the plots alone, the plots' display of points and simulated values overlap, obscuring graphical diagnosis.	NCRWQCB

Russian River Hydrologic Modeling for the Fish Habitat Flows and Water Rights Project					
197	2-11, 3-48	3, 4 and 5	—	The DEIR used the USACE Guide Curve in the model. The DEIR should include a simulation using the USACE Guide Curve and a discussion of whether and how the use of the Alternative Guide Curve in simulation does or does not create a situation for unanalyzed impacts (e.g., if the Alternative Guide Curve is used in the future or if the Guide Curve is permanently changed in the future).	PALS
198	3-18	1, 4	—	The average daily baseline demands for SCWA were estimated through an analysis of observed diversions from 2009 to 2014. However, the demands for other public water systems were estimated through an analysis of production records from 2009 to 2013. It is the Division's understanding that 2014 was not used due to curtailments. If this is correct, please disclose this information in the DEIR.	PALS
199	3-27 through 3-29	All	—	The model uses past reservoir capacity and the future 2035 demand. However, the cumulative analysis model uses future reservoir capacity and future demand. The future reservoir capacity is estimated using a projection to 2040. The DEIR should either use the future reservoir capacity in both models (given that 2035 is closer to 2040 than 2035 is to the 1982/2001 bathymetric survey dates) or clearly disclose supporting reasons for using the 1982 and 2001 bathymetric surveys.	PALS
200	3-33	2	—	Does the model incorporate a compliance floor for Flow Schedules 1 through 4 on top of meeting the five-day moving average requirement (as appears to have been done for the TUCP orders)? If not, how much lower could flows get below the minimum instream flow on a given day, and would this possible variability affect the impact analysis?	PALS
201	3-49 through 3-59	—	Figures 3-28, 3-30, 3-31, 3-33, 3-35, 3-37, and 3-39	Statistics used to evaluate model performance are inadequate or can be misleading. Linear regression of simulated versus observed flows did not include an intercept term, which leads to a different formulation of the R^2 goodness-of-fit statistic (Eisenhauer 2003). For hydrologic models, authors should use the following statistics, in addition to R^2: NSE — Nash-Sutcliffe model efficiency coefficient or ratio of mean-squared-error of observed vs simulated values to variance—i.e.: $\mathrm{NSE} = 1 - \frac{\sum_i^n (Q_{obs,i} - Q_{sim,i})^2}{\sum_i^n (\bar{Q}_{obs,i} - Q_{obs,i})^2}$ bR^2 — R^2 multiplied with the slope of the regression line (with an intercept term)	NCRWQCB

				% Bias Average tendency of simulated values to be larger or smaller than observed—i.e. $\text{PBIAS} = 100 \times \frac{\sum_i^n (Q_{sim,i} - Q_{obs,i})}{\sum_i^n Q_{obs,i}}$ In general multiple statistics provide information on different aspects of the model performance. NSE is one of the more common and robust goodness-of-fit statistic in surface water hydrology modeling (Krause and others, 2005). bR^2 value adjusts the coefficient of determination by how much the regression deviates from a 1:1 line. Percent bias gives a gross measure of overestimation or underestimation in model simulations.	
202	3.5 through 59	—	Figures 3-27 through 40	It is difficult to observe a difference between simulated and observed flows at low flow periods. A difference of 10 cfs is small for a flow of 300 cfs, but a difference of 10 cfs is 20% of a 50 cfs flow. Please consider using a logarithmic scale or other method to illustrate low-flow comparisons of observed and simulated flows.	IFU
203	3-57	—	Figure 3-37	Dry Creek observed and simulated flows do not match very well. The explanation given is: "Because the model incorporates simplified patterns of loss the simulated flows at the Dry Creek junction are mostly a function of these modeled loss patterns as opposed to the actual observed losses ..." Please explain why these are simplified losses, why they do not model the watershed accurately, and why this is not an issue at other sites.	IFU
204	5-1	—	Item 4	The Proposed Project model scenario incorporates the proposed hydrologic index and minimum flows as well as the full face value of 75,000 af per year. In order to evaluate whether and how the Proposed Project model scenario can be used to evaluate and take action on the pending petitions for change, the Division will need additional clarification regarding the associated model assumptions. For example, were other permit restrictions on location/rate/amount also assumed in the model? How was the 75,000 af demand distributed? Was it assumed that all 75,000 af were diverted at Mirabel and Wohler, or is it assumed that contractors (including the requested PODs) are diverting water and in what proportions? *See comments 1 and 40 for additional information.*	PALS

HEC-5Q Russian River Basin Model Demonstration					
205	—	—	—	Please indicate the elevations in the reservoirs from which water is released into the rivers.	IFU
206	2-5	3	—	In addition to temperature and dissolved oxygen, the RMA report says “nutrients, phytoplankton, benthic algae, and [organic matter]” are also simulated. The simulation results for these constituents are not shown. Even if the data are sparse or if simulation results are similar to previous reports, the results would still be of value in evaluating the water quality impacts from the Project, especially considering the model was modified for compatibility with ResSim.	NCRWQCB

ATTACHMENT A

COMPARISON TABLE OF EXISTING AND PROPOSED MINIMUM FLOW REQUIREMENTS

COMPARISON TABLE OF EXISTING AND PROPOSED MINIMUM FLOW REQUIREMENTS

(all minimum flows in cubic-feet per second)

1. *East Fork Russian River[1] – Existing (Permit 12947A)*

Water Supply Conditions	June	July	August	Sep	Oct 1-15	Oct 16-31	Nov	Dec	Jan	Feb	March	April	May
All	25	25	25	25	25	25	25	25	25	25	25	25	25

East Fork Russian River – Proposed (Permit 12947A)

Flow Schedule	June	July	August	Sep	Oct 1-15	Oct 16-31	Nov	Dec	Jan	Feb	March	April	May
All	25	25	25	25	25	25	25	25	25	25	25	25	25

Upper Russian River[2] – Existing (Permit 12947A)

Water Supply Conditions	**Water Year[3]**	June	July	August	Sep	Oct 1-15	Oct 16-31	Nov	Dec	Jan	Feb	March	April	May
Normal	1	185	185	185	150	150	150	150	150	150	150	150	185	185
	2[4]	150	150	150	150	150 (75)	150 (75)	150 (75)	150 (75)	150	150	150	185	185
	3	75	75	75	75	75	75	75	75	150	150	150	185	185
Dry		75	75	75	75	75	75	75	75	75	75	75	75	75
Critical		25	25	25	25	25	25	25	25	25	25	25	25	25

Upper Russian River – Proposed (Permit 12947A)

Flow Schedule	June	July	August	Sep	Oct 1-15	Oct 16-31	Nov	Dec	Jan	Feb	March	April	May
1 (Wettest)	105	105	105	105	105	105	105	105	105	105	105	105	105
2	85	85	85	85	85	105	105	105	105	105	105	105	85
3	65	65	65	65	65	100	100	100	100	100	100	100	65
4	45	45	45	45	45	45	70	70	70	70	70	70	45
5 (Driest)	25	25	25	25	25	25	25	25	25	25	25	25	25

[1] The East Fork Russian River between Coyote Dam and its confluence with the Russian River

[2] The Russian River between the East Fork Russian River and Dry Creek

[3] Water Year Categories. When the combined water in storage, including dead storage, in Lake Pillsbury and Lake Mendocino on May 31 of any year:

Water Year 1: Exceeds 150,000 acre-feet or 90% of the estimated water supply storage capacity of the reservoirs, whichever is less

Water Year 2: Is between 150,000 acre-feet or 90% of the estimated water supply storage capacity of the reservoirs, whichever is less, and 130,000 acre-feet or 80% of the estimated water supply storage capacity of the reservoirs, whichever is less

Water Year 3: Is less than 130,000 acre-feet or 80% of the estimated water supply storage capacity of the reservoirs, whichever is less

[4] If from October 1 through December 31, storage in Lake Mendocino is less than 30,000 acre-feet, the minimum flow shall be 75 cubic-feet per second.

Lower Russian River[5] – Existing[6] (Permits 12947A and 16596)

Water Supply Conditions	June	July	August	Sep	Oct 1-15	Oct 16-31	Nov	Dec	Jan	Feb	March	April	May
Normal	125	125	125	125	125	125	125	125	125	125	125	125	125
Dry	85	85	85	85	85	85	85	85	85	85	85	85	85
Critical	35	35	35	35	35	35	35	35	35	35	35	35	35

Lower Russian River – Proposed[3] (Permit 12947A and 16596)

Flow Schedule	June	July	August	Sep	Oct 1-15	Oct 16-31	Nov	Dec	Jan	Feb	March	April	May
1 (Wettest)	70	70	70	70	70	135	135	135	135	135	135	135	70
2	70	70	70	70	70	135	135	135	135	135	135	135	70
3	70	70	70	70	70	135	135	135	135	135	135	135	70
4	50	50	50	50	50	85	85	85	85	85	85	85	50
5 (Driest)	35	35	35	35	35	35	35	35	35	35	35	35	35

Dry Creek[7] – Existing (Permit 16596)

Water Supply Conditions	June	July	August	Sep	Oct 1-15	Oct 16-31	Nov	Dec	Jan	Feb	March	April	May
Normal	80	80	80	80	80	80	105	105	75	75	75	75	80
Dry	25	25	25	25	25	25	75	75	75	75	75	25	25
Critical	25	25	25	25	25	25	75	75	75	75	75	25	25

Dry Creek – Proposed (Permit 16596)

Flow Schedule	June	July	August	Sep	Oct 1-15	Oct 16-31	Nov	Dec	Jan	Feb	March	April	May
1 (Wettest)	50	50	50	50	50	105	105	105	75	75	75	75	50
2	50	50	50	50	50	105	105	105	75	75	75	75	50
3	50	50	50	50	50	75	75	75	75	75	75	50	50
4	50	50	50	50	50	75	75	75	75	75	75	50	50
5 (Driest)	50	50	50	50	50	75	75	75	75	75	75	50	50

[5] The Russian River between its confluence with Dry Creek and the Pacific Ocean

[6] Permit 12947A species these flows must be met to the extent that such flows cannot be met by releases from storage at Lake Sonoma under Permit 16596; Permit 16596 specifies these flows must be met unless the water level in Lake Sonoma is below elevation 292.0 feet with reference to the National Geodetic Vertical Datum of 1929, or unless prohibited by the United States Government

[7] Dry Creek between Warm Springs Dam and its confluence with the Russian River

ATTACHMENT B

COMPARISON OF EXISTING AND PROPOSED HYDROLOGIC INDEX

COMPARISON OF EXISTING AND PROPOSED HYDROLOGIC INDEX

EXISTING DECISION 1610 HYDROLOGIC INDEX

For the purposes of the requirements in this term, the following definitions apply:

1) Dry water supply conditions exist when cumulative Inflow to Lake Pillsbury beginning on October 1 of each year is less than:

    8,000 acre-feet as of January 1
    39,200 acre-feet as of February 1
    65,700 acre-feet as of-March 1
    114,500 acre-feet as of April1
    145,600 acre-feet as of May 1
    160,000 acre-feet as of June 1

2) Critical water supply conditions exist when cumulative inflow to Lake Pillsbury beginning on October 1 of each year Is less than:

    4,000 acre-feet as of January 1
    20,000 acre-feet as of February 1
    45,000 acre-feet as of March 1
    50,000 acre-feet as of April 1
    70,000 acre-feet as of May 1
    75,000 acre-feet as of June 1

3) Normal water supply conditions exist in the absence of defined dry or critical water supply conditions.

4) The water supply condition designation for the months of July through December shall be the same as the designation for the previous June. Water supply conditions for January through June shall be redetermined monthly.

5) Cumulative inflow to Lake Pillsbury is the calculated algebraic sum of releases from Lake Pillsbury, increases in storage in Lake Pillsbury, and evaporation from Lake Pillsbury.

6) For Permit 12947A, estimated water supply storage space is the calculated reservoir volume between elevation 1,828.3 feet in Lake Pillsbury and below elevation 749.0 feet in Lake Mendocino. Both elevations refer to the National Geodetic Vertical Datum of 1929. The calculation shall use the most recent two reservoir volume surveys made by the U.S. Geological Survey, U.S. Army Corps of Engineers, or other responsible agency to determine the rate of sedimentation to be assumed from the date of the most recent reservoir volume survey.

PROPOSED RUSSIAN RIVER HYDROLOGIC INDEX

The proposed hydrologic index for the Russian River would evaluate water supply conditions to determine which schedule of required minimum instream flows (Flow Schedule) would apply during each month for each of the following river reaches: (1) upper Russian River[1]; (2) lower Russian River[2]; and (3) Dry Creek[3].

The Upper Russian River Flow Schedule for January through May would be determined by the Lake Mendocino Cumulative Inflow Condition (Inflow Condition). For June through December, this Flow Schedule would be set by a combination of the Inflow Condition and the Lake Mendocino Storage Condition (Storage Condition), as discussed below.

The Lower Russian River and Dry Creek Flow Schedules for January through December would be set by the Inflow Condition.

For the purposes of determining the Inflow Condition, the Storage Condition, and the applicable Flow Schedules for each month, the following definitions and rules would apply:

LAKE MENDOCINO CUMULATIVE INFLOW CONDITION

The cumulative inflow into Lake Mendocino (cumulative inflow) would be calculated from October 1 of the previous year through the start (midnight) of the first day of each month from January through October as the sum of the following daily amounts: (1) releases from Lake Mendocino; (2) increases in storage in Lake Mendocino; and (3) evaporation from Lake Mendocino. For the months of January, February and March, cumulative inflow calculated by this method would be constrained to the maximum value listed below for each month as the Cumulative Inflow Limit[4]. If the calculated cumulative inflow were to exceed the Cumulative Inflow Limit value listed below for the applicable month, then the cumulative inflow would be adjusted and set equal to the Cumulative Inflow Limit for that month.

Cumulative Inflow Limit:	
January 1:	22,100 acre-feet
February 1:	37,500 acre-feet
March 1:	54,500 acre-feet

Any adjustments made to the cumulative inflow by the Cumulative Inflow Limit would carry forward and be applied to the calculations of cumulative inflows for subsequent months.

The following rules would be applied to determine the applicable Inflow Condition number for each month.

INFLOW CONDITIONS:

1) Inflow Condition 1 exists when cumulative inflow is equal to or greater than the following amount for the applicable month:

   22,100 acre-feet as of January 1
   37,500 acre-feet as of February 1
   54,500 acre-feet as of March 1
   64,100 acre-feet as of April 1

[1] The upper Russian River refers to the river between the East Fork Russian River and Dry Creek.
[2] The lower Russian River refers to the river between its confluence with Dry Creek and the Pacific Ocean.
[3] Dry Creek refers to the creek between Warm Springs Dam and its confluence with the Russian River.
[4] These cumulative inflow constraints were developed to limit the effects of large, early-season inflows on the applicable cumulative inflow. This is appropriate because early season inflows are less predictive of the water supply conditions for the subsequent dry season.

73,200 acre-feet as of May 1
80,600 acre-feet as of June 1
87,100 acre-feet as of July 1
93,500 acre-feet as of August 1
99,800 acre-feet as of September 1
105,000 acre-feet as of October 1

2) Inflow Condition 2 exists when cumulative inflow is less than the following amount for the applicable month and greater than or equal to the applicable amount for Inflow Condition 3:

22,100 acre-feet as of January 1
37,500 acre-feet as of February 1
54,500 acre-feet as of March 1
64,100 acre-feet as of April 1
73,200 acre-feet as of May 1
80,600 acre-feet as of June 1
87,100 acre-feet as of July 1
93,500 acre-feet as of August 1
99,800 acre-feet as of September 1
105,000 acre-feet as of October 1

3) Inflow Condition 3 exists when cumulative inflow is less than the following amount for the applicable month and greater than or equal to the applicable amount for Inflow Condition 4:

13,000 acre-feet as of January 1
24,900 acre-feet as of February 1
42,100 acre-feet as of March 1
56,400 acre-feet as of April 1
63,200 acre-feet as of May 1
70,200 acre-feet as of June 1
74,600 acre-feet as of July 1
79,400 acre-feet as of August 1
82,600 acre-feet as of September 1
86,700 acre-feet as of October 1

4) Inflow Condition 4 exists when cumulative inflow is less than the following amount for the applicable month and greater than or equal to the applicable amount for Inflow Condition 5:

10,800 acre-feet as of January 1
18,000 acre-feet as of February 1
31,900 acre-feet as of March 1
50,200 acre-feet as of April 1
55,700 acre-feet as of May 1
62,200 acre-feet as of June 1
66,600 acre-feet as of July 1
70,700 acre-feet as of August 1
74,900 acre-feet as of September 1
78,600 acre-feet as of October 1

5) Inflow Condition 5 exists when cumulative inflow is less than the following amount for the applicable month:

    10,500 acre-feet as of January 1
    13,700 acre-feet as of February 1
    19,500 acre-feet as of March 1
    23,900 acre-feet as of April 1
    32,700 acre-feet as of May 1
    37,700 acre-feet as of June 1
    40,000 acre-feet as of July 1
    42,000 acre-feet as of August 1
    44,000 acre-feet as of September 1
    44,000 acre-feet as of October 1

The Inflow Condition number for November and December would be the same as the Inflow Condition number for the preceding October.

LAKE MENDOCINO STORAGE CONDITION

The water storage in Lake Mendocino (total storage) would be calculated from the water surface elevation measured on the start (midnight) of the first day of each month from June through December and using the most recent reservoir volume surveys conducted by the U.S. Geological Survey, U.S. Army Corps of Engineers, or other responsible agency.

The following rules would be used to determine the applicable Storage Condition number for each month.

STORAGE CONDITIONS

1) Storage Condition 1 exists when the total storage is equal to or greater than the following amount for the applicable month.

    78,900 acre-feet on June 1
    76,100 acre-feet on July 1
    70,400 acre-feet on August 1
    64,600 acre-feet on September 1
    58,500 acre-feet on November 1
    54,500 acre-feet on October 1
    54,400 acre-feet on December 1

2) Storage Condition 2 exists when the total storage is less than the following amount for the applicable month and greater than or equal to the applicable amount for Storage Condition 3:

    78,900 acre-feet on June 1
    76,100 acre-feet on July 1
    70,400 acre-feet on August 1
    64,600 acre-feet on September 1
    58,500 acre-feet on November 1
    54,500 acre-feet on October 1
    54,400 acre-feet on December 1

3) Storage Condition 3 exists when the total storage is less than the following amount for the applicable month and greater than or equal to the applicable amount for Storage Condition 4:

    73,500 acre-feet on June 1
    70,700 acre-feet on July 1
    65,100 acre-feet on August 1
    60,200 acre-feet on September 1
    54,200 acre-feet on October 1
    50,000 acre-feet on November 1
    51,550 acre-feet on December 1

4) Storage Condition 4 exists when the total storage is less than the following amount for the applicable month and greater than or equal to the applicable amount for Storage Condition 5:

    70,000 acre-feet on June 1
    66,800 acre-feet on July 1
    61,200 acre-feet on August 1
    55,500 acre-feet on September 1
    49,100 acre-feet on October 1
    45,700 acre-feet on November 1
    45,600 acre-feet on December 1

5) Storage Condition 5 exists when total storage is less than the following amount for the applicable month:

    67,100 acre-feet on June 1
    62,800 acre-feet on July 1
    57,000 acre-feet on August 1
    50,600 acre-feet on September 1
    42,600 acre-feet on October 1
    40,800 acre-feet on November 1
    41,700 acre-feet on December 1

DETERMINATION OF FLOW SCHEDULES

The Lower River Flow Schedule number and the Dry Creek Flow Schedule number for each month would be set equal to the Inflow Condition number for that month.

The Upper River Flow Schedule number for January through May would be set equal to the Inflow Condition number for that month.

For June through September, if the Storage Condition number is greater than the Inflow Condition number for the month, then the Upper River Flow Schedule number would be set to the Inflow Condition number plus one. Otherwise, the Upper River Flow Schedule number would be set equal to the Inflow Condition number for that month.

For October through December, if the Storage Condition number is greater than the Inflow Condition number for the month, then the Upper River Flow Schedule number would be set equal to the Storage Condition number for the month, but not greater than the Upper River Flow Schedule number for the previous month plus one. Otherwise, the Upper River Flow Schedule number would be set to the Inflow Condition number for the month.