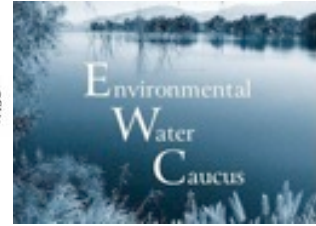


Save California



CRAB BOAT OWNERS ASSOCIATION, Inc.
2907 Jones Street
San Francisco, California 94133-1115
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CHICO 350



March 17 2019

Mr. Jim Watson
Sites Project Authority
P.O. Box 517
Maxwell, CA

Re: Request For A Recirculated Draft Sites Reservoir EIS/EIR

Dear Mr. Watson:

It is our understanding that the Sites Project Authority (SPA) is planning on release of a final EIS/EIR in March 2020. We are requesting a revision and recirculation of the Draft Sites Reservoir EIS/EIR (DEIS/EIR) prior to release of a final EIS/EIR because the initial DEIS/EIR was inadequate under the law to fully describe the project, reasonable alternatives, impacts and appropriate mitigation measures. The inadequacy of the DEIS/EIR was clearly pointed out in comment letters by numerous organizations and individuals, including many of our organizations and the California Department of Fish and Wildlife (CDFW).¹

The DEIS/EIR was inadequate to meet the legal requirements of CEQA and NEPA as described in detail below, but more importantly, the project as described to date does not resolve the fundamental issue of what will be the minimum bypass flows for the Sacramento River. This is a key issue that underlies the basic water yield and economic feasibility of this project.

The California Department of Fish and Wildlife has recommended a much higher minimum bypass flow in the Sacramento River than is being proposed by the SPA (13,000 cfs compared to 3,250 cfs at Red Bluff, 4,000 cfs at Hamilton City and 5,000 cfs at Wilkins Slough).² The impacts to the Sacramento River fishery have not been adequately described in the DEIS/EIR, nor is there an alternative analyzed in the DEIS/EIR that would provide the flow recommendations by CDFW.

¹ See Friends of the River's website on Sites Reservoir for comment letters on the Sites DEIS/EIR at <https://www.friendsoftheriver.org/our-work/rivers-under-threat/sacramento-threat-sites/>

² See CDFG letter of 1/12/18, page 9 "CDFW recommends the Project proponents revise the bypass flow requirement to maintain at least 13,000 cfs past all diversion facilities prior to the diversion of water to reduce impacts on out-migrating juvenile salmonids." Accessed at <https://www.friendsoftheriver.org/wp-content/uploads/2018/09/1-12-2018-CDFW-Sites-Project-Letter.pdf>

It is impossible for anybody to know if this project is cost effective and promised environmental public benefits can be delivered until the Sacramento River minimum bypass flow issue is resolved. The SPA's recommendation for Sacramento River minimum bypass flows appears to justify a finding of financial feasibility, but how feasible will the project be if CDFW's minimum bypass flows are legally required? We believe this issue must be fully and adequately analyzed in the DEIS/EIR, prior to any water rights hearing or other permitting process that will rely on the information in the DEIS/EIR.

Due to the extensive and significant issues listed above, a recirculated draft document addressing these deficiencies is necessary for the Sites Project to comply with NEPA and CEQA. The existing DEIS/EIR is inadequate and cannot be relied upon for preparation of a Final EIS/EIR. Therefore, we urge you to prepare a recirculated draft EIS/EIR for the proposed Sites Reservoir to fully disclose impacts, alternatives and mitigation measures. You would do a disservice to your own cause to do otherwise.

Sincerely,

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Attachment: Kamman Hydrology Analysis of Sites DEIS/EIR on Trinity River

cc: California Water Commission Members
Representative Jared Huffman
Karuk Tribe
Hoopa Valley Tribe
Yurok Tribe
Humboldt County Board of Supervisors
Trinity County Board of Supervisors
Eileen Sobeck, Executive Officer SWRCB
Charlton Bonham, Director CDFW

Specific List of Issues That Must Be Addressed in a Recirculated Draft EIS/EIR For The Sites Project

- 1. Foreseeable Impacts to Trinity River Water Temperature Objectives Associated with Sites Project Operations Need to be Evaluated with an Accurate Temperature Model.** The revised Trinity River Division water operations associated with the Sites Project (shifting diversions to winter/spring from summer/fall in dry years) violates the 2000 Trinity Record of Decision and will lead to increased water temperatures in Lewiston Reservoir and downstream in the Trinity River. The Draft EIS/EIR does not disclose the impact, even though the proposed operation would clearly increase river temperatures, meaning that the temperature model is not accurate. Any increase in the temperature of water released to the Trinity River would degrade water quality conditions and increase the potential for violations of North Coast Basin Plan water quality (temperature) objectives protective of adult spring and fall Chinook, as well as the water temperature objectives established under the Trinity River Record of Decision to protect outmigrating juvenile salmonids. The water temperature model developed by USGS for the Trinity River should be used to evaluate the impacts to Trinity River water temperatures and attainment of water temperature objectives. See detailed comments in attached memo from Kamman Hydrologics.
- 2. Foreseeable Impacts to Trinity River Associated with Trinity Lake Carryover Storage.** The Sites Project water operation and temperature analyses assume a minimum Trinity Reservoir carryover storage volume of 600TAF, thereby impacting Trinity River water temperatures. Water temperature modeling for the Trinity River, including studies by the Bureau of Reclamation, indicate that initial October 1 carryover storage volumes of 600- and 750-TAF are not sufficient to satisfy Trinity River temperature objectives for a single dry/critically dry water year-type, let alone multi-year droughts. It is reasonable to foresee that current implementation of the ROD Flows without sufficient carryover storage will not achieve Trinity River temperature objectives during critically dry year-types and possibly not meet objectives of the ROD for the Long-Term Plan to Protect Adult Salmon in the Lower Klamath River. Additionally, Trinity Reservoir storage has no chance of being replenished during multi-year droughts. See detailed comments in attached memo from Kamman Hydrologics.
- 3. Inaccurate Existing (Baseline) TRD Water Operations.** The water operations analysis for Sites Project EIR/S did not include an analysis considering use of Humboldt County's 50 TAF water contract included as a provision of the Trinity River Division Act of 1955. The ROD for the Long-Term Plan to Protect Adult Salmon in the Lower Klamath River (Lower Klamath ROD) identifies Humboldt County's 50 TAF water contract as a volume of water available to release into the Trinity River to reduce the probability of a fish kill in the Lower Klamath River. The omission of the Humboldt County 50 TAF contract and the Lower Klamath ROD in the DEIR/S analyses could have significant effects on projected CVP water deliveries and the water quality conditions and potential impacts to both the Trinity and Sacramento Rivers. Therefore, the DEIR/S should be considered incomplete in the analysis of the effects of the Site Project operations on the Trinity River. See detailed comments in attached memo from Kamman Hydrologics.

4. **Incomplete Cumulative Impact Assessment Pertaining to TRD Operations.** Several issues were not evaluated as part of the cumulative impact assessment that will likely have adverse impacts on the Trinity River including (1) the impact of the 600 TAF minimum carryover storage in meeting Trinity River water temperature objectives during multi-year droughts, (2) accounting for Humboldt County's 50 TAF water contract, and (3) the influence of climate change on meteorology and hydrology of northern California rivers. See detailed comments in attached memo from Kamman Hydrologics.
5. **Mitigation for Trinity/Lower Klamath Impacts.** Effective mitigation measures must be recommended to ensure that fishery/fish habitat management objectives for the Trinity River and lower Klamath River will be met. The Bureau of Reclamation has used the auxiliary outlet on Trinity Dam to release colder water during drier years, but this action results in the loss of power generation and this impact on CVP power generation needs to be evaluated as it relates to revised Trinity operations as proposed for Sites.
6. **Narrow Scope of Alternatives.** The DEIS/EIR should include a wider range of alternatives rather than only alternatives that maximize attaining project benefits of increasing water supply. Alternatives that achieve varying levels of project objectives while minimizing project impacts should be developed and evaluated.
7. **No Action Alternative and Existing Conditions.** Assuming the existing conditions and No Action alternatives are the same is inappropriate, compromises the ability to compare impacts across alternatives, and may minimize the magnitude of some of the impacts. The faulty assumption that State and Federal water contractors would be projected to use their full contracted water volumes (2030 projected conditions) does not reflect the current water management (existing condition) and likely provides inaccurate impact results. Because of this, the no action alternative minimizes potential impacts and greatly reduces the mitigation responsibilities required under CEQA.
8. **Sites Project Water Rights and Potential Unforeseen/Undisclosed Impacts.** The DEIS/EIR does not sufficiently address the acquisition of water rights for the Sites Project nor does it address water over-allocation issue in the Central Valley. Also, potential impacts of acquiring these water rights and the associated water to be stored in Sites Reservoir on other streams/watersheds must be evaluated.
9. **Cumulative Impacts.** The conclusion presented in the DEIS/EIR that there are no cumulative impacts associated with the Sites Project is flawed. An evaluation of cumulative impacts is necessary to comply with the law. With the declining status of the fishery resources in the Sacramento-San Joaquin Basin and the Delta, reduction of flows in the Sacramento River by the proposed Sites Project operations would contribute to the decline of these populations in a cumulative manner. Changes in proposed diversions from the Trinity Basin would also have cumulative impacts on the fishery resources of the Klamath-Trinity Basin. Additionally, many

actions are not identified in the cumulative impacts section and need to be included in the cumulative impacts analysis including: the ROD for the Trinity River Mainstem Fishery Restoration (without modifications to diversions to the Sacramento River as proposed in the DEIS/EIR), the ROD for the Long-Term Plan to Protect Adult Salmon in the Lower Klamath River (as proposed), the lower American River Modified Flow Management Standard, California Water Fix, the Temperance Flat Dam proposal, the proposed enlargement of Shasta Dam, the State Water Project Contract Extension, the Agricultural Drainage Selenium Management Program, the West Sacramento Levee Improvements Program, the Central Valley Flood Protection Plan, FloodSAFE,, the Lower Yolo Restoration Project, the Contra Costa Water District Intake and Pump Station (Alternative Intake Project), 2009 National Marine Fisheries Service Biological Opinion and Conference Opinion for the Coordinated Long-Term Operation of the CVP/SWP, , the new Biological Assessment and NOAA Fisheries consultation regarding the State and Federal Water Projects, the 2008 United States Fish and Wildlife Service Biological Opinion for Delta smelt for the Coordinated Long-Term Operation of the CVP/SWP, the Draft Environmental Impact Statement for Revisions to the Coordinated Long-Term Operation of the Central Valley Project and State Water Project, the Central Valley Flood Management Program, the San Joaquin River Restoration Program, the Recovery Plan for Sacramento-San Joaquin Delta Native Fishes, the Yolo Bypass Salmonid Habitat Restoration and Fish Passage Implementation Plan, Bay Delta Phase 2 plan updates, the California Water Action Plan, California EcoRestore, and the Davis-Woodland Water Supply Project.

10. **Sites Reservoir Operating Procedures/Priorities Absent.** The operating /accountable entity of the Sites Project is not identified, and no operating rules/procedures are provided. The DEIS/EIR identifies four potential uses of stored water (supplemental deliveries to TC Canal, GC Canal and RD108 settlement contractors; increasing deliveries to wildlife refuges; increasing water reliability for CVP and SWP contractors; and releases for delta water quality) but no rule set with priorities and volumes to be used to meet these uses are provided. These procedures must include integration of the Sites Project with CVP, SWP, and other water management projects.

11. **Tribal Consultation and Mitigation Absent.** There is no Tribal consultation outside the footprint area and there are cultural resources within the foot print area with no mitigation measures discussed for their protection. AB-52 tribal consultation is now required and federal Tribal consultation has always applied.

12. **Compliance with California Endangered Species Act (CESA).** As identified in the DEIS/EIR, CESA protected species may be affected (take) by the Sites Project and any take must be authorized by CDFW by a CESA permit which is also subject to CEQA. Impacts, mitigation actions with an associated monitoring and reporting program much be included in the CEQA document supporting the CESA permit. In addition, Klamath River spring Chinook are now a candidate species under CESA and must be considered.

13. **Hydropower Licensing.** Since it is likely that hydropower facilities would be constructed as part of the project, a detailed descriptions and operation protocols of the proposed facilities and analyses of potential impacts should be presented in the DEIS/EIR. A description of the steps, including timelines, that will be taken to obtain FERC approval for the project should also be provided.
14. **Environmental Baseline/Modeling.** The source of much of the information used in the modeling and impact assessment appears to be outdated (it is difficult to discern the source of some of the data) and likely does not reflect the current understanding of the system using the best available data. Without the use of updated, contemporary models the information presented in the document on potential impacts are highly questionable.
15. **Bypass Flows and Diversion Rates.** The DEIS/EIR indicates diversions to the Sites Project would reduce flows in the Sacramento River and Delta outflows, especially in the winter in spring. Potentially significant flow reductions in the Sacramento River, especially during dry and critically dry water years, will likely have significant biological impacts on fish species in the river at those times. The proposed bypass flows of 3,250 cfs at Red Bluff, 4,000 cfs at Hamilton City and 5,000 cfs at Wilkins Slough are less than those needed to restore native fish and wildlife identified in the State Water Resources Control Board report "*Scientific Basis Report in Support of New and Modified Requirements for Inflows from the Sacramento River and its Tributaries and Eastside Tributaries to the Delta, Delta outflows, Cold Water Habitat, and Interior Delta Flows*" (https://www.waterboards.ca.gov/water_issues/programs/peer_review/docs/scientific_basis_phase_ii/201710_bdphaseII_sciencereport.pdf). Justification for these flow magnitudes should be presented and impacts of these flows that are insufficient for restoration of native fish species should be thoroughly evaluated. The timing of the Sites Project diversions during winter and spring will eliminate or greatly diminish the effectiveness of higher releases of water from Shasta Dam to meet environmental needs if it remained in the river. Additionally, potential mitigation measures to address these decreased flow impacts such changing diversion timing and magnitude, a variety of pulse flows to improve outmigration conditions for fishes, and other physical/biological/ecological processes should be proposed and evaluated. An alternative using Sacramento minimum bypass flows of no less than 13,000 cfs recommended by CDFW should be fully analyzed.
16. **Reduced Delta Outflows and impacts on Delta Smelt and Other Important Bay-Delta Species.** The draft EIS/EIR erroneously states there is no relationship between winter/spring Delta outflows and Delta smelt abundance. Information presented in the Interagency Ecological Delta Smelt Management Analysis and Synthesis Team report (2015) shows a positive relationship between larval Delta smelt abundance and winter-spring Delta Outflows. The impacts on larval Delta smelt abundance resulting from reduced winter-spring Delta outflows due to Sites Project operations needs to be evaluated and necessary mitigation actions identified. Additionally, the impacts of reduced Delta outflows on the zooplankton community should be evaluated because of their critical importance as food for larval fishes.

17. **Delta and Longfin Smelt Impacts due to Old and Middle River Reverse Flows.** The DEIS/EIR acknowledges the potential increase of Old and Middle River reverse flows during some summer, fall, and winter months due to increased pumping at the CVP and SWP facilities but does not adequately assess the impact on Delta smelt and Longfin smelt. In addition to the estimated losses due to entrainment in the CVP/SWP facilities, losses in Old and Middle River (and other affected waterways) occurring before the diversion facilities, the areas where the majority of mortality occurs, must be evaluated.

18. **Water Quality and Beneficial Use Impacts.** Diverting higher-quality water from the Sacramento River will likely lead to water quality degradation at downstream sites and these potential impacts are not evaluated. The Sacramento River and Delta already suffer from water quality impairments (temperature, heavy metals, nutrients, pesticides) and decreasing flows will only exacerbate these problems. This not only impacts the aquatic resources but also potentially agricultural and domestic uses of these waters.

19. **Sacramento River Flow and Temperature Modeling.** The use of an outdated version of the CALSIM II model not calibrated to current data is inappropriate. This model is based on a monthly timestep which is not appropriate for modeling impacts on habitat availability and water temperature. Water temperature analyses should be based on daily time steps because of the potential sub-lethal and lethal effects of temperatures on aquatic organisms due to daily or weekly changes. The water quality analyses that use the weekly time-step information from CALSIM II would not capture this shorter timeframe impacts. The shorter timestep for habitat modeling such as weekly would be more appropriate.

20. **Sacramento River Temperature Effects.** The assumption that a multi-level outlet structure to manage releases water temperatures to match those of the Sacramento River needs to be evaluated and appropriate information presented. The Sites Reservoir will be a relatively shallow and large surface area impoundment that may not provide the stratification and resulting cold water pool necessary to effectively manage water temperature releases to preserve cold water fishes. Modeling of reservoir water volume and thermal dynamics, using information from similar reservoirs, should be conducted, and potential impacts on attaining the objective of releasing the same water temperature as the Sacramento River disclosed. Incorporation of operations procedures using the multi-level outlet should be presented and an evaluation of how these procedures, using anticipated volumes of cold-water storage and release patterns, is needed to evaluate the effectiveness of this component of the proposed action. Additionally, an explanation and modeling data of how Sites Project operations will be incorporated CVP and SWP operations in meeting temperature objectives should be presented.

21. **Impacts to Floodplain Habitat.** Sites Project operations will reduce flows in the Sacramento River and may impact the timing and duration that fish have to high quality habitat in the Yolo

and Sutter bypasses. An annual time-series analyses of flow impacts on access to, duration of connectivity and extent of habitat availability of these floodplain habitats is needed.

22. **Evaluation of Fishery Impacts Lacking.** Fishery resources in the Sacramento-San Joaquin and Klamath-Trinity Basins contribute to significant tribal, commercial, and recreational fisheries within these river systems and along the coasts of California and Oregon. An evaluation of the cultural, social and economic impacts on these fisheries must be included in the document to fully disclose potential impacts. There is no supporting documentation on how the fishery impact information presented in the DEIS/EIR were derived and many statements pertaining to fishery impacts are unsupported. There is no information concerning the potential impacts on spring and fall Chinook salmon, Coho salmon, and steelhead populations in the Klamath-Trinity. The DEIR/EIS should evaluate how alternatives would impact different runs and species as well as the fisheries that depend on these resources, including impacts on port facilities, marinas, bait shops, motels, and restaurants that benefit from these fisheries.
23. **Water Quality – Toxic Metals.** Potential significant water quality issues pertaining to toxic metals are not evaluated in the DEIS/EIR. Although data are limited, the source water for the Sites Reservoir (Sacramento River, Funks and Stone Corral creeks) indicate high levels of many metals that exceed water quality standards. In addition to the high concentrations of metals present in streams inundated by the project, additional leaching from soils under the reservoir, known for high concentrations of mercury, will occur when these soils are inundated. The impacts of toxic metals on water quality in the reservoir and impacts to the Sacramento River water quality from Sites Project release needs to be analyzed. Additionally, the potential impacts to the reservoir fishery due to chronic toxicity/mortality and public health/fish consumption concerns needs to be evaluated.
24. **Methylmercury.** Many impoundments near the proposed Sites Project (Black Butte, Colusa Drain, Indian Valley Stony Gorge) have fish advisories due to elevated mercury levels. There is a potential for methylmercury creation and subsequent bioaccumulation in fish resulting from the implementation of the Sites and this should be modeled, evaluated and any potential mitigation measures proposed.
25. **Noxious Algal Blooms.** Blue-green algal are common in shallow reservoirs in California near the proposed Sites Project as well as downstream in the Delta. The potential for noxious algal blooms should be evaluated under the proposed operation plan and potential mitigation measures to minimize algal blooms and minimize public health issues should be proposed.
26. **Water Quality – Salinity.** Sites Reservoir will inundate areas where known saline springs exist. The impact of these salt springs on the water quality of the reservoir and the releases into the Sacramento needs to be evaluated.

27. **Geomorphology.** The problematic geomorphic analyses (errors/inconsistencies in data presented on geomorphic impacts, inappropriate citations, apparent analyses of alternatives that are different than the proposed alternatives) requires reanalysis of the potential geomorphic impacts. Increases in sediment entrainment of 55% in the Tehama-Colusa Canal and 46% in the Glenn-Colusa Canal suggest that there are significant undisclosed geomorphic impacts which could affect riverine and riparian habitats adjacent to these canal intakes.
28. **Entrainment Losses of Native Fish.** The amount of water available to be pumped through the Federal and State pumping facilities will be increased with the Sites Project. The potential impacts to larval and juvenile fishes (salmonids, Delta smelt, white and green sturgeon, Pacific Lamprey, and other native species) should be evaluated. This evaluation should not just estimate losses of entrainment as was done in the draft EIS/EIR but also estimated losses in southern delta channel prior to fish reaching the screening facilities. The mitigation actions to address the potentially significant impacts of impingement, entrainment and stranding are not sufficiently defined to ensure that impacts are minimized. These mitigation actions need to be developed with appropriate performance criteria so the effectiveness of these actions can be assessed.
29. **Fish Screens.** Effectiveness of fish screens and fish mortality associated with entrainment into the Sites Project or impinged on screens should be evaluated. With the majority of the diversions occurring during the winter and spring, impacts to larval and small juvenile fishes migrating past the Sites Project can be significant.
30. **Impacts on Funks and Stone Corral creeks.** Impacts to the instream habitats and dependent fish populations in Funks and Stone Corral creeks are not evaluated. No justification for the instream flows of “up to 10 cfs” in these creeks is provided. The method for establishing this flow level should be provided. An evaluation of how these flow levels will impact physical processes necessary to maintain stream habitats and impacts to aquatic habitats and fish populations should be included.
31. **Reservoir Fishery Impacts from Pumping Plant Operation:** Since a recreational fishery is an anticipated benefit of the Project, the potential impacts of the pumping/power generation between the reservoirs should be evaluated in the context of the sustainability of a recreational fishery. Stating that a fishery impact analysis was not conducted because no reservoir exists is not sufficient. Mitigation measures to minimize pumping/power generation impacts to recreational fisheries such as screening or timing of operations should be proposed.
32. **Recreation.** The presentation of potential recreation benefits of the Sites Project presented in the DEIS/EIR is insufficient. Only boat ramp accessibility is evaluated, presumably to inform fishing/boating use, but no information on other recreational activities (swimming, bird watching, camping, hunting, etc.) are provided. Additionally, the potential for the development of a reservoir fishery should include a fish management plan. While the development of a

warm-water reservoir fishery may be a recreational benefit, the potential impact of increased non-native predators on native fish populations needs to be evaluated.

33. **Wildlife Mitigation Actions.** Future agreements with other public or private entities for mitigation actions to address significant wildlife and terrestrial habitat impacts are not acceptable because there is no guarantee these actions will be implemented. Mitigation actions should be feasible and the agency needs to commit to ensuring these actions are fully implemented to reduce project impacts to less than significant prior to project approval.
34. **Need for a Natural Community Conservation Plan (NCCP).** A plan for the development and implementation of a NCCP must be included because the Sites Project affect several species that may occur in the Sites Project area.
35. **Nesting Birds.** Sites Project activities must be implemented in a manner that eliminates disturbance to the nests/nesting birds protected under the Migratory Bird Treaty and Fish and Game Code. Depending on the species, the disturbance distance of activities may be variable and, if established buffer distances are found to be ineffective at minimizing disturbance through monitoring of nests, the buffer must be increased to eliminate the disturbance.
36. **Giant Garter Snake.** The Giant Garter Snake, a CESA protected species, may occur in the areas within the Sites Project and the Project would negatively alter giant garter snake habitats resulting in significant impacts to this species. Implementable and enforceable actions must be included to address these significant impacts and appropriate CESA permits obtained.
37. **Botanical Surveys.** Information contained in the DEIS/EIR is insufficient to determine the impacts on botanical resources within the Sites Project area. Botanical surveys must be redone, data included in the DEIS/EIR are from the late 1990's and early 2000's, and must include all areas affected by the project. Accepted scientific protocols should be used to conduct these surveys.
38. **Botanical Resources Mitigation.** Using information from updated botanical surveys, implementable actions, with the commitment to fully implement them until they effectively mitigate for project impacts, need to be include in the document. These actions must include sufficient detail to allow for determination of their feasibility and likelihood for success.



January 21, 2019

Mr. Noah Oppenheim, Pacific Coast Federation of Fishermen's Association (PCFFA)
Mr. Thomas Stokely, Save California Salmon

Subject: Review of Draft Environmental Impact Report/Statement
Sites Reservoir Project

Dear Mr. Oppenheim and Mr. Stokely:

I have reviewed the Draft Environmental Impact Report/Draft Environmental Impact Statement (DEIR/S) for the Sites Reservoir (Sites) Project located in Glenn and Colusa Counties, California. The focus of my review was to evaluate if the Sites Project and associated Trinity River Division (TRD) of the Central Valley Project (CVP) operations would potentially impact the hydrology and water quality of the Trinity River. I am familiar with how TRD operations affect water temperatures as I have completed numerous water temperature modeling studies related to alternative operations of Trinity and Lewiston reservoirs with a focus on effects on downstream temperatures in the Trinity River. These studies were completed from 1997 through 2004. A copy of my resume is attached.

The DEIR/S indicates that the project poses less than significant impacts on the water quality to the Trinity River downstream of Trinity and Lewiston reservoirs. However, based on my review and analysis of the DEIR/S and other available information, I have identified a number of notable deficiencies in the water quality assessment that fail to identify and correctly analyze revised water operation impacts on Trinity River water quality (temperature) and, in turn, biological resources. Therefore, it is my opinion that the information presented in the DEIR/S is inadequate in evaluating potential adverse impacts to the water quality of the Trinity River. Nor does it propose mitigation measures for reasonably foreseeable adverse impacts to water quality and aquatic resources of the Trinity River. A discussion of the identified deficiencies is provided below.

1. Foreseeable Impacts to Trinity River Associated with Sites Project Operations

Based on my knowledge and experience in analyzing water temperature conditions of the TRD of the CVP, it is my opinion that the revised TRD water operations associated with the Sites Project will lead to increased water temperatures in Lewiston Reservoir and releases to the Trinity River. Any increase in the temperature of water released to the Trinity River would degrade water quality conditions and increase the potential for violations of North Coast Basin Plan¹ water quality (temperature) objectives as well as the water temperature objectives

¹ "Water Quality Control Plan for the North Coast Region" Footnote 5, Table 3-1, page 3-8.00:

Accessed at http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/083105-bp/04_water_quality_objectives.pdf

established under the Trinity River Record of Decision (USDOI 2000) to protect outmigrating juvenile salmonids².

I reached this conclusion through analysis of water resources system modeling results provided in Appendix 6B of the DEIR/S. Tables 1 through 3 are taken from Appendix 6B and present Trinity Reservoir storage, Trinity River flow and Clear Creek Tunnel diversion modeling results for both the Sites Project No Action Alternative and Alternative D under a variety of water year types. Table 1 presents a comparison of end of month (EOM) storage in Trinity Reservoir. The DEIR/S suggests incorrectly that the small differences between the No Action Alternative and Alternative D are not significant per the following statement (page 6-36).

The CALSIM II model monthly simulation of real-time daily (or even hourly) operation of the CVP and SWP results in several limitations in use of the CALSIM II model results. The model results must be used in a comparative manner to reduce the effects of use of monthly assumptions and other assumptions that are indicative of real-time operations, but do not specifically match real-time observations. Given the CALSIM II model uses a monthly time step, incremental flow and storage changes of 5 percent or less are generally considered within the standard range of uncertainty associated with model processing, and as such flow changes of 5 percent or less were considered to be similar to Existing Conditions/No Project/No Action flow levels in the comparative analyses using CALSIM II conducted in this EIR/EIS.

Table 2 presents the monthly average releases to the Trinity River from Lewiston Reservoir. Apart from the 8.9% decline during December of Wet years, 8.6% to 31.2% decline in flows during February and March of Above Average water year-types, and the 24.2% drop during February of the Below Average water year-type, there are no reductions in flow under Alternative D that are considered significant in the DEIR/S.

Table 3 presents the changes in flow through the Clear Creek Tunnel, which represent diversions from Lewiston Reservoir (via the Carr power plant) to the Sacramento River and potentially Sites Reservoir. A general pattern seen in the these data is a shift in operations under the Project Alternative that increase the rate of diversions through the winter months (December-March) and reduce diversion rates through the summer/fall months (July-November) during dry and critically dry year types. I assume this change in operations is intended to provide more water to the Sacramento River during the winter to enhance

Daily Average Not to Exceed	Period	River Reach
60°F	July 1- Sept 15	Lewiston to Douglas City Bridge
56°F	Sept 15-Oct 1	Lewiston to Douglas City Bridge
56°F	Oct 1- Dec 31	Lewiston to North Fork Confluence

² Trinity River Outmigrant Juvenile Salmonid objectives at Weitchpec (Trinity River Flow Evaluation (USFWS and HVT 1999) accessed at <http://www.trrp.net/library/document/?id=226>

Normal, Wet and Extremely Wet	April 1-May 22	<13.0 C (<55.4 F)
	May 23-June 4	<15.0 C (<59.0 F)
	June 5-July 9	<17.0 C (<62.6 F)
Dry and Critically Dry	April 1-May 22	<15.0 C (<59.0 F)
	May 23-June 4	<17.0 C (<62.6 F)
	June 5-July 9	<20.0 C (<68.0 F)

the opportunity for diversion to Sites Reservoir. However, this change in operations would have a significant negative effect on the water temperatures in Lewiston Reservoir as well as the temperature of releases to the Trinity River.

Table 4 was developed in order to compare the total average flow through Lewiston Reservoir under the Sites Project No Action Alternative and Alternative D operations. The total flow through Lewiston Reservoir was computed by summing the average monthly flow values of releases to the Trinity River (Table 1) and flow through Clear Creek Tunnel (Table 3).

Due to its geometry and operations of the TRD, water temperatures in Lewiston Reservoir are highly variable. During the summer when there are relatively low and constant releases to the Trinity River and Carr power plant diversions are at capacity, the rate of flow through Lewiston Reservoir is sufficient to displace its entire volume in about 2.5 days and water temperatures remain relatively cool (Brown et al., 1992)³. On the other hand, when the Carr power plant is not operating, flow through Lewiston Reservoir stagnates and thermal stratification develops within days, typically leading to the warming of summer surface waters to between 60 and 70 F (15.6 and 21.1 C) (Ibid).

Modeling that I have completed suggests that total flow rates through Lewiston Reservoir (i.e. the sum of Carr power plant diversions and river releases) should be between approximately 800 cubic feet per second (cfs) during the late summer/early fall months of normal year-types and up to 1900 cfs during the summer/fall months of critically dry year-types in order to comply with downstream temperature objectives (Kamman, 1999a)⁴. The maximum late summer/early fall daily releases for releases to the Trinity River under the Trinity ROD range from 300 to 450 cfs. Thus, Carr power plant diversions (i.e., flow through Clear Creek Tunnel) would need to be maintained between 1450 and 1600 cfs to meet summer/early fall temperature needs during normal and critically dry years, respectively.

Based on this information, it can be inferred that any decrease on total flow through Lewiston Reservoir during the summer/fall period would lead to increased temperatures in water released to the Trinity River as well as that diverted via the Carr power plant and Clear Creek Tunnel. Comparison of total flow rates through Lewiston Reservoir for Alternative D (Table 4) indicates significant reductions during most summer/fall months of the representative dry and critically dry year-types. Most notable are the reductions in flow and likely reservoir heating during the month of October, where flow through Lewiston Reservoir is reduced by 165% and 56% during dry and critically dry year-types, respectively, a time when meeting downstream temperature objectives is already compromised (Kamman, 1999b)⁵.

Evaluation of average monthly temperature results for releases to the Trinity River presented in Appendix 7E (River Temperature Modeling) of the DEIR/S do not corroborate the anticipated increase in Lewiston Reservoir temperatures. Table 5 presents the DEIR/S temperature modeling results and

³ Brown, R., Yates, G., and Field, J. (1992) "Temperature Modeling of Lewiston Lake with the BETTER two-dimensional reservoir flow mixing and heat exchange model." *Rep.*, Department of Transportation and Planning, Trinity County, Weaverville, CA.

⁴ Kamman, G.R., 1999a, Temperature Analysis of Proposed Trinity River Fish and Wildlife Restoration Flow Alternatives using the BETTER Model: Prepared for: Trinity County Planning Department, June, 80p.

⁵ Kamman, G.R., 1999b, Addendum to Temperature Analysis of Proposed Trinity River Fish and Wildlife Restoration Flow Alternatives using the BETTER Model: Cumulative Effects. Prepared for: Trinity County Planning Department, September, 7p.

suggests (contrary to the discussion above) that water temperatures in Lewiston Reservoir (i.e., temperature of releases to Trinity River) would decrease as total flow through the reservoir decreases. In fact, the temperature decreases are most pronounced during some dry and critically dry months of greatest reduction in flow rates through Lewiston Reservoir, when water temperatures would be increasing. This leads me to call into question the validity of the temperature model analysis of TRD operations presented in the DEIR/S.

More important is that the proposed change in TRD operations by the Sites Project directly conflicts with and reverses intended operations stipulated in the Secretary of Interior's 2000 Record of Decision (ROD) for the Trinity River Mainstem Fishery Restoration project. As you are aware, the modeling and temperature analysis work I completed for Trinity County back in the late 1990's contributed significantly to development of the instream flow and Carr power plant and Clear Creek Tunnel diversion schedules for the Trinity Preferred Alternative in order to better meet downstream temperature objectives. This work was accomplished through lengthy and focused analyses and meetings with project stakeholders and resulted in final preferred alternative operations with increased late summer CVP diversions to the Sacramento River. Acknowledging that even the river releases and temperatures from Lewiston Reservoir associated with the Preferred Alternative may not satisfy downstream temperature objectives, the Trinity Project ROD stipulates the following (page 20): "*Under the Preferred Alternative, the TRD would be operated to release additional water to the Trinity River, and the timing of exports to the Central Valley would be shifted to later in the summer to help meet Trinity River instream temperature requirements*". By proposing to reduce late summer CVP diversions to the Sacramento River, the Sites Project creates a foreseeable potential impact on Trinity River water quality by reversing the very operations associated with the Trinity River ROD that are intended to satisfy downstream water temperatures objectives and protect instream beneficial uses, particularly for salmon and steelhead.

This potential shift in TRD operations is concerning due to the fact that there are frequent exceedances of water temperature objectives under the current TRD ROD operations and flows. Recent studies completed by the U.S. Fish and Wildlife Service⁶ provide data on how the TRD operations and ROD flows comply with downstream Basin Plan and Restoration Project temperature objectives. Appendix A from David and Goodman (2017), presented below, summarizes the exceedances to the Basin Plan (DGC and NFH locations) and Trinity River Restoration Project (TRWEI location) temperature objectives for the period 2001 through 2016.

⁶ David, A.T. and Goodman, D.H., 2017, Performance of water temperature management on the Klamath and Trinity Rivers, 2016. U.S. Fish and Wildlife Service, Arcata Fisheries Technical Report TR 2017-29, November, 72p; and Polos, J. 2016. Adult salmon water temperature targets. Trinity River Restoration Program Performance Measure. Trinity River Restoration Program.

Appendix A. Number of days exceeding numeric water temperature objectives for the three specified locations on the Trinity River, 2001-2016. DGC = Trinity at Douglas City, NFH = Trinity above the North Fork Trinity, TRWE1 = Trinity above the Klamath

Year	Objective locations			Forecast water year type	Actual water year type
	DGC	NFH	TRWE1		
2001	--	--	33 ^a	Dry	Dry
2002	0	--	54	Normal	Normal
2003	11	--	34	Wet	Wet
2004	0	--	43	Wet	Wet
2005	--	1	21 ^b	Normal	Wet
2006	6	0	18	Ex. Wet	Ex. Wet
2007	3	0	19	Dry	Dry
2008	1	4	0	Normal	Dry
2009	31	2	21	Dry	Dry
2010	6	7	10	Normal	Wet
2011	0	0	7	Wet	Wet
2012	0	1	25	Normal	Normal
2013	0	0	26	Dry	Dry
2014	18	15	53	Crit. Dry	Crit. Dry
2015	--	18	65	Dry	Dry
2016	14	3	52	Wet	Wet

^aData unavailable prior to 5/3 for TRWE1 in 2001. We assumed mean daily temperatures did not reach or exceed 15.0 C before this date.

^bData unavailable prior to 4/4 for TRWE1 in 2005. We assumed mean daily temperatures did not reach or exceed 13.0 C before this date.

These exceedances occur during all water year types, but with highest frequency during dry and critically dry year types. Of note in this Appendix are the high number of exceedances during the wet water year 2016. As reported by David and Goodman, the exceedances during 2016 are, in part, due to depletion of the cool water pool (carry-over storage) during the preceding 3-year drought period (2013-2015).

2. Foreseeable Impacts to Trinity River Associated with Trinity Lake Carryover Storage

Ordinarily in late summer, water temperatures in Trinity Reservoir are well stratified, displaying a layer of warm water above a deeper pool of much colder water. During this time, releases from Trinity Reservoir to Lewiston Reservoir occur through a submerged powerhouse outlet. If the reservoir is drawn down to a relatively low level, the upper warm layer may intersect the powerhouse outlet, releasing warm water to Lewiston Reservoir. In turn, these warm temperatures are propagated through Lewiston Reservoir to the Trinity River. As presented below, a number of studies have been completed to quantify the minimum October 1st carryover storage volume that is needed to protect against the introduction of warm summer water releases during various water year types and droughts.

In 1998, Trinity County retained KHE to evaluate how an intense multi-year drought would affect carryover storage in Trinity Reservoir (Kamman, 1998)⁷. The study approach included an

⁷ Kamman, G.R., 1998, Carryover Storage Analysis – Simulated (1928-1934) period. Prepared for: Trinity County Planning Department, May 22, 3p

interannual accounting of Trinity Reservoir storage during a series of representative water year-types similar to those experienced during the 1928-1934 drought.⁸ Water releases from Trinity Lake were based on the water year type for Trinity Division operations⁹ under the ROD Flows. A series of interannual Trinity Reservoir water budgets were developed with initial carryover storage volumes ranging from 750- to 2000-TAF.

Study results (Kamman, 1998) indicate that under CVP operations to meet ROD Flows, there is a net annual increase in Trinity Reservoir storage during normal (1928) year-types, but decrease during dry (-17.5 TAF) and critically dry (-341 TAF) year-types. Thus, when starting with 750 TAF of storage, Trinity Reservoir storage would have dropped below 200 TAF after the third year of the drought, primarily driven by storage reductions experienced during critically dry years. Study results also indicate that a starting storage volume of 1250 TAF is required to maintain a minimum carryover storage of 600 TAF through the drought. However, modeling results (Kamman, 1999a and 1999b) indicate that even 600 TAF of carryover storage does not fully achieve compliance with temperature objectives during dry and critically dry year types. This study suggests that a minimum carryover storage volume of between 1250- and 1500-TAF during the first year of drought is likely required in order to provide the necessary water release temperatures to the Trinity River to meet downstream temperature objectives during subsequent years.

In addition to the work cited above, I am aware of other studies focused on identifying the minimum Trinity Reservoir carryover storage to provide the necessary cold water releases to satisfy river temperature objectives. In their 1992 testimony to the State Water Board, Finnerty and Hecht (1992)¹⁰ concluded that Trinity Reservoir carryover storage of 900 TAF or slightly more may be needed to meet downstream temperature objectives during 90% of all years. Their conclusion was based on analysis of hydrology, reservoir operations and temperatures for 1991, a single critically dry year-type. The second study, completed by Deas in 1998¹¹ on behalf of Trinity County, included water temperature simulations of Trinity Reservoir using the Water Temperature Simulation Model (WTSM). Deas evaluated temperature compliance under 1990 dry year-type conditions assuming initial reservoir storage volumes of 750-, 1250- and 1500-TAF. Model simulation results indicated elevated water temperatures at the powerhouse intake elevation for the 750 TAF carryover storage scenario and minimal to no temperature concerns at initial carryover storage volumes of 1250- and 1500-TAF, respectively. Deas' findings of elevated temperatures associated with 750 TAF of carryover storage are corroborated in the 2012 report by Reclamation¹², which found that a September 30 carryover storage requirement of less than 750 TAF is "problematic" in meeting state and federal Trinity River temperature objectives

⁸ The interannual water budget accounting started in 1928, a normal water year type.

⁹ It is likely that CVP operations would change during drought periods. However, we did not have the knowledge or expertise to define such changes. Thus, the analysis used operations consistent with the earlier PROSIM simulations.

¹⁰ Hecht, B. and Finnerty, A.A., 1992, Testimony to the State Water Resources Control Board regarding Carryover Storage in Trinity and Lewiston Reservoirs to Protect Public-interest Resources. State Water Resources Control Board Water Right Phase of the Bay-Delta Estuary Proceedings, June 26, 7p.

¹¹ Deas, M.L., 1998, Trinity Reservoir Carryover Analysis. Prepared for: Trinity County Planning Department, Natural Resources Division, August, 26p.

¹² U.S. Department of Interior, Bureau of Reclamation, 2012, Trinity Reservoir Carryover Storage Cold Water Pool Sensitivity Analysis – Technical Service Center (TSC) Technical Memorandum No. 86-68220-12-06. August 20, 7p.

protective of the fishery.

The Sites Project water operation and temperature analyses assume a minimum Trinity Reservoir carryover storage volume of 600TAF. The study findings presented above indicate that initial October 1 carryover storage volumes of 600- and 750-TAF are not sufficient to satisfy Trinity River temperature objectives for a single dry/critically dry water year-type, let alone multi-year droughts. Thus, it is reasonable to foresee that current implementation of the ROD Flows without sufficient carryover storage will not achieve Trinity River temperature objectives during critically dry year-types. Modeling results indicate that critically dry water year-types deplete reservoir carryover storage volumes at much higher rates than occurs during dry years. Whether dealing with dry or critically dry year-types, reservoir storage has no chance of being replenished during multi-year droughts under the current and proposed Sites Project CVP operations.

As determined by Finnerty and Hecht, a minimum baseline carryover storage volume of 900 TAF is required to meet Basin Plan temperature objectives on the Trinity River during a single dry year. Studies by Deas and Kamman suggest this baseline carryover storage volume is likely higher for critically dry year-types. Significantly higher carryover storage volumes over the baseline value are required to preserve the necessary reservoir cool water pool during multi-year drought periods, in order to achieve temperature objectives. Modeling studies suggest first year drought carryover storage volumes of around 1750 TAF are sufficient to maintain adequate carryover storage to meet temperature objectives during multi-year droughts. Thus, a single minimum carryover storage volume cannot be developed without revising CVP operations that focus on preserving Trinity Reservoir carryover storage, most likely by reducing water that is diverted out of the Trinity River basin.

The Sites Project DEIR/S presents the results of their modeling analyses as monthly average values of flow, storage and water temperature for multiple years within designated water-year type classifications. This presentation masks the impacts from a single extreme dry year as well as repeated impacts associated with a continuous multi-year drought. These are the periods of greatest concern and potential damage to aquatic resources, but they are not identified or described in the DEIR/S. Prior to 2016, the USGS¹³ developed a water temperature model that accurately simulates daily mean water temperature along the course of the Trinity River, from Lewiston Dam to the Klamath River confluence. This model would be a more appropriate tool to evaluate how changes in TRD water operations associated with the Sites Project would satisfy water temperature objectives in the Trinity River.

3. Inaccurate Existing (Baseline) TRD Water Operations

The water operations analysis for Sites Project EIR/S did not include an analysis considering use of Humboldt County's 50 thousand acre feet (TAF) water contract included as a provision of the Trinity River Division Act. The following is an excerpt from the Statutory Authority Appendix contained in the DEIS for the Long-Term Plan to Protect Adult Salmon in the Lower Klamath River (Lower Klamath LTP)¹⁴ describing Humboldt County's 50 TAF water contract.

¹³ Jones, E.C., Perry, R.W., Risley, J.C., Som, N.A. and Hetrick, N.J., 2016, Construction, calibration and validation of the RBM10 water temperature model for the Trinity River, Northern California. U.S. Department of Interior, U.S. Geological Survey, Open-File Report 2016-1056, prepared in cooperation with the U.S. Fish and Wildlife Service and the Bureau of Reclamation, 56p.

¹⁴ U.S. Department of Interior, Bureau of Reclamation, 2016, Long-Term Plan to Protect Adult Salmon in the Lower Klamath River, Humboldt County, California Draft Environmental Impact Statement, October.

Construction of the Trinity River Division (TRD) of the Central Valley Project (CVP) was authorized by the Act of August 12, 1955 (Public Law 84-386) (TRD Act). In section 2 of the 1955 TRD Act, Congress directed that the operation of the TRD should be integrated and coordinated with the operation of the CVP, subject to two conditions set forth as distinct Provisos in section 2 of that Act. The first of these two Provisos states that the Secretary of the Interior is authorized and directed to “adopt appropriate measures to insure the preservation and propagation of fish and wildlife” including certain minimum flows in the Trinity River deemed at the time as necessary to maintain the fishery. The second Proviso directs that not less than 50,000 acre-feet of water shall be released and made available to Humboldt County and other downstream users¹⁵.

The recently released Solicitor’s Opinion, M-37030, concludes that each of the two Provisos in section 2 of the TRD Act are “separate and independent limitations on the TRD’s integration with, and thus diversion of water to, the CVP” and that the two Provisos may “require separate releases of water as requested by Humboldt County and potentially other downstream users pursuant to Proviso 2 and a 1959 Contract between the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) and Humboldt County.”¹⁶ M- Opinion 37030 at 2. Formal 18 opinions of the Solicitor are binding on the Department of the Interior and its bureaus.

Chapter 6 and Appendix 6A of the Sites Project DEIR/S state that the project water operations modeling analyses adhered to 2000 Trinity River ROD releases to the Trinity River downstream of Lewiston Reservoir to meet instream flow requirements. The DEIR/S states, “The total volume of water released to the Trinity River ranges from approximately 368,600 AF in critically dry years to 815,000 AF in extremely wet years, depending on the annual water-year type (hydrology) determined as of April 1st (DOI, 2000). Table 6-2 shows the annual volumes, peak flows, and peak flow duration by water type.” Table 6-2 from the DEIR/S is presented below. However, there is no mention of Humboldt County’s 50 TAF annual water contract being integrated into the DEIR/S water resources system modeling and analysis. It is not possible to compare total annual modeled Trinity River releases from the DEIR/S (Table 2, attached) to the annual Trinity River ROD flow volumes (Table 6.2 below) as they represent different water year type classification schemes¹⁷. The USFWS report by David and Goodman (2017) indicates how the Humboldt County 50 TAF water contract has been especially important for flow augmentation during dry years to meet flow and temperature targets in the lower Klamath River to reduce the probability of an adult fish kill. The omission of the Humboldt County 50 TAF contract in the DEIR/S analyses could have significant effects on the water quality conditions and potential impacts

¹⁵ Reclamation’s water permits from the State of California includes the following condition: “Permittee shall release sufficient water from Trinity and/or Lewiston Reservoirs into the Trinity River so that not less than an annual quantity of 50,000 acre-feet will be available for the beneficial use of Humboldt County and other downstream users.” Condition 9

¹⁶ The 1959 water delivery contract between Reclamation and Humboldt County includes the following: “The United States agrees to release sufficient water from Trinity and/or Lewiston Reservoirs into the Trinity River so that not less than an annual quantity of 50,000 acre-feet will be available for the beneficial use of Humboldt County and other downstream users.” Contract, Article 8.

¹⁷ The water year types included in the Trinity ROD are probability-based and classified by ranges of annual upper Trinity River Basin water year runoff. This classification is different from the water year types presented in all other tables in Appendix 6B of the DEIR/S, which are based on the historical record of WY1922 through WY2003 and defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 2000).

to both the Trinity and Sacramento Rivers. Therefore, the DEIR/S should be considered incomplete in the analysis of the effects of the Site Project operations on the Trinity River.

**Table 6-2
Trinity River Record of Decision
Annual Flow Volumes and Peak Flows**

Water Year Type	Volume (AF)	Peak Flow (cfs)	Peak Flow Duration (days)
Extremely Wet	815,000	11,000	5
Wet	701,000	8,500	5
Normal	647,000	6,000	5
Dry	453,000	4,500	5
Critically Dry	369,000	1,500	36

Notes:
cfs = cubic feet per second
Source: DOI, 2000.

4. Incomplete Cumulative Impact Assessment

In addition to the omission of the Humboldt County 50 TAF water delivery contract on the Trinity River, the Sites Project DEIR/S fails to consider and incorporate the Lower Klamath LTP operations into the water resources system modeling analyses. Under CEQA, a cumulative impact assessment must consider development projects within the cumulative study area, which includes past projects, projects under construction and approved, and pending projects that are anticipated to be either under construction or operational by the time of the completion of the proposed project. The Sites DEIR/S states the following (pg. 6A-2, Appendix 6A).

The Existing Conditions/No Project/No Action Condition simulation was developed assuming Year 2030 level of development and regulatory conditions. The Existing Conditions/No Project/No Action Condition assumptions include existing facilities and ongoing programs that existed as of March 2017 (publication of the Notice of Preparation) that could affect or could be affected by implementation of the alternatives. The Existing Conditions/No Project/No Action Condition assumptions and the models do not include any restoration actions or additional conveyance over the current conditions.

Although the ROD for the Lower Klamath LTP¹⁸ wasn't signed until April 2017, it was certainly a well-known and defined pending project and should have been incorporated into the baseline condition of the water resource system modeling analysis. Tables 6 through 8 provide average monthly storage and flow values for the TRD under the Lower Klamath LTP. Comparison of the Lower Klamath LTP Alternative 1 conditions presented in Table 6 through 8 to the Sites Project No Action Alternative conditions presented in Tables 1 through 3 indicate significant differences in project operations and hydrologic conditions when including the Lower Klamath LTP in the water resource impact assessment. For example, under the Lower Klamath LTP, diversions to

¹⁸ U.S. Department of the Interior, Bureau of Reclamation, 2017, Record of Decision for the Long Term Plan to Protect Adult Salmon in the Lower Klamath River, April, Accessed at https://www.usbr.gov/mp/nepa/includes/documentShow.php?Doc_ID=28314

the Sacramento River are reduced by an average of 13 TAF per year, while Sites DEIR has diversions increasing, on average, by 4 TAF per year. The main reason for this difference is the August and September Trinity River release rates: as a result of flow augmentations, the Lower Klamath LTP increases average releases to Trinity River by 20% and 42% (presumably using the Humboldt County 50TAF water) above No Action flows, respectively (see Table 7). Alternative D of the Sites Project maintains a constant 450 cfs baseline ROD flow during these months for all water year types. The Lower Klamath LTP introduces significant project operations, not included in the Sites Project DEIR/S analyses, which could have significant effects on the anticipated water supply available to the project as well as impacts to temperature on the Sacramento River. Because of this omission in the impact analysis, the Sites Project DEIR/S should be considered incomplete.

Another cumulative impact that is not evaluated in the Sites Project DEIR/S is the influence of climate change on the meteorology and hydrology of northern California rivers. The water temperature modeling of Alternatives completed as part of DEIR/S analyses uses historic meteorologic and hydrologic data and do not consider the predicted warmer future temperatures in the Trinity and Klamath River basins under climate change (USBR, 2011)¹⁹. Warmer air temperatures under climate change will result in warmer reservoir and river water temperatures. Anticipated changes to the timing and magnitude of spring snowmelt hydrograph and associated tributary accretion (flow and water temperature) are likely to increase river water temperatures, which will reduce the attainment of water temperature objectives on the Trinity River, especially those established for outmigrant juvenile salmonids. Thus, the DEIR/S fails to evaluate the cumulative impact of climate change conditions.

Please feel free to contact me with any questions regarding the material and conclusions contained in this letter.

Sincerely,



Greg Kamman, PG, CHG
Principal Hydrologist



¹⁹ U.S. Department of the Interior, Policy and Administration, Bureau of Reclamation, 2011, SECURE Water Act Section 9503(c) – Reclamation Climate Change and Water. April, 226p.

TABLE 1: Trinity Lake end of month storage. Source: Table SW-01-9a, Appendix 6B of Sites Project DEIR/S.

Table SW-02-9a Trinity Lake, End of Month Elevation Long-term Average and Average by Water Year Type												
Analysis Period	End of Month Elevation (FEET)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Long-term												
Full Simulation Period¹												
No Action Alternative	2,278	2,280	2,285	2,292	2,302	2,313	2,325	2,324	2,321	2,310	2,297	2,286
Alternative D	2,281	2,283	2,288	2,294	2,304	2,314	2,325	2,325	2,322	2,310	2,298	2,287
Difference	2	3	3	2	2	1	1	1	1	1	1	1
Percent Difference ³	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Water Year Types²												
Wet (32%)												
No Action Alternative	2,322	2,323	2,325	2,324	2,337	2,347	2,357	2,359	2,358	2,350	2,342	2,332
Alternative D	2,322	2,323	2,324	2,325	2,338	2,348	2,358	2,360	2,358	2,350	2,341	2,331
Difference	-1	0	0	1	1	1	0	0	0	0	-1	-1
Percent Difference	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Above Normal (15%)												
No Action Alternative	2,305	2,305	2,307	2,298	2,313	2,329	2,341	2,342	2,340	2,331	2,321	2,309
Alternative D	2,307	2,307	2,309	2,305	2,319	2,334	2,345	2,346	2,344	2,335	2,323	2,311
Difference	2	2	2	7	6	5	4	4	4	4	2	2
Percent Difference	0.1%	0.1%	0.1%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%	0.1%
Below Normal (17%)												
No Action Alternative	2,275	2,278	2,285	2,281	2,289	2,298	2,313	2,313	2,310	2,298	2,287	2,277
Alternative D	2,275	2,278	2,286	2,281	2,289	2,298	2,314	2,313	2,310	2,298	2,286	2,277
Difference	0	1	0	0	0	0	0	0	0	0	0	0
Percent Difference	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dry (22%)												
No Action Alternative	2,260	2,261	2,270	2,283	2,291	2,304	2,316	2,312	2,307	2,293	2,277	2,266
Alternative D	2,261	2,263	2,273	2,284	2,292	2,304	2,316	2,312	2,306	2,291	2,277	2,266
Difference	2	2	2	1	1	0	0	-1	-1	-1	0	0
Percent Difference	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%
Critical (15%)												
No Action Alternative	2,189	2,190	2,198	2,240	2,246	2,255	2,263	2,260	2,258	2,239	2,218	2,203
Alternative D	2,203	2,206	2,211	2,242	2,248	2,257	2,265	2,262	2,260	2,242	2,224	2,208
Difference	14	16	13	2	2	2	2	2	2	2	6	5
Percent Difference	0.6%	0.7%	0.6%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%	0.2%

¹ Based on the 82-year simulation period

² As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999)

³ Relative difference of the monthly average

TABLE 2: Monthly flow on Trinity River below Lewiston Reservoir. Source: Table SW-04-9a, Appendix 6B of Sites Project DEIR/S.

Table SW-04-9a Trinity River below Lewiston Reservoir, Monthly Flow Long-term Average and Average by Water Year Type												
Analysis Period	Monthly Flow (CFS)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Long-term												
Full Simulation Period¹												
No Action Alternative	368	360	522	655	645	575	554	3,779	2,091	923	450	450
Alternative D	373	360	498	638	621	570	561	3,779	2,091	923	450	450
Difference	5	-1	-24	-17	-24	-5	6	0	0	0	0	0
Percent Difference ³	1.2%	-0.2%	-4.6%	-2.6%	-3.7%	-0.9%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Water Year Types²												
Wet (32%)												
No Action Alternative	373	300	852	1,412	1,026	1,096	627	4,636	3,318	1,289	450	450
Alternative D	373	300	775	1,351	1,052	1,143	647	4,636	3,318	1,289	450	450
Difference	0	0	-76	-61	26	47	20	0	0	0	0	0
Percent Difference	0.0%	0.0%	-8.9%	-4.3%	2.5%	4.3%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Above Normal (15%)												
No Action Alternative	373	713	621	316	831	436	469	4,462	2,488	1,048	450	450
Alternative D	373	709	621	332	760	300	469	4,462	2,488	1,048	450	450
Difference	0	-5	0	16	-72	-136	0	0	0	0	0	0
Percent Difference	0.0%	-0.7%	0.0%	5.1%	-8.6%	-31.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Below Normal (17%)												
No Action Alternative	373	300	300	300	517	319	507	3,774	1,672	869	450	450
Alternative D	373	300	300	300	392	319	507	3,774	1,672	869	450	450
Difference	0	0	0	0	-125	0	0	0	0	0	0	0
Percent Difference	0.0%	0.0%	0.0%	0.0%	-24.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Dry (22%)												
No Action Alternative	373	300	300	300	300	300	529	3,216	1,251	667	450	450
Alternative D	373	300	300	300	300	300	529	3,216	1,251	667	450	450
Difference	0	0	0	0	0	0	0	0	0	0	0	0
Percent Difference	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Critical (15%)												
No Action Alternative	342	300	300	300	300	300	575	2,092	783	450	450	450
Alternative D	373	300	300	300	300	300	575	2,092	783	450	450	450
Difference	31	0	0	0	0	0	0	0	0	0	0	0
Percent Difference	9.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

¹ Based on the 82-year simulation period

² As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999)

³ Relative difference of the monthly average

TABLE 3: Monthly flow through Clear Creek Tunnel. Source: Table SW-05-9a, Appendix 6B of Sites Project DEIR/S.

Table SW-05-9a Clear Creek Tunnel, Monthly Flow Long-term Average and Average by Water Year Type												
Analysis Period	Monthly Flow (CFS)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Long-term												
Full Simulation Period ¹												
No Action Alternative	1,033	344	257	420	95	269	389	168	551	1,812	1,926	1,666
Alternative D	900	261	269	460	155	341	373	163	576	1,862	1,957	1,675
Difference	-133	-83	12	40	61	71	-16	-5	25	50	30	9
Percent Difference ³	-12.9%	-24.2%	4.7%	9.4%	64.2%	26.4%	-4.2%	-3.2%	4.6%	2.8%	1.6%	0.5%
Water Year Types ²												
Wet (32%)												
No Action Alternative	1,593	481	536	430	81	344	483	278	421	1,742	1,678	2,135
Alternative D	1,571	448	585	437	118	355	493	268	439	1,765	1,882	2,142
Difference	-22	-32	49	7	36	12	10	-10	18	23	204	6
Percent Difference	-1.4%	-6.7%	9.1%	1.6%		3.4%	2.0%	-3.5%	4.3%	1.3%	12.1%	0.3%
Above Normal (15%)												
No Action Alternative	964	437	304	269	58	302	588	0	167	1,417	1,875	1,958
Alternative D	1,088	340	237	269	71	468	564	21	166	1,500	2,313	1,875
Difference	124	-98	-67	0	12	166	-24	21	-1	83	438	-83
Percent Difference	12.9%	-22.4%	-22.1%	0.0%		54.9%	-4.1%		-0.5%	5.9%	23.3%	-4.3%
Below Normal (17%)												
No Action Alternative	429	186	65	295	80	384	265	61	660	1,538	1,796	1,361
Alternative D	433	68	96	334	212	406	171	61	660	1,698	1,714	1,342
Difference	4	-118	32	39	132	22	-94	0	0	161	-82	-18
Percent Difference	1.0%	-63.5%	48.6%	13.4%		5.8%	-35.3%	0.0%	0.0%	10.5%	-4.6%	-1.4%
Dry (22%)												
No Action Alternative	884	333	100	408	166	141	222	221	905	2,100	2,322	1,468
Alternative D	676	205	81	551	265	295	252	200	978	2,147	2,119	1,420
Difference	-209	-128	-20	143	99	154	29	-22	73	47	-203	-48
Percent Difference	-23.6%	-38.4%	-19.7%	35.2%	59.9%	109.4%	13.1%	-9.8%	8.1%	2.2%	-8.7%	-3.3%
Critical (15%)												
No Action Alternative	818	156	62	715	70	135	385	147	561	2,245	2,075	1,012
Alternative D	142	84	99	710	90	174	342	143	585	2,200	1,802	1,235
Difference	-676	-72	37	-5	21	39	-43	-4	25	-45	-272	222
Percent Difference	-82.6%	-46.2%		-0.8%		28.5%	-11.2%	-2.5%	4.4%	-2.0%	-13.1%	22.0%

¹ Based on the 82-year simulation period
² As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999)
³ Relative difference of the monthly average

TABLE 4: Estimated Monthly flow through Lewiston Reservoir.

<i>Flow through Lewiston Lake (cfs)</i>												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Full Simulation Period1												
No Action Alternative	1401	704	779	1075	740	844	943	3947	2642	2735	2376	2116
Alternative D	1273	621	767	1098	776	911	934	3942	2667	2785	2407	2125
Difference	(128)	(83)	(12)	23	36	67	(9)	(5)	25	50	31	9
Percent Difference	-9.1%	-11.8%	-1.5%	2.1%	4.9%	7.9%	-1.0%	-0.1%	0.9%	1.8%	1.3%	0.4%
Wet (32%)												
No Action Alternative	1966	781	1388	1842	1107	1440	1110	4914	3739	3031	2128	2585
Alternative D	1944	748	1360	1788	1170	1498	1140	4904	3757	3054	2332	2592
Difference	(22)	(33)	(28)	(54)	63	58	30	(10)	18	23	204	7
Percent Difference	-1.1%	-4.2%	-2.0%	-2.9%	5.7%	4.0%	2.7%	-0.2%	0.5%	0.8%	9.6%	0.3%
Above Normal (15%)												
No Action Alternative	1337	1150	925	585	889	738	1057	4462	2655	2465	2325	2408
Alternative D	1461	1049	858	601	831	768	1033	4483	2654	2548	2763	2325
Difference	124	(101)	(67)	16	(58)	30	(24)	21	(1)	83	438	(83)
Percent Difference	9.3%	-8.8%	-7.2%	2.7%	-6.5%	4.1%	-2.3%	0.5%	0.0%	3.4%	18.8%	-3.4%
Below Normal (17%)												
No Action Alternative	802	486	365	595	597	703	772	3835	2332	2407	2246	1811
Alternative D	806	368	396	634	604	725	678	3835	2332	2567	2164	1792
Difference	4	(118)	31	39	7	22	(94)	0	0	160	(82)	(19)
Percent Difference	0.5%	-24.3%	8.5%	6.6%	1.2%	3.1%	-12.2%	0.0%	0.0%	6.6%	-3.7%	-1.0%
Dry (22%)												
No Action Alternative	1257	633	400	708	466	441	751	3437	2156	2767	2772	1918
Alternative D	1049	505	381	851	565	595	781	3416	2229	2814	2569	1870
Difference	(208)	(128)	(19)	143	99	154	30	(21)	73	47	(203)	(48)
Percent Difference	-16.5%	-20.2%	-4.8%	20.2%	21.2%	34.9%	4.0%	-0.6%	3.4%	1.7%	-7.3%	-2.5%
Critical (15%)												
No Action Alternative	1160	456	362	1015	370	435	960	2239	1344	2695	2525	1462
Alternative D	515	384	399	1010	390	474	917	2235	1368	2650	2252	1685
Difference	(645)	(72)	37	(5)	20	39	(43)	(4)	24	(45)	(273)	223
Percent Difference	-55.6%	-15.8%	10.2%	-0.5%	5.4%	9.0%	-4.5%	-0.2%	1.8%	-1.7%	-10.8%	15.3%

TABLE 5: Monthly temperatures of Trinity River below Lewiston Dam. Source: Table SQ-33-9a, Appendix 7E of Sites Project DEIR/S.

Table SQ-33-9a Trinity River below Lewiston Dam, Monthly Temperature Long-term Average and Average by Water Year Type												
Analysis Period	Monthly Temperature (DEG-F)											
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Long-term												
Full Simulation Period ¹												
No Action Alternative	49.4	44.7	40.0	39.4	42.7	47.0	50.2	46.6	50.9	51.3	51.7	50.7
Alternative D	49.3	44.6	39.9	39.5	42.7	46.9	50.3	46.6	50.8	51.1	51.3	50.7
Difference	-0.1	-0.1	-0.1	0.2	0.0	-0.2	0.1	0.0	-0.1	-0.2	-0.4	0.1
Percent Difference ³	-0.2%	-0.2%	-0.2%	0.4%	0.0%	-0.4%	0.2%	-0.1%	-0.2%	-0.4%	-0.7%	0.1%
Water Year Types²												
Wet (32%)												
No Action Alternative	47.0	44.6	41.5	40.6	43.0	45.9	49.1	45.8	48.3	50.8	51.6	48.6
Alternative D	47.0	44.6	41.3	40.5	43.0	45.8	49.1	45.8	48.3	50.7	50.9	48.8
Difference	0.1	0.0	-0.1	-0.1	-0.1	-0.1	0.0	0.0	0.0	-0.2	-0.7	0.2
Percent Difference	0.1%	0.1%	-0.3%	-0.2%	-0.1%	-0.3%	-0.1%	0.0%	0.0%	-0.3%	-1.4%	0.4%
Above Normal (15%)												
No Action Alternative	48.2	43.3	40.2	38.6	42.6	47.3	49.9	45.9	50.6	51.6	50.9	48.8
Alternative D	47.7	43.2	39.8	38.8	42.6	47.2	50.0	45.9	50.5	51.2	49.6	49.4
Difference	-0.5	-0.1	-0.4	0.1	0.0	-0.1	0.1	-0.1	-0.1	-0.4	-1.3	0.6
Percent Difference	-1.1%	-0.2%	-1.1%	0.3%	0.0%	-0.2%	0.2%	-0.2%	-0.2%	-0.8%	-2.6%	1.3%
Below Normal (17%)												
No Action Alternative	50.2	44.7	39.0	38.7	41.9	46.8	51.1	46.4	51.3	52.0	52.0	51.3
Alternative D	50.2	44.7	39.1	38.8	41.9	46.7	51.6	46.5	51.3	51.6	52.2	51.5
Difference	0.0	0.0	0.2	0.1	0.0	-0.2	0.5	0.0	0.0	-0.3	0.1	0.2
Percent Difference	-0.1%	0.1%	0.4%	0.3%	0.0%	-0.4%	1.0%	0.1%	0.0%	-0.6%	0.3%	0.4%
Dry (22%)												
No Action Alternative	49.5	45.0	39.6	38.4	42.4	47.9	51.4	46.7	51.9	50.7	50.1	50.3
Alternative D	49.7	44.7	39.4	39.0	42.4	47.6	51.1	46.6	51.7	50.5	50.5	50.4
Difference	0.2	-0.2	-0.2	0.6	0.0	-0.4	-0.2	-0.1	-0.2	-0.3	0.4	0.1
Percent Difference	0.4%	-0.5%	-0.4%	1.5%	0.1%	-0.8%	-0.4%	-0.2%	-0.5%	-0.5%	0.8%	0.2%
Critical (15%)												
No Action Alternative	54.5	45.7	38.2	39.4	43.1	48.0	50.2	49.3	55.5	52.5	54.4	56.6
Alternative D	53.8	45.5	38.4	39.7	43.2	47.8	50.4	49.2	55.3	52.6	53.9	55.6
Difference	-0.7	-0.2	0.1	0.2	0.1	-0.2	0.2	-0.1	-0.2	0.1	-0.5	-1.0
Percent Difference	-1.3%	-0.5%	0.3%	0.6%	0.2%	-0.3%	0.4%	-0.2%	-0.3%	0.2%	-0.9%	-1.8%
¹ Based on the 82-year simulation period ² As defined by the Sacramento Valley 40-30-30 Index Water Year Hydrologic Classification (SWRCB D-1641, 1999) ³ Relative difference of the monthly average												

TABLE 6: Monthly Trinity Lake Storage. Source: Table 4-1, Lower Klamath LTP DEIS.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action (TAF)												
Extremely Wet	1,197	1,258	1,399	1,618	1,839	1,998	2,208	2,300	2,236	2,105	1,993	1,850
Wet	1,373	1,393	1,507	1,621	1,806	1,952	2,114	2,090	2,018	1,896	1,752	1,606
Normal	1,322	1,324	1,346	1,415	1,529	1,669	1,843	1,773	1,689	1,534	1,386	1,276
Dry	1,096	1,089	1,113	1,127	1,189	1,292	1,403	1,361	1,302	1,159	1,005	901
Critically Dry	1,051	1,016	1,014	988	1,012	1,068	1,087	1,048	985	836	676	598
Average All Years	1,233	1,242	1,306	1,385	1,511	1,637	1,779	1,755	1,686	1,548	1,403	1,283
Alternative 1 (TAF)												
Extremely Wet	1,170	1,236	1,377	1,597	1,821	1,981	2,191	2,285	2,221	2,090	1,979	1,839
Wet	1,362	1,382	1,497	1,613	1,798	1,946	2,107	2,083	2,011	1,890	1,743	1,595
Normal	1,319	1,321	1,343	1,415	1,528	1,669	1,842	1,772	1,689	1,536	1,387	1,266
Dry	1,092	1,085	1,109	1,123	1,184	1,288	1,399	1,357	1,298	1,148	992	881
Critically Dry	1,044	1,007	1,005	979	1,004	1,058	1,078	1,039	976	848	677	576
Average All Years	1,224	1,233	1,298	1,377	1,504	1,631	1,772	1,749	1,680	1,544	1,396	1,269
No Action compared to Alternative 1 (TAF)												
Extremely Wet	-27	-22	-22	-21	-17	-17	-17	-15	-15	-15	-15	-11
Wet	-11	-11	-10	-9	-8	-7	-7	-7	-6	-6	-8	-11
Normal	-3	-2	-3	0	0	0	0	0	0	3	1	-10
Dry	-4	-4	-4	-4	-4	-4	-4	-4	-4	-11	-13	-20
Critically Dry	-7	-9	-9	-9	-8	-9	-9	-9	-9	11	1	-22
Average All Years	-9	-9	-9	-8	-7	-6	-6	-6	-6	-5	-8	-14
No Action compared to Alternative 1 (%)												
Extremely Wet	-2%	-2%	-2%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%
Wet	-1%	-1%	-1%	-1%	0%	0%	0%	0%	0%	0%	0%	-1%
Normal	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%
Dry	0%	0%	0%	0%	0%	0%	0%	0%	0%	-1%	-1%	-2%
Critically Dry	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	-1%	1%	0%	-4%
Average All Years	-1%	-1%	-1%	-1%	0%	0%	0%	0%	0%	0%	-1%	-1%

Key:
TAF = thousand acre-feet

TABLE 7: Monthly flow on Trinity River below Lewiston Reservoir. Source: Table 4-3, Lower Klamath LTP DEIS.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action												
(cfs)												
Extremely Wet	373	796	930	1,264	1,525	2,458	1,042	4,570	4,626	1,241	450	450
Wet	373	300	1,023	1,175	915	510	481	4,687	2,862	1,102	450	450
Normal	373	300	300	300	385	302	477	4,189	2,120	1,102	450	450
Dry	337	286	300	300	300	300	543	2,848	847	481	450	450
Critically Dry	368	267	300	300	300	300	600	1,498	783	450	450	400
Average All Years	363	359	605	696	668	654	584	3,753	2,210	890	450	445
Alternative 1												
(cfs)												
Extremely Wet	373	719	930	1,248	1,455	2,458	1,042	4,570	4,626	1,241	460	477
Wet	373	300	1,024	1,151	910	505	481	4,687	2,862	1,102	503	533
Normal	373	300	300	300	358	302	477	4,189	2,120	1,102	508	632
Dry	337	286	300	300	300	300	543	2,848	847	481	574	725
Critically Dry	332	267	300	300	300	300	600	1,498	783	450	699	861
Average All Years	359	349	605	687	652	652	584	3,753	2,210	890	538	630
No Action compared to Alternative 1												
(cfs)												
Extremely Wet	0	-77	0	-16	-69	0	0	0	0	0	10	27
Wet	0	0	1	-24	-5	-5	0	0	0	0	53	83
Normal	0	0	0	0	-27	0	0	0	0	0	58	182
Dry	0	0	0	0	0	0	0	0	0	0	124	275
Critically Dry	-37	0	0	0	0	0	0	0	0	0	249	461
Average All Years	-4	-10	0	-9	-16	-2	0	0	0	0	88	185
No Action compared to Alternative 1												
(%)												
Extremely Wet	0%	-10%	0%	-1%	-5%	0%	0%	0%	0%	0%	2%	6%
Wet	0%	0%	0%	-2%	-1%	-1%	0%	0%	0%	0%	12%	18%
Normal	0%	0%	0%	0%	-7%	0%	0%	0%	0%	0%	13%	40%
Dry	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	28%	61%
Critically Dry	-10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	55%	115%
Average All Years	-1%	-3%	0%	-1%	-2%	0%	0%	0%	0%	0%	20%	42%

Key:

% = percent

cfs = cubic feet per second

TABLE 8: Monthly flow on Trinity River Diversion to Sacramento River at Lewiston Reservoir. Source: Table 4-3, Lower Klamath LTP DEIS.

Water Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
No Action (cfs)												
Extremely Wet	827	233	235	410	7	329	278	498	407	1,836	1,526	2,079
Wet	945	541	376	482	97	322	591	0	290	1,190	1,952	2,065
Normal	792	355	193	418	243	396	228	0	472	1,553	1,991	1,471
Dry	712	418	166	385	134	153	229	247	1,011	1,973	2,098	1,358
Critically Dry	598	609	132	748	168	157	426	378	736	2,028	2,178	949
Average All Years	802	439	241	464	131	276	367	172	575	1,640	1,965	1,648
Alternative 1 (cfs)												
Extremely Wet	766	234	233	410	7	329	278	465	407	1,836	1,513	1,984
Wet	904	551	355	482	100	303	586	0	290	1,181	1,937	2,025
Normal	767	344	196	378	270	396	228	0	469	1,510	1,957	1,471
Dry	636	415	162	387	134	152	229	247	1,008	2,092	2,009	1,196
Critically Dry	521	642	132	753	143	177	426	373	736	1,701	2,092	880
Average All Years	748	443	234	457	134	272	366	167	573	1,623	1,920	1,573
No Action compared to Alternative 1 (cfs)												
Extremely Wet	-61	1	-2	0	0	0	0	-33	0	0	-13	-95
Wet	-42	10	-21	0	3	-20	-5	0	0	-9	-14	-41
Normal	-25	-10	4	-40	27	0	0	0	-3	-43	-34	0
Dry	-75	-3	-4	2	0	-1	0	0	-3	119	-89	-163
Critically Dry	-77	32	0	5	-25	20	0	-4	0	-327	-86	-69
Average All Years	-53	4	-7	-7	3	-4	-2	-5	-2	-16	-45	-74
No Action compared to Alternative 1 (%)												
Extremely Wet	-7%	0%	-1%	0%	0%	0%	0%	-7%	0%	0%	-1%	-5%
Wet	-4%	2%	-6%	0%	3%	-6%	-1%	0%	0%	-1%	-1%	-2%
Normal	-3%	-3%	2%	-10%	11%	0%	0%	0%	-1%	-3%	-2%	0%
Dry	-11%	-1%	-3%	1%	0%	0%	0%	0%	0%	6%	-4%	-12%
Critically Dry	-13%	5%	0%	1%	-15%	13%	0%	-1%	0%	-16%	-4%	-7%
Average All Years	-7%	1%	-3%	-1%	3%	-1%	0%	-3%	0%	-1%	-2%	-5%

Key:
 % = percent
 cfs = cubic feet per second

Greg Kamman, PG, CHG

Principal Hydrologist



EDUCATION	1989	M.S. Geology - Sedimentology and Hydrogeology Miami University, Oxford, OH
	1985	A.B. Geology Miami University, Oxford, OH
REGISTRATION	No. 360 No. 5737	Certified Hydrogeologist (CHG.), CA Professional Geologist (PG), CA
PROFESSIONAL HISTORY	1997 - Present	Principal Hydrologist/Vice President Kamman Hydrology & Engineering, Inc. San Rafael, CA
	1994 - 1997	Senior Hydrologist/Vice President Balance Hydrologics, Inc., Berkeley, CA
	1991 - 1994	Project Geologist/Hydrogeologist Geomatrix Consultants, Inc., San Francisco, CA
	1989 - 1991	Senior Staff Geologist/Hydrogeologist Environ International Corporation, Princeton, NJ
	1986 - 1989	Instructor and Research/Teaching Assistant Miami University, Oxford, OH

SKILLS AND EXPERIENCE

As a Principal Hydrologist with over 25 of technical and consulting experience in the fields of geology, hydrology, and hydrogeology, Mr. Kamman routinely manages projects in the areas of surface- and ground-water hydrology, stream and wetland habitat restoration, water supply, water quality assessments, water resources management, and geomorphology. Areas of expertise include: stream and wetland habitat restoration; characterizing and modeling basin-scale hydrologic and geologic processes; assessing hydraulic and geomorphic responses to land-use changes in watersheds and causes of stream channel instability; evaluating surface- and ground-water resources and their interaction; and designing and implementing field investigations characterizing surface and subsurface conditions; and stream and wetland habitat restoration feasibility assessments and design. In addition, Mr. Kamman commonly works on projects that revolve around sensitive fishery, wetland, wildlife and/or riparian habitat enhancement. Thus, Mr. Kamman is accustomed to working within a multi-disciplined team and maintains close collaborative relationships with biologists, engineers, planners, architects, lawyers, and resource and regulatory agency staff. Mr. Kamman is a prime or contributing author to over 80 technical publications and reports in the discipline of hydrology – the majority pertaining to ecological restoration. Mr. Kamman routinely teaches courses on stream and wetland restoration through U.C. Berkeley Extension and San Francisco State University's Romberg Tiburon Center.

PROFESSIONAL SOCIETIES & AFFILIATIONS

American Geological Institute
Society for Ecological Restoration International
California Native Plant Society

1.0 TECHNICAL REPORTS

Kamman, G.K., Fiori, R., and Kamman, R.Z., 2017, Lagunitas Creek Salmonid Habitat Enhancement Project, anchoring and bank stabilization concerns at LDRJ Sites #4 and #5. Prepared for: Marin Municipal Water District, September 25, 23p.

Kamman G.R. and Hayes, C., 2017, Annual geomorphic monitoring (WY2017) rock cascade-pool structure, Green Gulch landslide repair project, Marin County. Prepared for: Green Gulch Farm/San Francisco Zen Center, August 31, 57 p.

Kamman, G.R., 2017, Results of Flood Assessment for Proposed Mason Street Culverts, Quartermaster Reach Wetland Restoration Project, The Presidio of San Francisco, California. Prepared for: The Presidio Trust, May, 37p.

Kamman, G.R., 2017, Mountain Lake Water Budget, The Presidio of San Francisco. Prepared for: The Presidio Trust, May, 56p.

Kamman, G.R., 2017, Preliminary Flood Inundation Analysis and Restoration Opportunities, Butte Creek Site, Colusa County, CA. Prepared for: WRA, February 17, 10p.

Kamman G.R. and Hayes, C., 2016, Annual geomorphic monitoring (WY2016) rock cascade-pool structure, Green Gulch landslide repair project, Marin County. Prepared for: Green Gulch Farm/San Francisco Zen Center, July 1, 53 p.

Kamman, G.R., 2016, Novato Creek Hydrologic Monitoring, Water Year 2016 Summary. Prepared for: Marin County Department of Public Works, June 7, 19p.

Kamman, G.R., 2016, Hydraulic Design and Feasibility Assessment Report: Eel River Estuary and Centerville Slough Enhancement Project, Humboldt County, CA. Prepared for: California Trout and California Department of Fish and Wildlife, June, 277p.

Kamman, G.R., 2016, Hydrologic Analysis Results: Proposal to Change Operations of the Crane Prairie, Wickiup, and Crescent Lake Dams and Reservoirs as related to harm to Oregon spotted frog. Prepared for: Earthjustice Northwest Office, Seattle, February 5, 18p.

Kamman, G.R., 2015, Characterization of Groundwater Conditions, Stanislaus County, California. Prepared for: Law Offices of Thomas N. Lippe APC, San Francisco, CA, November, 67p.

Kamman, G.R., 2015, Assessment of Groundwater Conditions, 2031 North Avenue Residence, Napa, California. Prepared for: Michael Lee, Napa, CA, November, 9, 7p.

Kamman, R.Z., Hayes, C., Kamman, G.R., Avocet Research Associates, Carbiener, M., Holland, E., and Baye, P., 2015, Draft McInnis Marsh Restoration Project: Feasibility Study and Alternatives Analysis McInnis Marsh, Marin County, CA. Prepared for: Marin County Parks and The California Coastal Conservancy, September 5, 66p.

Kamman, G.R., 2015, Draft Eel River Coastal Plain Dunes Assessment and Restoration Feasibility Analysis, Humboldt County, CA. Prepared for: GHD, June, 124p.

Greg Kamman, PG, CHG
Principal Hydrologist

- Kamman, G.R., 2015, Draft Basis of Design Report for Southern Eel River Delta Wetland Restoration and Enhancement Project. Prepared for: Trout Unlimited and California Coastal Conservancy, May, 66p.
- Kamman, R.Z., Hayes, C. and Kamman G.K., 2015, Draft Hydrologic Assessment: Lawson's Land, Dillon Beach, CA. Prepared for: Lawson's Landing Inc. pursuant to The California Coastal Commission Coastal Development Permit, Special Condition 4.1.2.d, January, May, 38p.
- Kamman G.R. and Hayes, C., 2015, Annual geomorphic monitoring (WY2015) rock cascade-pool structure, Green Gulch landslide repair project, Marin County. Prepared for: Green Gulch Farm/San Francisco Zen Center, March 2, 45 p.
- Kamman, G.R., 2014, Groundwater assessment, Page Mill Road Office Complex, 1450/1454 Page Mill Road, Palo Alto, CA. Prepared for Stanford University Real Estate Operations, November 3, 8p.
- Kamman, G.R., 2014, 100% Basis of design report, Lagunitas Creek salmonid winter habitat enhancement project. Prepared in association with: Fiori Geosciences, Prepared for: Marin Municipal Water District, September, 212p.
- Kamman, G.R., 2014, Draft Lower Miller Creek channel maintenance and flood study: pre-design report. Prepared in association with: Demgen Aquatic Biology and Miller Pacific Engineering Group, Prepared for: Las Gallinas Valley Sanitary District, July, 142p.
- Kamman, R.Z, WRECO, Kamman, G.R., 2014, Hydraulic assessment of existing conditions, Novato Creek Watershed Project. Prepared in association with: WRECO, Prepared for: County of Marin, Department of Public Works, June, 198p.
- Kamman, R.Z. and Kamman G.K., 2013, Annual geomorphic monitoring report for Water Year 2013, Vineyard Creek Channel Enhancement Project. Prepared for Marin County Department of Public Works, Flood Control and Water Conservation District, May, 69p.
- Kamman, G.R., 2014, Groundwater assessment, Upper California Avenue Site, 1451, 1501 and 1601 S. California Avenue, Palo Alto, CA. Prepared for Stanford University Real Estate Operations, April 10, 5p.
- Kamman, G.R. and Lapine, S.L., 2014, Hydrologic sufficiency analysis, Rheem Creek Mitigation Bank, Richmond, CA. Prepared for: Olberding Environmental, Inc., on behalf of: Contra Costa Water District, April, 19p.
- Kamman, G.R., 2013, Groundwater assessment, 1400 Page Mill Road, Palo Alto, CA. Prepared for Stanford University Real Estate Operations, September 3, 6p.
- Kamman, G.R., 2013, Lagunitas Creek salmonid winter habitat enhancement assessment report. Prepared in association with: Fiori Geosciences and Dr. Bill Trush, Prepared for: Marin Municipal Water District, June, 124p.
- Kamman, R.Z. and Kamman G.K., 2013, Annual geomorphic monitoring report for Water Year 2012, Vineyard Creek Channel Enhancement Project. Prepared for Marin County Department of Public Works, Flood Control and Water Conservation District, February, 83p.

Greg Kamman, PG, CHG
Principal Hydrologist

- Kamman, G.R. and Lapine, S.L., 2013, Hydrologic sufficiency analysis, Suisun Creek Preserve, Solano County, CA. Prepared for: Grizzly Bay, LLC, April, 12p.
- Kamman, G.R. and Lapine, S.L., 2013, Hydrologic feasibility assessment, Suisun Creek Preserve, Solano County, CA. Prepared for: Grizzly Bay, LLC, March, 12p.
- Kamman, G.R., 2012, Basis of design report, Home and G Ranch wetlands, Point Reyes National Seashore, Marin County, CA. Prepared for: Architectural Resources Group, Inc., on behalf of Point Reyes National Seashore, December, 136p.
- Kamman, G.R., 2012, Groundwater assessment, 1701 Page Mill Road, Palo Alto, CA. Prepared for Stanford University Real Estate Operations, August 16, 5p.
- Kamman, G.R. and Lapine, S.L., 2012, Hydrologic sufficiency analysis, Collier Creek Mitigation Bank, Livermore Area of Alameda and Contra Costa Counties, CA. Prepared for: Olberding Environmental, Inc., August, 28p.
- Kamman, R.Z. and Kamman G.K., 2012, Annual geomorphic monitoring report for Water Year 2011, Vineyard Creek Channel Enhancement Project. Prepared for Marin County Department of Public Works, Flood Control and Water Conservation District, February, 46p.
- Kamman, G.R. and Lapine, S., 2012, Erosion control assessment in support of trail planning at Mori Point, Pacifica, CA. Prepared for Golden Gate Parks Conservancy, February, 57p.
- Kamman, G.R., 2011, Mana Plain Wetland Area Hydraulic Model Report, Kauai, Hawaii. Prepared for: Mana Plain Wetland Restoration Partnership, September 10, 87p.
- Kamman, G.R., Kamman, R.Z., Lapine, S., and Higgins, S., 2011, Draft Basis of Design Report, Volume I, Salt River Ecosystem Restoration Project, Riverside Ranch Tidal Marsh Restoration and Preliminary Salt River Channel Design. Prepared for: Humboldt County RCD, June.
- Kamman, G.R., 2011, Chapter 3.1: Hydrology and Water Quality and Chapter 3.2: Geology and Soils, in: Grasseti Environmental Consulting, California State Coastal Conservancy, and Kamman Hydrology & Engineering, Inc., 2011, Final Environmental Impact Report: Salt River Ecosystem Restoration Project (SCH# SD2007-05-6). Prepared for Humboldt County RCD, February, 744p.
- Kamman, G.R., Higgins, S. and Lapine, S., 2011, 2nd DRAFT Restoration Feasibility and Conceptual Design Report, Third Valley Creek and Chicken Ranch Beach, Inverness, California. Prepared for: Tomales Bay Watershed Council, with contributions from May & Associates, Inc., Avocet Research Associates, and Anthropological Studies Center of Sonoma State University, April 20, 199p.
- Kamman, R.Z., Kamman G.K., and Higgins, S., 2011, Annual geomorphic monitoring report for Water Year 2010, Vineyard Creek Channel Enhancement Project. Prepared for Marin County Department of Public Works, Flood Control and Water Conservation District, February, 47p.
- Kamman, G.R. and Lapine, S., 2010, Nyhan Creek Trail Segment Assessment, Southern Marin County, California. Prepared for Golden Gate National Parks Conservancy, December 31, 23p.
- Kamman, G.R., 2010, Chapter 3.1: Water Resources. In: The Presidio Trust (eds.), 2010. *The Quartermaster Reach Environmental Assessment, September 21, pp. 11-25.*

Greg Kamman, PG, CHG
Principal Hydrologist

- Kamman, G.R. and Higgins, S., 2010, Hydrologic and Water Quality Investigation, Lower Pitkin Marsh, Sonoma County, California. Prepared for Sonoma Land Trust, August 25, 69p.
- Kamman, G.R., 2010. Subsurface Investigation & Conceptual Wetland Enhancement at North fort Scott Wetland Mitigation Site, The Presidio of San Francisco, California. Prepared for The Presidio Trust, August 6, 43p.
- Kamman, G.R. and Lapine, S., 2010, Yreka Creek Hydrologic and Hydraulic Analysis Report, Siskiyou County, California. Prepared for WRA, Inc. and the City of Yreka, Department of Public Works, July 29, 32p.
- Kamman, G.R. and Higgins, S., 2010, Western Stege Marsh Restoration Project, Year 5 Hydrologic Monitoring Report. Prepared for Tetra Tech EM Inc. and University of California, Berkeley, July 14, 76p.
- Higgins, S. and Kamman, G.R., 2010, Watershed-based assessment of hydrologic and geomorphic conditions in Cache Creek through Capay Valley, Yolo County, CA. Prepared for Yolo County RCD, May 19, 85p.
- Kamman, G.R. and Lapine, S., 2010, Seasonal Crossing Structure Concept Design. Prepared for: George Salvaggio (WRA, Inc.) and Jeannette Hook (City of Yreka), May 4, 7p.
- Kamman, G.R., 2010, Banducci Reservoir Disposal Site Design, Muir Beach Project. Prepared for Carolyn Shoulders (GGNRA, NPS) and Sharon Farrell (GGNPC), April 5, 4p.
- Kamman, G.R., 2010, Letter Report Regarding Feasibility to Divert Water from Arroyo Valle Seasonal Wetland Enhancement Design Concepts Shadow Cliffs Regional Recreation Area, Livermore, CA. Prepared for Anne Rivoire, Park Planner, East Bay Regional Park District. January 14, 13p.
- Kamman, G.R., 2010, Hydrology Report, Temescal Creek Bridge Crossing, St. John's Episcopal Church, Oakland, CA. Prepared for: Wolfe Mason Associates/Design Community & Environment, January, 53p.
- Kamman, R.Z., Kamman G.K., and Higgins, S., 2009, Annual geomorphic monitoring report for Water Year 2009, Vineyard Creek Channel Enhancement Project. Prepared for Marin County Department of Public Works, Flood Control and Water Conservation District, December 18, 33p.
- Kamman, G.R. and Lapine, S., 2009, Break-Away Bridge Options and Limitations. Prepared for George Salvaggio (WRA, Inc.) and Jeannette Hook (City of Yreka), December 7, 7p.
- Higgins, S. and Kamman, G.R., 2009, Annual geomorphic monitoring of San Francisquito Creek channel, Sand Hill Road Bridge and former golf cart crossing, Stanford University, Santa Clara County, CA. Prepared for Stanford University, Facilities Operations - Utilities Division, December 1, 13p.
- Kamman, G.R., (ed.), 2009, Phase 2 Technical Report, Sycamore Grove Recovery Program, Sycamore Grove Park, Livermore, CA. Prepared for Livermore Area Recreation and Park District and Zone 7 Water Agency, Contributing Authors: HortScience, Inc., Kamman Hydrology & Engineering, Inc., Lone Pine Research and National Forest Genetic Electrophoresis Laboratory, December, 129p.

Greg Kamman, PG, CHG
Principal Hydrologist

- Kamman, G.R., 2009, Sharp Park Conceptual Restoration Alternatives Report Review. Prepared for: Sharon Farrell (Golden Gate Parks Conservancy), Daphne Hatch (Golden Gate National Recreation Area), Phil Ginsburg (S.F. Recreation Park Commission), November 18, 3p.
- Kamman, G.R. and Higgins, S., 2009. Fitzgerald Marine Reserve Trail Improvement: Hydrologic and Hydraulic Analysis, San Mateo County, California. Prepared for WRA, Inc., November, 22p.
- Kamman, G.R., 2009, Opportunities and Constraints for Ecological Restoration Shadow Cliffs Regional Recreation Area. Prepared for: George Salvaggio (WRA) to Anne Rivoire, EBRPD, September 23, 13p.
- Higgins, S. and Kamman, G.R., 2009, Preliminary Hydrologic Assessment Report for the Borba Dairy Farms Conservation and Wetland Mitigation Bank Merced County, California. Prepared for WRA, Inc., September 14, 40p.
- Kamman, R.Z., Higgins, S. and Kamman, G., 2009, Olema Marsh Restoration: Salinity Impact Assessment Report. Prepared for: Point Reyes National Seashore Association and National Park Service, September, 58p.
- Kamman, G.R. and Higgins, S., 2009, Western Stege Marsh Restoration Project, Year 4 Hydrologic Monitoring Report. Prepared for Tetra Tech EM Inc. and University of California, Berkeley, June 30, 37p.
- Kamman, G.R. and Williams, T., 2009, Hydrologic monitoring results and implication on modification to Middle Pond, Mori Point. Prepared for Golden Gate Parks Conservancy, May 28, 8p.
- Kamman, G.R. and Lapine, S., 2009, Yreka Creek Floodplain Enhancement Assessment. Prepared for: George Salvaggio (WRA, Inc.) and Jeannette Hook (City of Yreka), May 27, 10p.
- Kamman, G.R. and Higgins, S., 2009. Preliminary Findings of a Geomorphic Assessment in Support of Erosion Control Planning and Design; Phleger Estate, San Mateo County, California. Prepared for Golden Gate National Parks Conservancy and Golden Gate National Recreation Area, NPS, April 28, 6p.
- Kamman, G.R. and Higgins, S., 2009, Report for the Hydrologic Assessment and Ecological Enhancement Feasibility Study, Laguna Salada Wetland System, Pacifica, California. Prepared for: Tetra Tech Inc., San Francisco, March 30, 45p.
- Kamman, G.R., 2009, Annual geomorphic monitoring of San Francisquito Creek channel, Sand Hill Road Bridge and former golf cart crossing, Stanford University, Santa Clara County, CA. Prepared for Stanford University, Facilities Operations - Utilities Division, February 18, 62p.
- Kamman, G.K. and Higgins, S., 2008, Annual hydrologic/geomorphic monitoring, Vaquero Farms wetlands mitigation, Vineyards at Marsh Creek (Blackhawk 4)/EDAW Project No. 07015005.01. Prepared for EDAW Natural Resources (Sacramento), December 19, 20p.
- Lapine, S. and Kamman, G.R., 2008. Hydrologic and Hydraulic Analysis, Saenger Property. Prepared for Paul Saenger, December 7, 5p.
- Lapine, S. and Kamman, G.R., 2008, Lower West Creek drainage improvement assessment. Prepared for Marin County Department of Public Works, Flood Control, November 5, 4p.

- Kamman, G.R., 2008. Memorandum from KHE to Mark Frey; Subject: NIKE Swale/Landfill 8 Shallow Subsurface Investigation. November 3.
- Kamman, G.R., 2008, Reduced Flooding Pressure Resulting from Proposed Greenway Project. Prepared for Jeannette Hook (City of Yreka), August 26, 11p.
- Kamman, G.R., 2008, Technical Assistance in Development of Year 3 Monitoring Report. Prepared for: Jason Brodersen, P.G., Program Manager, Tetra Tech EM Inc., August 20, 11p.
- Kamman, R., Kamman, G.R., Higgins, S., and May, L, 2008, Summary of Headland Institute (HI) Stream Corridor Enhancement Design Components. Prepared for: The Headlands Institute Restoration Design Team, May 28, 36p.
- Kamman, R., Kamman, G.R., Higgins, S., and May, L, 2008, Summary of Site Conditions for the Headland Institute (HI) Stream Corridor and Watershed. Prepared for: The Headlands Institute Restoration Design Team, May 5, 37p.
- Kamman, G.R., 2008, Annual geomorphic monitoring of San Francisquito Creek channel, Sand Hill Road Bridge and former golf cart crossing, Stanford University, Santa Clara County, CA. Prepared for Olberding Environmental Inc., January 30, 37p.
- Kamman, G.K. and Higgins, S., 2007, Annual hydrologic/geomorphic monitoring, Vaquero Farms wetlands mitigation, Vineyards at Marsh Creek (Blackhawk 4)/EDAW Project No. 07015005.01. Prepared for EDAW Natural Resources (Sacramento), December 17, 17p.
- Kamman, G.R., 2007, Independent Model Review for Klamath Settlement Negotiations Klamath Independent Review Project (KIRP). Prepared for Erica Terrence and Anna Schulz, Northcoast Environmental Center, November 9, 19p.
- Kamman, G.R., and Higgins, S., 2007, Results of subsurface investigation: Dragon Fly Creek. Prepared for The Presidio Trust, November 9, 12p.
- Kamman, G.R., 2007, Chapter 3: Alternatives and Chapter 4.3: Water Resources, in: The Presidio Trust, 2007, Environmental Assessment for Tennessee Hollow Upper Watershed Revitalization Project, August, 149p.
- Kamman, G.R., 2007, Mori Point trail planning and restoration project, wetland pond final designs. Prepared for Golden Gate Parks Conservancy, July 23, 34p.
- Kamman, G.R., 2007, Chapter 2: Hydrological Considerations in: Nautilus Environmental (eds.), Brown & Caldwell, Foothill Associates, KHE, and Stoecker Ecological, 2007, Feasibility Study on the Reuse of Ojai Valley Sanitary District Effluent - DRAFT Final Facilities Planning Report, prepared for City of Buenaventura, Public Works Department, July 10, 148p.
- Kamman, G.R., 2007, Mori Point wetland ponds - preliminary designs. Prepared for Golden Gate Parks Conservancy, June 19, 6p.
- Kamman, G.R., and Higgins, S., 2007. Santa Clara River Estuary water budget and salinity assessment. Prepared for Nautilus Environmental LLC and The City of Buenaventura, April 30, 11p.

Greg Kamman, PG, CHG
Principal Hydrologist

- Kamman, G.R. and Kamman R.Z., 2007, Feasibility and design report of Bear Valley Creek watershed enhancement and fishery restoration project. Prepared for Point Reyes National Seashore Association and National Park Service, March, 325p.
- Kamman, G.R., Kamman R.Z., and Beahan, C., 2007, Design report for lower Redwood Creek floodplain and salmonid habitat restoration at the Banducci site, Golden Gate National Recreation Area, Marin County, CA. Prepared for Golden Gate Parks Conservancy and National Park Service, February 28, 105p.
- Kamman, G.R., 2007, Pilarcitos Creek Bank Stabilization Project, Pilarcitos Creek, San Mateo County, California. Prepared for TRC-Essex, January 22, 8p.
- Kamman, G.R., 2007, Annual geomorphic monitoring of San Francisquito Creek channel, Sand Hill Road Bridge and former golf cart crossing, Stanford University, Santa Clara County, CA. Prepared for Olberding Environmental Inc., January 2, 29p.
- Kamman, G.R. and Beahan, C., 2006, Annual geomorphic monitoring of Arroyo Mocho channel - WY2006, Wente Street Bridge, Livermore, CA. Prepared for Sycamore Associates, LLC, December 14, 13p.
- Kamman, G.K. and Higgins, S., 2007, Hydraulic analysis for final design, Vaquero Farms Wetland Mitigation Project. Prepared for Sycamore Associates, LLC, July 11, 8p.
- Kamman, G.R. and Lapine, S., 2006, West Creek drainage improvement assessment, Tiburon, CA. Prepared for Marin County Department of Public Works, Flood Control and Water Conservation District, July, 44p.
- Kamman G.K. and Kamman, R.Z., 2006, Larkspur Creek bank stabilization, floodplain expansion and riparian revegetation project, Schaefer Parcel (Lark Creek Inn - parcel no. 021-104-34. Prepared for Department of Public Works, City of Larkspur, CA, June 1, 11p.
- Kamman, G.R., 2006. Hydrologic Feasibility Assessment Report for the Tennessee Hollow Watershed Project, The Presidio of San Francisco. Prepared for: The Presidio Trust, with assistance from Colby Groundwater Consulting, May, 52p.
- Kamman, G.R., 2006. Piezometer installation and monitoring Fill Site 6A, The Presidio of San Francisco. Prepared for The Presidio Trust, April 14, 20p.
- Kamman, G.R., and Kamman, R.Z., 2006, Data Synthesis and Hydrodynamic Model Development Feasibility Report, Pescadero Lagoon, San Mateo County, California. Technical letter report prepared for California Coastal Commission, April 13, 18p.
- Kamman, G.R., 2006, Leona Mines Closure - Conceptual Creek Design. Prepared for Peters & Ross, February 5, 15p.
- Kamman, G.R. and Rios, T., 2005, Annual geomorphic monitoring of San Francisquito Creek channel, Sand Hill Road Bridge and former golf cart crossing, Stanford University, Santa Clara County, CA. Prepared for Olberding Environmental Inc., December 12, 20p.
- Kamman, G.R., 2005, Preliminary hydrologic assessment, Mori Point Trail Planning and Restoration Project. Prepared for Golden Gate Parks Conservancy, October 14, 8p.

Greg Kamman, PG, CHG
Principal Hydrologist

Kamman, G.R. and Rios, T., 2005, Annual geomorphic monitoring of Arroyo Mocho channel, Wente Street Bridge, Livermore, CA. Prepared for Sycamore Associates, LLC, November 11, 11p.

Kamman, G.R., 2005, Hydrology and water quality assessment report, Coastal Trail planning at Land's End, San Francisco, CA. Prepared for Golden Gate Parks Conservancy, August, 24p.

Kamman, G.R., 2005, Technical letter report - groundwater impact assessment, January 2005 Settlement Agreement, Lundy Hydroelectric Project (FERC No. 1390). Prepared for Lundy Mutual Water Company, May 6, 9p.

Kamman, G.R., Gragg, J., and Kamman R.Z., 2005. Hydrology & Coastal Lagoon Assessment: Environmental Study of the Santa Clara River Estuary. Prepared for Nautilus Environmental LLC and The City of Buenaventura, March, 52p.

Kamman, G.R. and Rios, T., 2005. Fiscalini Bank Stabilization Hydraulic Analysis and Preliminary Design Evaluation Report. Prepared for The California Coastal Conservancy and Greenspace-The Cambria Land Trust, February, 27p.

Kamman, G.R. and Rios, T., 2004, Survey and Hydraulic Analysis of St. Johns Property Project, Temescal Creek, Oakland, CA. Prepared for: Wolfe Mason Associates/Design Community & Environment, December 27, 13p.

Kamman, G.R. and Kamman R.Z., 2004, Gallinas Creek Restoration Feasibility Study and Conceptual Design Report, Marin County, California. Prepared for: San Pablo Bay Watershed Restoration Program Partners (US Army Corps of Engineers, San Francisco District and California Coastal Conservancy), in cooperation with: The Friends of Gallinas Creek., The Bay Institute, and Marin County Stormwater Pollution Prevention Program, December, 47p.

Kamman, G.R. and Rios, T., 2004. Hydrologic Feasibility Analysis for the Tolay Lake Ranch Property, Sonoma County, California. Prepared for: Sonoma County Agricultural Preservation & Open Space District, December, 96p.

Kamman, G.R. and Rios, T., 2004, Annual geomorphic monitoring of Arroyo Mocho channel, Wente Street Bridge, Livermore, CA. Prepared for Sycamore Associates, LLC, November 17, 10p.

Ecorp Consulting, Inc. and Kamman Hydrology & Engineering, Inc., 2004, Draft Gualala Estuary and Lower River Enhancement Plan: Results of 2002 and 2003 Physical and Biological Surveys. Prepared for: Sotoyome Resource Conservation District and California Coastal Conservancy, June 10.

Kamman, G.R., 2003, Annual geomorphic monitoring of Arroyo Mocho channel, Wente Street Bridge, Livermore, CA. Prepared for Sycamore Associates, LLC, December 23, 10p.

Kamman, G.R., 2003, Hydrologic Analyses - Technical Letter Report, Reach B-2 Pond, Sycamore Grove Park, Livermore, CA. Prepared for Livermore Area Recreation and Parks Department, December 4, 13p.

Kamman, G.R., 2003, Hydrologic assessment of wetland mitigation and monitoring plan, Metcalf Road Property, San Jose, CA. Prepared for: Sycamore Associates, LLC, November 21, 21p.

Greg Kamman, PG, CHG
Principal Hydrologist

- Kamman R.Z. and Kamman, G.R., 2003, Review of flood hazard analysis for Easkoot Creek Project, Stinson Beach, CA. Prepared for Golden Gate National Recreation Area, National Park Service, September 10, 1p.
- Kamman, G.R., 2003, Redwood Creek levee analysis, Lower Redwood Creek, Orick, CA. Prepared for Humboldt County Department of Public Works, July 28, 15p.
- Kamman, G.R., 2003. 3rd iteration of preliminary grading plan for Fill Site 6, Tennessee Hollow Riparian Corridor Restoration Project, The Presidio of San Francisco. Prepared for The Presidio Trust, March 25, 10p.
- Kamman, G.R., 2003. Draft Interim Hydrologic Monitoring Report for the Tennessee Hollow Riparian Corridor Restoration Project, the Presidio of San Francisco. Prepared for The Presidio Trust, March, 110p.
- Kamman, G.R. and McBain & Trush, Inc., 2002, Chapter 4: Shallow Groundwater Hydrology. In: McBain & Trush, Inc. (eds.), 2002. *San Joaquin River Restoration Study Background Report*, prepared for Friant Water Users Authority, Lindsay, CA, and Natural Resources Defense Council, San Francisco, CA, December,
- Kamman, G.R., 2002. Conceptual Watershed Model and proposed surface- and ground-water monitoring program for the Tennessee Hollow Riparian Corridor Restoration Project, The Presidio of San Francisco. Prepared for The Presidio Trust, July, 77p.
- Kamman, G.R., 2002. Hydraulic Assessment of Proposed Channel Modifications: Iron Horse Trail Concord, CA. Prepared for: The East Bay Regional Park District, January 2002, 12p.
- Kamman, G.R. and Kamman, R.Z., 2001, Final revised tidal marsh designs, Cargill-Eden Landing Ecological Preserve, Hayward, CA. Prepared for: East Bay Regional Park District, September 7, 4p., with plates.
- Kamman, G.R., Kamman, R.Z., and Granholm, S., 2001, Final conceptual seasonal wetland design, Damon Slough Mitigation Site, Oakland, CA. Prepared for: Port of Oakland, June 14, 37p.
- Kamman, G.K., 2001, Salt Panne/Snowy Plover Management Area, Eden Landing Ecological Reserve Restoration and Management Plan, Hayward, CA. Prepared for: East Bay Regional Park District, April 18, 5p.
- Kamman, G.R. and Kamman, R.Z., 2001, Hydrologic evaluation of final design for the Bay Point Regional Shoreline wetland restoration plan, Bay Point, CA. Prepared for: LSA and East Bay Regional Park District, April, 33p.
- Kamman, G.R., 2001. Draft Comments: 100-year flood estimate on Upper Trinity River. Prepared for Trinity County Planning Department, February 9, 8p.
- Kamman, R.Z. and Kamman, G.K., 2000, Tidal exchange analysis of tidal channel geometry, Cargill-Eden Landing Ecological Preserve, Hayward, CA. Prepared for: East Bay Regional Park District and Far West Restoration Engineering, November 1, 11p.

Greg Kamman, PG, CHG
Principal Hydrologist

- Kamman, G.R., 2000, Preliminary hydrologic sufficiency analysis for proposed California tiger salamander (CTS) pond, Bosley Property, Livermore, CA. Prepared for: Sycamore Associates, LLC, May 24, 7p.
- Kamman, G.R. and Kamman, R.Z., 2000, Hydrologic analysis for the Bay Point Regional Shoreline wetland restoration plan, Bay Point, CA. Prepared for: LSA and East Bay Regional Park District, March, 47p.
- Kamman, G.R., 2000, Hydrologic analyses for creek restoration design: Heather Farms Project Site, Walnut Creek, CA. Prepared for: Sycamore Associates, LLC, January, 33p.
- Kamman, G.R., 2000, Hydrologic Analysis, Conway Ranch Water Rights, Mill Creek, Mono County, CA. Prepared for: Don Mooney Esq., January 28, 21p.
- Kamman, G.R., 1999, Flood damage assessment of proposed Trinity River fish and wildlife restoration flow alternatives. Prepared for: Trinity County Planning Department, September, 19p.
- Kamman, G.R., and Stokely, T., 1999, Trinity Dam auxiliary outlet releases. Prepared for: Trinity County Planning Department, Agreement No. TFG 94-04, September 24, 4p.
- Kamman, G.R., 1999, Addendum to Temperature analysis of proposed Trinity River fish and wildlife restoration flow alternatives using the BETTER model: cumulative effects analyses. Prepared for: Trinity County Planning Department, Agreement No. TFG 94-04, September, 7p.
- Kamman, G.R., 1999, Temperature analysis of proposed Trinity River fish and wildlife restoration flow alternatives using the BETTER model. Prepared for: Trinity County Planning Department, Agreement No. TFG 94-04, June, 31p.
- Kamman, G.R., 1999, Stormwater runoff hydrology and channel stability report: The Ranch on Silver Creek Project, San Jose, CA. Prepared for: Sycamore Associates, LLC, May, 21p + appendices.
- Kamman, G.R., 1999, Baseline water quality and hydrology investigation: The Ranch on Silver Creek Project, San Jose, CA. Prepared for: Sycamore Associates, LLC, May, 28p.
- Kamman, G.R., 1999, Slope stabilization at Wallabi Ct., Las Trampas Creek, Lafayette, CA. Prepared for: Sycamore Associates, LLC, April 5, 8p.
- Kamman, G.R., 1999, Draft report on causation 1997 West Walker River flood damage to Mt. Gate Lodge, Mono County, CA. Prepared for: Lou deBottari, January 18, 16p.
- Kamman, G.R., 1998, Hydrologic and hydraulic review of Temescal Creek Bridge repairs, 145 Duncan Way, Oakland, CA. Prepared for: Vince Aitro, December 31, 10p.
- Kamman, G.R., 1998, Final summary of site visits and recommendations for bank stabilization, San Ramon Creek, South San Ramon Creek and associated tributaries, San Ramon, CA. Prepared for: City of San Ramon, Engineering, September 23, 12p.
- Kamman, G.R., 1998, Hydrologic sufficiency and design considerations for proposed mitigation wetlands, Crystyl Ranch Drive, Contra Costa County, CA. Prepared for: Sycamore Associates, LLC, June, 19p.

Greg Kamman, PG, CHG
Principal Hydrologist

- Kamman, G.R., 1998, Carryover storage analysis, simulated (1928-1934) drought period. Prepared for Trinity County Planning Department, Agreement No. TFG 97-04, May 22, 1p.
- Kamman, G.R., 1998, Draft carryover storage analysis results, maximized auxiliary bypass releases. Prepared for Trinity County Planning Department, Agreement No. TFG 97-04, May 21, 1p.
- Kamman, G.R., 1998, Carryover storage analysis results, Maximum Flow, Flo Study, and No Action Alternatives. Prepared for Trinity County Planning Department, Agreement No. TFG 97-04, May 19, 3p.
- Kamman, G.R., 1998, Carryover storage analysis results, Flow Study and No Action Alternatives. Prepared for Trinity County Planning Department, Agreement No. TFG 97-04, May 14, 3p.
- Kamman, G.R., 1998, Carryover storage analysis results, Flow Study and No Action Alternatives. Prepared for Trinity County Planning Department, Agreement No. TFG 97-04, May 14, 3p.
- Kamman, G.R. and Kamman, R.Z., 1997, Hamilton Base Realignment and Closure Wetland Conversion Alternative: Landfill 26 Groundwater Assessment. Prepared on behalf of PWA, Ltd. for IT Corporation and San Francisco District Corps of Engineers, October, 16p.
- Kamman, G.R., 1997, Small community flood information study report for five Salinas River communities, Tembladero Slough study area. Prepared for: Phillip Williams & Associates, Ltd., on behalf of San Francisco District Corps of Engineers, September 30, 51p.
- Kamman, G.R., 1997, Hydraulic estimates for San Ramon Creek bank stabilization, Crow Canyon Gardens, San Ramon. Prepared for: ENGE0 and Sycamore Associates, LLC, September, 5p.
- Kamman, G.R., 1997, Natural vs. regulated flow and temperature conditions on the Upper Eel River, California – Lake Pillsbury to Outlet Creek. Prepared for: California Trout, August 23, 103p.
- Kamman, G.R., 1997, Theoretical temperature modeling – Upper Klamath Lake Area, Oregon. Prepared for: Phillip Williams & Associates, Ltd., March 10, 18p.
- Kamman, G.R. and Hecht, B., 1997, Hydrology and Water Supplies at the Marin Coast Ranch, Marin County, California. Prepared for The Brenner Group, San Rafael, CA, March, 33p.
- Kamman, G.R., 1996, Flow of the Mojave River for Water Year 1995, Victorville Narrows, California. Prepared for James C. Hanson Engineers, Sacramento, California, June, 9p.
- Hanson, K.L., Coopersmith, K.J., Angell, M.M., Crampton, T.A., Wood, T.F., Kamman, G.R., Baldwin, F., Peregoy, W., and McVicar, T., 1996, Evaluation of the Capability of Inferred Faults in the Vicinity of Building 371, Rocky Flats Environmental Technology Site, Colorado.
- Kamman, G.R., 1996, Progress Report: Flow of the Mojave River for Water Year 1995, Victorville Narrows, California. Prepared for: James C. Hanson Engineers, Sacramento, California, June.
- Kamman, G.R., Hecht, B., and Owens, J., 1996, Hydrologic Assessment: Seminary Creek Restoration Project - 1996. Prepared for East Bay Asian Local Development Corporation, Oakland, California, June, 5p.
- Kamman, G.R. and Hecht, B., 1996, Assessment of Fishway Effects on Water Production from the Los

Greg Kamman, PG, CHG
Principal Hydrologist

- Trancos Diversion, Stanford University, California. Prepared for Stanford University, May, 21p.
- Kamman, G.R. and Hecht, B., 1996, Results of Baseline Hydrologic Investigation and Modifications to Recharge Mitigation Measures, Proposed Harbor View Development, Bodega Bay, California. Prepared for Redwood Development, Santa Rosa, California, May, 19p.
- Kamman, G.R., Hecht, B., and Owens, J., 1996. Webb Ranch Bridge Hydrology Assessment. Prepared for Stanford Land Company, Menlo Park, California, April, 13p.
- Hecht, B. and Kamman, G.R., 1996, Initial Assessment of Pre- and Post-Klamath Project Hydrology of the Klamath River and Impacts of the Project on In-stream Flows and Fishery Habitat. Prepared on behalf of The Yurok Tribe, March, 39p.
- Kamman, G.R. and Hecht, B., 1996, Report of Hydrologic Investigation Results, Proposed Veterans Home Golf Course, Yountville, California. Prepared for Reynolds and Brown, Concord, California, January, 11p.
- Kamman, G.R., 1995, Changes in Surface Water Salinity as a Function of Natural Wet and Dry Cycles - Santa Ynez River Basin. Prepared for the City of Santa Barbara, Santa Barbara, California, December, 8p.
- Kamman, G.R. and Hecht, B., 1995, Daily and Peak Flow Records Measured at the San Geronimo Creek Gage during WY 1995. Prepared for: Marin Municipal Water District, Corte Madera, California, October.
- Kamman, G.R., 1995, Daily and Peak Flow Records Measured at the San Geronimo Creek Gage during WY 1994. Prepared for: Marin Municipal Water District, Corte Madera, California, September.
- Kamman, G.R. and Hecht, B., 1995, Interim Ground Water Monitoring Program: Sisquoc Plant and Vicinity, Santa Barbara County, California. Prepared for: SP Milling Company, Oxnard, California, July.
- Kamman, G.R. and Hecht, B., 1995, Results of Hydrologic Investigation, Highland Ranch, Sonoma County, California. Prepared for: Robert Yahng, Baker and McKenzie, San Francisco, California, June, 8p.
- Kamman, G.R., and Ramirez, T., 1994, Evaluation of Gravel Retainment Structures and Placement of Salmon Spawning Gravel in the Merced River below the Crocker-Huffman Dam. Prepared for Center for Environmental Design Research, University of California, Berkeley, California, May, 14p.
- Kamman, G.R. and Hecht, B., 1995, Assessment of Fishway Effects on Water Production from the Los Trancos Diversion, Stanford University, California. Prepared for: Stanford University, May.
- Kamman, G.R. and Johnson, K.A., 1994, Phase II Site Investigation Results, 1515 Industrial Way, Belmont, California. Prepared for: General Instrument Corporation, Parsippany, New Jersey, November.
- Kamman, G.R. and Zemo, D.A., 1994, Ground Water Investigation Work Plan, Clark's Home and Garden, Hayward, California," prepared for: Mr. Chester Clark, Grants Pass, Oregon, April.

Greg Kamman, PG, CHG
Principal Hydrologist

- Kamman, G.R. and Graf, T., 1994, Results of Site Investigation, Quan's Automotive Service, Oakland, California. Prepared for: Alameda County Health Care Services Agency, Oakland, California, March.
- Kamman, G.R., Rowles, L.D. and Bice, N.T., 1994, Addendum to Phase V Investigation Report, 234 East Main Street and Vicinity, Ontario, California. Prepared for: General Electric Company, San Francisco, California, February.
- Kamman, G.R. and Goodin, S.E., 1994, Proposal for Underground Tank Site Remediation Testing and Management Services. Prepared for: California Fairs Financing Authority, Sacramento, California.
- Kamman, G.R., Zemo, D.T., Bice, N.T., and Rafferty, M.T., 1993, Results of Phase I Activities and Phase II Work Plan for On-Site Soil Remediation, Former McKesson Facility, Santa Fe Springs, California. Prepared for: McKesson Corporation, San Francisco, California, November.
- Kamman, G.R. and Goodin, S.E., 1993, Soil Investigation for Proposed Freeway Alignment, Parcels A, B, and C, Oakland Post Office, Oakland, California. Prepared for: California Department of Transportation, Oakland, California, September.
- Kamman, G.R., Zemo, D.T., and Bice, N.T., 1993, Phase I On-Site Soil Remediation Work Plan, Former McKesson Facility, Santa Fe Springs, California. Prepared for: McKesson Corporation, San Francisco, California, June 1993 (with D.A. Zemo and N.T. Bice).
- Kamman, G.R. and Rowles, L.D., 1994, Quarterly Ground Water Monitoring Reports, 234 East Main Street and Vicinity, Ontario, California. Prepared for: General Electric Company, San Francisco, California, March.
- Kamman, G.R., Rowles, L.D., Foote, G.R., and Bice, N.T., 1993, Phase V Investigation Report, 234 East Main Street and Vicinity, Ontario, California. Prepared for: General Electric Company, San Francisco, California, January.
- Kamman, G.R., Warner, S.D., and Goodin, S.E., 1992, Environmental Site Assessment Report, 215 Leo Avenue, San Jose, California. Prepared for: Redtree Properties, San Francisco, California, December.
- Kamman, G.R. and Hall, N.T., 1992, Paleoseismic Investigations of the San Andreas Fault on the San Francisco Peninsula," NEHRP proposal to US Geological Survey, May.
- Kamman, G.R., McDonald, S. and North, R., 1990, Presentation of Phase III Sampling Results and Partial Soil Cleanup Plan and Additional Ground Water Investigation for Paulsboro Packaging, Inc., ECRA Case No. 86826. Prepared for: Paulsboro Packaging, Inc., Paulsboro, New Jersey, December.
- Kamman, G.R. and Fusillo, T., 1990, Addendum Report on the Results of Environmental Sampling at Tax Blocks S-6: Lots 90, 92, and 93, West Windsor, New Jersey, Prepared for: Matrix Development Group, Inc., Cranbury, New Jersey, June.
- Kamman, G.R. and Stone, B., 1990, Results Report and Phase II Sampling Plan for the Courier-News, Bridgewater, New Jersey, ECRA Case No. 90029. Prepared for: The Courier News, Bridgewater, New Jersey, May.

Greg Kamman, PG, CHG
Principal Hydrologist

Kamman, G.R. and Fusillo, T., 1990, Results of Soil, Sediment, and Ground Water Sampling at Tax Block S-6: Lots 90, 92, and 93 in West Windsor, New Jersey. Prepared for: Matrix Development Group, Inc., Cranbury, New Jersey, April.

Kamman, G.R. and Fusillo, T. 1989, Proposed Sampling Plan for University Square Associates Property, West Windsor Township, Mercer County. Prepared for: Matrix Development Group, Inc., Cranbury, New Jersey, December.

Kamman, G.R., 1989, Clay diagenesis of the Monterey Formation and relationship to burial history: Point Arena and Salinas Basins, California. M.S. thesis, Miami University, Oxford, OH, April, 147p.

2.0 DECLARATIONS, DEPOSITIONS & CEQA REVIEW COMMENTS

- Kamman, G.R., 2017, Review of Sonoma Agenda Item Summary Report for Appeal Hearing, Knights Bridge Winery, PRMD file #: UPE 13-0046, 17134 Spencer Lane, Calistoga, CA. Prepared for: Maacama Watershed Alliance (MWA) and Friends of Spencer Lane, August 21, 30p.
- Kamman, G.R., 2017, Review Comments: PAD and SD1, FERC Relicensing of Potter Valley Project (PVP). Professional declaration prepared for: Friends of Eel River, July 31, 8p.
- Kamman, G.R., 2017, Review of Revised Draft EIR (RDEIR) Davidon/Scott Ranch GPA, Rezoning, and Vesting Tentative Map Project, Petaluma, California. Prepared for: Shute, Mihaly & Weinberger LLP, June 12, 11p.
- Kamman, G.R., 2017, Review Comments, Draft Environmental Impact Report, Fish Habitat Flow and Water Rights Project. Professional declaration prepared for: Friends of Eel River, March 8, 18p.
- Kamman, G.R., 2016, Review of Draft General Waste Discharge Requirements for Vineyard Dischargers in the Napa River and Sonoma Creek Watersheds. Prepared for: Law Offices of Thomas N. Lippe APC, December 12, 4p.
- Kamman, G.R., 2016, Review of County Appeal Hearing Video from November 22, 2016, Walt Ranch Erosion Control Plan (P11-00205-ECPA), Walt Ranch Project, Napa, CA. Professional Declaration Prepared for: Law Offices of Thomas N. Lippe APC, November 28, 3 p.
- Kamman, G.R., 2016, Review of Final EIR, Walt Ranch Erosion Control Plan (P11-00205-ECPA), Walt Ranch Project, Napa, CA. Professional Declaration Prepared for: Law Offices of Thomas N. Lippe APC, November 20, 15 p.
- Kamman, G.R., 2016, Effect of Vineyard Drainage Elements on Modeled Peak Runoff, Walt Ranch Erosion Control Plan (P11-00205-ECPA), Walt Ranch Project, Napa, CA. Professional Declaration Prepared for: Law Offices of Thomas N. Lippe APC, November 17, 8 p.
- Kamman, G.R., 2016, Review of Revised Mitigated Negative Declaration Knights Bridge Winery, PRMD file #: UPE 13-0046, 17134 Spencer Lane, Calistoga, CA. Prepared for: Maacama Watershed Alliance (MWA) and Friends of Spencer Lane, October 27, 50p.
- Kamman, G.R., 2016, Review of Middle Green Valley Specific Plan Project, Second Revised Recirculated Draft Environmental Impact Report, Solano County, CA, Sch# 2009062048. Professional Declaration Prepared for: Law Offices of Amber Kemble, October 25, 3p.
- Kamman, G.R., 2016, Review of Initial Study and Negative Declaration Mountain Peak Winery: Use Permit #P13-00320-UP, 3265 Soda Canyon Road, Napa, CA 94558 (APN: 032-500-033). Prepared for: The Soda Canyon Group, October 11, 15p.
- Kamman, G.R., 2016, Hydrologic and Water Quality Issues Associated with Proposed Golden Bridges School Project at 203 Cotter Street, San Francisco, CA. Prepared for: Neighbors of Cotter Street, September 19, 15p.

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- Kamman, G.R., 2016, Review of Mitigated Negative Declaration Knights Bridge Winery, PRMD file #: UPE 13-0046, 17134 Spencer Lane, Calistoga, CA. Prepared for: Maacama Watershed Alliance (MWA) and Friends of Spencer Lane, September 16, 6p.
- Kamman, G.R., 2016, Review of Draft EIR for General Waste Discharge Requirements for Vineyard Dischargers in the Napa River and Sonoma Creek Watersheds. Prepared for: Law Offices of Thomas N. Lippe APC, September 14, 81p.
- Kamman, G.R., 2016, Landslide Hazard Assessment, Walt Ranch Erosion Control Plan (P11-00205-ECPA), Walt Ranch Project, Napa, CA. Professional Declaration Prepared for: Law Offices of Thomas N. Lippe APC, August 26, 45 p.
- Kamman, G.R., 2016, Review of Approved Erosion Control Plan (P14-00069-ECPA), Kongsgaard Wine LLC – Atlas Peak Vineyard Conversion, Napa, CA. Professional Declaration Prepared for: Law Offices of Thomas N. Lippe APC, March 14, 8p.
- Kamman, G.R., 2016, Second Declaration of Greg Kamman Plaintiff’s Joint Motion for Preliminary Injunction, Prepared for Center for Biological Diversity (Plaintiff) v. U.S. Bureau of Reclamation, Case No. 6:16-cv-00035-TC (Recovery for Oregon Spotted Frog, Upper Deschutes Basin, Oregon) , March 11, 11p.
- Kamman, G.R., 2016, Declaration of Greg Kamman Plaintiff’s Joint Motion for Preliminary Injunction, Prepared for Center for Biological Diversity (Plaintiff) v. U.S. Bureau of Reclamation, Case No. 6:16-cv-00035-TC (Recovery for Oregon Spotted Frog, Upper Deschutes Basin, Oregon) , February 4, 8p.
- Kamman, G.R., 2016, Review of Final, Recirculated and Draft Environmental Impact Reports, Corte Madera Inn Rebuild Project, Marin County, California. Prepared for: Community Venture Partners, February 4, 9p.
- Kamman, G.R., 2016, Review of Response to Public Comments by Richard C. Slade & Associates LLC, Mountain Peak Winery: Use Permit #P13-00320, 3265 Soda Canyon Road, Napa, CA 94558 (APN: 032-500-033). Prepared for: The Soda Canyon Group, January 30, 298p.
- Kamman, G.R., 2015, Review of Timber Harvest Plan (THP) 1-15-042 SON (Gualala Redwoods Inc. “Dogwood” THP). Professional Declaration Prepared for: Law Offices of Paul Carrol and Friends of the Gualala River, December 24, 4p.
- Kamman, G.R., 2015, Declaration of Greg Kamman in Opposition to Affirmative Defense Regarding Mootness, Prepared for Paul Carroll, Attorney at Law and Center for Biological Diversity (Petitioners) v. County of Sonoma, Agricultural Commissioner of Sonoma County and (Respondents) Ohlson Ranch, September 9, 10p.
- Kamman, G.R., 2015, Review of Timber Harvest Plan (THP) 1-15-042 SON (Gualala Redwoods Inc. “Dogwood” THP) and THP 1-15-033 SON (Gualala Redwoods Inc. “Apple” THP). Professional Declaration Prepared for: Law Offices of Paul Carrol and Friends of the Gualala River, August 6, 8p.
- Kamman, G.R., 2015, Sharp Park Project Impacts to Laguna Salada. Prepared for National Parks Conservation Association and Wild Equity Institute, April 14, 1p.

Greg Kamman, PG, CHG
Principal Hydrologist

- Kamman, G.R., 2014, Review of Draft EIR, Walt Ranch Project, Napa, CA. Professional Declaration Prepared for: Lippe Gaffney Wagner LLP, November 20, 15 p.
- Kamman, G.R., 2014, Review of Technical Reports Sonoma County Discretionary Development Permit Application #UPE 13-00046, Proposed Knights Bridge Winery, 18260 Hwy 128, Calistoga, CA 94515. Professional Declaration Prepared for: Maacama Watershed Alliance, October 27, 4p.
- Kamman, G.R., 2014, Review of Middle Green Valley Specific Plan Project, Revised Recirculated Draft Environmental Impact Report, Solano County, CA, Sch# 2009062048. Professional Declaration Prepared for: Law Offices of Amber Kemble, August 11, 11p.
- Kamman, G.R., 2014, Top of Bank Review, Finger Avenue Planned Development Project, Redwood City, CA. Professional Declaration Prepared for: Friends of Cordilleras Creek, July 14, 10 p.
- Kamman, G.R., 2014, Hydrologic Technical Review of 1360 Big Rock Road Project St. Helena, California. Professional Declaration Prepared for: Lippe, Gaffney Wagner LLP, June 14, 5p.
- Kamman, G.R., 2014, Review of IS/MND Kongsgaard Wine LLC – Atlas Peak Vineyard Conversion Agricultural Erosion Control Plan #P14-00069. Professional Declaration Prepared for: Law Offices of Thomas N. Lippe, APC, May 14, 9 p.
- Kamman, G.R., 2013, Review of Middle Green Valley Specific Plan Project, Solano County, CA, Recirculated Draft EIR, Sch.# 2009062048. Professional Declaration Prepared for: Law Offices of Amber Kemble, October 10, 6p.
- Kamman, G.R., 2013, Flow trend analysis, Williamson and Sprague River Basins. Prepared for: Yurok Tribe, July 22, 8p.
- Kamman, G.R., 2014, Addendum to Hydrologic Technical Review of 1360 Big Rock Project, St. Helena, California.. Professional Declaration Prepared for: Lippe Gaffney Wagner, LLP, June 17, 2p.
- Kamman, G.R., 2014, Hydrologic Technical Review of 1360 Big Rock Project, St. Helena, California. Professional Declaration Prepared for: Lippe Gaffney Wagner, LLP, June 14, 5 p.
- Kamman, G.R., 2013, Proposed hydraulic analysis and design recommendations – landslide stabilization – creek cascade design element, Green Gulch Zen Center, Muir Beach, CA. Prepared for Green Gulch Zen Center, April 25, 4p.
- Kamman, G.R., 2012, Deposition of Gregory Richard Kamman, R.G., C.H.G., Schaefer vs. City of Larkspur, CA, Superior Court of the State on California, County of Marin. August 23, 2012.
- Kamman, G.R., 2012, Technical review comments to Biological Assessment, Sharp Park Safety, Infrastructure Improvement and Habitat Enhancement Project. Prepared for Wild Equity Institute, August 3, 11p.
- Kamman, G.R., 2012, Proposed Hardy-based Environmental Water Allocation (EWA) Input for WRIMS Model Simulation, Klamath River Basin. Prepared for: Yurok Tribe, July 20, 5p.
- Kamman, G.R., 2012, Review of Draft EIR, Hunter Subdivision Project, St. Helena, CA. Professional Declaration Prepared for: Law Offices of Thomas Lippe, July 10, 11p.

Greg Kamman, PG, CHG
Principal Hydrologist

- Kamman, G.R., 2012, Review of groundwater conditions and modeling report by S.S. Papadopoulos & Associates, Inc., Scott Valley, California. Prepared for: Yurok Tribe, 4p.
- Kamman, G.R., 2012, Review of Mitigated Negative Declaration, Ratna Ling Buddhist Retreat Master Plan, File No. PLP08-0021. Professional Declaration Prepared for: Law Offices of Paul Carrol and Friends of the Gualala River, April 4, 5p.
- Kamman, G.R., 2011, Supplemental Declaration of Greg Kamman regarding Laguna Salada, Wild Equity Institute v. City and County of San Francisco, et al., Case No.: 3:11-CV-00958 SI, United States District Court, Northern District of California, San Francisco Division. Prepared for Wild Equity Institute, November 4, 50p.
- Kamman, G.R., 2011, Declaration of Greg Kamman regarding Laguna Salada, Wild Equity Institute v. City and County of San Francisco, et al., Case No.: 3:11-CV-00958 SI, United States District Court, Northern District of California, San Francisco Division. Prepared for Wild Equity Institute, September 23, 7p.
- Kamman, G.R., 2011, Preliminary Review of BBPUD Bay Flat Road Well Installation Project. Prepared for: Law Offices of Rose Zoia, July 10, 16p.
- Kamman, G.R., 2010, Review of Sonoma County Water Agency NOP (issued 9/29/10) Fish Habitat Flow and Water Rights Project. Professional declaration prepared for: Friends of Eel River, November 8, 7p.
- Kamman, G.R., 2009, Finger Avenue Nine-Lot Planned Development. Professional declaration prepared for Friends of Cordilleras Creek, October 26, 2p.
- Kamman, G.R., 2009, Supplemental Technical Review of Henry Cornell Winery, 245 Wappo Road, Santa Rosa, CA APN 028-260-041. Prepared for Ms. Kimberly Burr, Esquire, June 1, 3p.
- Kamman, G.R., 2009, San Rafael Airport Recreation Facility DEIR. Profession declaration prepared for Friends of Gallinas Creek, May 12, 3p.
- Kamman, G.R., 2008, Technical Review of Henry Cornell Winery, 245 Wappo Road, Santa Rosa, CA APN 028-260-041. Prepared for Ms. Kimberly Burr, Esquire, November 12, 8p.
- Kamman, G.R., 2007, Independent Model Review for Klamath Settlement Negotiations, Klamath Independent Review Project (KIRP). Prepared for Northcoast Environmental Center, November 9, 19p.
- Kamman, G.R., 2007, Negative Declaration for File No. UPE04-0040, Gualala Instream. Professional declaration prepared for Friends of the Gualala River, October 21, 2p.
- Kamman, G.R., 2007, Second Declaration on WRA and Balance Hydrologics, Inc. technical studies pertaining to wetland conditions at the Harbor View Development site, Bodega Bay, CA. September 20, 3p.
- Kamman, G.R., 2007, Fairfax Conversion Project Environmental Impact Report (SCH# 2004082094). Professional declaration prepared for Friends of the Gualala River, July 27, 15p.

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Principal Hydrologist

- Kamman, G.R., 2007, Comments on WRA and Balance Hydrologics, Inc. technical studies pertaining to wetland conditions at the Harbor View Development site, Bodega Bay, CA. February 13, 4p.
- Kamman, G.R., 2004, Evaluation of potential impacts on hydrology and water supply, THP No. 1-04-055 SON and Proposed Mitigated Negative Declaration TCP No. 04-533, Roessler/Zapar Inc. THP/Conversion, Annapolis, CA. Professional declaration prepared for Friends of the Gualala River, August 13, 11p.
- Kamman, G.R., 2004, Evaluation of potential hydrologic effects, THP No. 1-04-059 SON and Proposed Mitigated Negative Declaration TCP No. 04-531, Sleepy Hollow (Martin) THP/Conversion, Annapolis, CA. Professional declaration prepared for Friends of the Gualala River, July 17, 9p.
- Kamman, G.R., 2004, Robert Mondavi Properties Vineyard (Erosion Control Plan Application #99323). Professional declaration prepared for the Law Offices of Thomas N. Lippe, July 1, 5p.
- Kamman, G.R., 2004, Pocket Canyon THP No. 1-020216 SON. Professional declaration prepared for Pocket Canyon Protection Group, March 8, 2p.
- Kamman, G.R., 2003, Evaluation of potential hydrologic effects, Negative Declaration for THP/Vineyard Conversion, No. 1-01-171 SON, Artesa Vineyards, Annapolis, CA. Professional declaration prepared for Friends of the Gualala River, May 19, 9p.
- Kamman, G.R., 1999, Review of Final Supplemental Environmental Assessment, Cirby-Linda-Dry Creek Flood Control Project. Professional declaration prepared for: Monty Hornbeck, Sunrise Office Park Owners Association; Bill Kopper/John Gabrielli, Attorneys at Law; and Sharon Cavello/Cathie Tritel, Placer Group Sierra Club, May 24, 10p.
- Kamman, G.R., 1997, Review comments, Deer Creek Hills Draft EIR. Professional declaration prepared for: The Nature Conservancy, August 4, 6p.
- Kamman, G.R., 1995, Variable Water Resources Available in the Area of Salinas, California. Declaration prepared for Price, Postal, and Parma, Santa Barbara, California, May, 6p.

3.0 PUBLICATIONS AND PRESENTATIONS

- Kamman, G.R. and Kamman, R.Z., 2015, Landscape Scale Urban Creek Restoration in Marin County, CA - Urban Creek Restoration: Interfacing with the Community. 33rd Annual Salmonid Restoration Conference, March 11-14, Santa Rosa, CA.
- Kamman, G.R., R.Z., 2015, Enhancing Channel and Floodplain Connectivity: Improving Salmonid Winter Habitat on Lagunitas Creek, Marin County, CA - Beyond the Thin Blue Line: Floodplain Processes, Habitat, and Importance to Salmonids. 33rd Annual Salmonid Restoration Conference, March 11-14, Santa Rosa, CA.
- Kamman, G.R., 2012, The role of physical sciences in restoring ecosystems. November 7, Marin Science Seminar, San Rafael, CA.
- King, N. and Kamman, G.R., 2012, Preferred Alternative for the Chicken Ranch Beach/Third Valley Creek Restoration Project. State of the Bay Conference 2012, Building Local Collaboration & Stewardship of the Tomales Bay Watershed. October 26, Presented by: Tomales Bay Watershed Council, Inverness Yacht Club, Inverness, CA.
- King, N. and Kamman, G.R., 2010, Chicken Ranch Beach Restoration Planning by TBWC. State of the Bay Conference 2010, A Conference about Tomales Bay and its Watershed. October 23, Presented by: Tomales Bay Watershed Council, Inverness Yacht Club, Inverness, CA.
- Higgins, S. and Kamman, G.R., 2009, Historical changes in Creek, Capay Valley, CA. Poster presented at American Geophysical Union Fall Meeting 2009, Presentation No. EP21B-0602, December.
- Kamman, G.R. and Higgins, S., 2009, Use of water-salinity budget models to estimate groundwater fluxes and assess future ecological conditions in hydrologically altered coastal lagoons. Coastal and Estuarine Research Federation 20th Biennial Conference, 1-5 November, Portland, OR
- Bowen, M., Kamman, G.R., Kaye, R. and Keegan, T., 2007, Gualala River Estuary assessment and enhancement plan. Estuarine Research Federation, California Estuarine Research Society (CAERS) 2007 Annual Meeting, 18-20 March, Bodega Marine Lab (UC Davis), Bodega Bay, CA
- Bowen, M. and Kamman, G.R., M., 2007, Salt River Estuary enhancement: enhancing the Eel River Estuary by restoring habitat and hydraulic connectivity to the Salt River. Salmonid Restoration Federation's 25th Salmonid Restoration Conference, 7-10 March, Santa Rosa, CA.
- Magier, S., Baily, H., Kamman, G., and Pfeifer, D, 2005, Evaluation of ecological and hydrological conditions in the Santa Clara River Estuary with respect to discharge of treated effluent. In: Abstracts with Programs, The Society of Environmental Toxicology and Chemistry North America 26th Annual Meeting, 13-17 November, Baltimore Convention Center, Baltimore, Maryland.
- Baily, H., Magier, S., Kamman, G., and Pfeifer, D, 2005, Evaluation of impacts and benefits associated with discharge of treated effluent to the Santa Clara River Estuary. In: Abstracts with Programs, The Society of Environmental Toxicology and Chemistry North America 26th Annual Meeting, 13-17 November, Baltimore Convention Center, Baltimore, Maryland.
- Kamman, G.R., Kamman, R.Z., and Parsons, L., 2005, Hydrologic and Hydraulic Feasibility Assessments for Ecological Restoration: The Giacomini Wetland Restoration Project, Point Reyes National Seashore, CA. In: Abstracts with Programs, The Geological Society of America, 101st Annual

Cordilleran Section Meeting, Vol.37, No. 4, p. 104, Fairmont Hotel, April 29-May1, 2005, San Jose, CA.

Kamman, G.R., 2001. Modeling and its Role in the Klamath Basin – Lewiston Reservoir Modeling. Klamath Basin Fish & Water Management Symposium, Humboldt State University, Arcata, CA, May 22-25.

Kamman, G.R., 1998, Surface and ground water hydrology of the Salmon Creek watershed, Sonoma County, CA. Salmon Creek Watershed Day, May 30, Occidental, CA.

Kamman, G.R., 1998. The Use of Temperature Models in the Evaluation and Refinement of Proposed Trinity River Restoration Act Flow Alternatives. ASCE Wetlands Engineering and River Restoration Conference Proceedings, Denver, Colorado (March 22-23, 1998).

Hecht, B., and Kamman, G.R., 1997, Historical Changes in Seasonal Flows of the Klamath River Affecting Anadromous Fish Habitat. In: Abstracts with Programs Klamath Basin Restoration and Management Conference, March 1997, Yreka, California.

Hanson, K.L, Coppersmith, K.J., Angell, M., Crampton, T.A., Wood, T.F., Kamman, G., Badwan, F., Peregoy, W., and McVicar, T., 1995, Evaluation of the capability of inferred faults in the vicinity of Building 371, Rocky Flats Environmental Technology Site, Colorado, in Proceedings of the 5th DOE Phenomena Hazards Mitigation Conference, p. 185-194, 1995.

Kamman, G.R. and Mertz, K.A., 1989, Clay Diagenesis of the Monterey Formation: Point Arena and Salinas Basins, California. *In*: Abstracts with Programs, The Geological Society of America, 85th Annual Cordilleran Section Meeting, Spokane Convention Center, May 1989, Spokane, Washington, pp.99-100.

4.0 ENGINEERING DESIGNS AND SPECIFICATIONS

- Kamman G.R., Kamman R.Z., Hayes, C., Lapine, S.L. and Fiori Geoscience, 2017, Lagunitas Creek Salmonid Winter Habitat Enhancement Plans, Marin County, CA., Project Sites 1-9: – Issued for Bid. Prepared for: Marin Municipal Water District, April 17, 25 sheets.
- Kamman G.R., Kamman R.Z., Hayes, C., 2017, Mana Plain Wetland Restoration Plan, Mana, Kauai, Hawaii. Prepared for: State of Hawaii, Board of Land and Natural Resources, April 15, 18 sheets.
- Kamman G.R., Kamman R.Z., and Hayes, C., 2017, Home Ranch Pond #2 and #9 Design, Point Reyes National Seashore. Prepared for: Jacobs Engineering, February 3, 5 sheets.
- Kamman G.R. and Kamman R.Z., 2015, Plans for Construction of Conlon Avenue Parking Lot – 90% Design. Prepared for: Golden Gate National Recreation Area, Muir Woods National Monument, December 3, 10 sheets.
- Kamman G.R. and Kamman R.Z., 2015, Plans for Construction of Conlon Avenue Parking Lot – 90% Design. Prepared for: Golden Gate National Recreation Area, Muir Woods National Monument, December 3, 10 sheets.
- Kamman G.R. and Kamman R.Z., 2014, Plans for construction of Lower Miller Creek Channel Maintenance Project – 30% Design. Prepared for: Las Gallinas Valley Sanitary District, November, 11 sheets.
- Kamman G.R., Lapine, S.L., and Hayes, C., 2014, Rheem Creek Wetland Restoration Design. Prepared for: Olberding Environmental, Inc., October 22, 1 sheet.
- Kamman G.R., Kamman R.Z. and Lapine, S.L., 2014, East Arm Mountain Lake Wetland Restoration Plan, The Presidio of San Francisco, CA. Prepared for: The Presidio Trust, June 30, 11 sheets.
- Kamman, G.R., 2014, John West Fork Fish Passage Repair Project. Prepared for: Point Reyes National Seashore, June, 6p.
- Kamman G.R., Kamman R.Z., Lapine, S.L. and Oberkamper Associates Civil Engineers, Inc., 2014, YMCA Reach of Tennessee Hollow Creek Wetland Restoration Construction Documents, The Presidio of San Francisco, CA. Prepared for: The Presidio Trust, April, 15 sheets.
- Kamman G.R., Kamman R.Z., and Oberkamper Associates Civil Engineers, Inc., 2014, Technical Specifications for YMCA Reach of Tennessee Hollow Creek Wetland Restoration, The Presidio of San Francisco, CA. Prepared for: The Presidio Trust, April, 133p.
- Kamman G.R., and Kamman R.Z., 2014, Technical Specifications for East Arm Mountain Lake Wetland Restoration, The Presidio of San Francisco, CA. Prepared for: The Presidio Trust, March, 127p.
- Kamman G.R., Kamman R.Z., Lapine, S.L., Oberkamper Associates Civil Engineers, Inc., and Roth LaMotte Landscape Architecture, 2014, MacArthur Meadow Wetland Restoration Plan, The Presidio of San Francisco, CA – 30% Design. Prepared for: The Presidio Trust, March 10, 12 sheets.
- Kamman G.R., 2013, Suisun Creek Preserved Mitigation Wetland, Solano County, CA. Prepared for: Las Gallinas Valley Sanitary District, November, 11 sheets.

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Kamman G.R., Kamman R.Z. and Lapine, S.L., 2013, Cayatano Creek Preserve Mitigation Wetland, Livermore Area, Alameda and Contra Costa Counties, CA – 50% Design. Prepared for: Grizzly Bay LLC., July 16, 2 sheets.

Miller Pacific Engineering Group and Kamman, G.R., 2013, Landslide stabilization retaining wall and rip-rap cascade, Green Gulch Zen Center, Muir Beach, CA. Prepared for: Green Gulch Zen Center, July, 8 sheets.

Kamman G.R., Kamman R.Z. and Lapine, S.L., 2013, Kellogg Creek and Deer Valley East Restoration Project, Contra Costa County, CA. Prepared for: Contra Costa Water District, June, 15 sheets.

Kamman G.R. and Kamman R.Z., 2013, Technical Specifications for Kellogg Creek and Deer Valley East Restoration Project, Contra Costa County, CA. Prepared for: Contra Costa Water District, June, 91p.

Kamman, G.R., 2012, John West Fork Repair Project, Point Reyes National Seashore, CA. Prepared for: National Park Service, December, 5 sheets.

Kamman G.R. and Lapine, S.L., 2012, Home Ranch Pond #9 Design, Point Reyes National Seashore, CA. Prepared for: Point Reyes National Seashore., October 24, 3 sheets.

Kamman G.R. and Lapine, S.L., 2012, G Ranch Wetland Swale near Abbott's Lagoon, Point Reyes National Seashore, CA. Prepared for: Point Reyes National Seashore., October 3, 3 sheets.

Kamman G.R. and Lapine, S.L., 2012, Eagle Ridge Preserve Property Wetland Design, Livermore Area, Contra Costa and Alameda Counties, CA. Prepared for: Olberding Environmental, Inc., August 31, 2 sheets.

Kamman G.R., 2012, Bear Valley Trail Upper Culvert Replacement and Bank Repair, Point Reyes National Seashore, CA. Prepared for: Point Reyes National Seashore, April, 8 sheets.

Kamman R.Z., Kamman G.R., and Lapine, S., 2012, Salt River Ecosystem Restoration Project, Riverside Ranch Tidal Marsh Restoration Plans, Phase 1 Construction. Prepared for Humboldt County RCD, April, 24 sheets.

Kamman R.Z., Kamman G.R., and Lapine, S., 2012, Technical Specifications for the Salt River Ecosystem Restoration Project, Phase 1 Construction, Riverside Ranch and Salt River Restoration Plans. Prepared for Humboldt County RCD, February, 163p.

Kamman, G.R., Kamman, R.Z., Higgins, S. and Lapine, S., 2010, Las Gallinas Valley Sanitary District (LGVSD) - Miller Creek Sanitary Sewer Easement Restoration (100% construction drawings), San Rafael, California. Prepared for LGVSD, September 1, 8 sheets.

Kamman, G.R., Kamman, R.Z., Higgins, S. and Lapine, S., 2010, Technical Specifications for Las Gallinas Valley Sanitary District (LGVSD) - Miller Creek Sanitary Sewer Easement Restoration, San Rafael, California. Prepared for LGVSD, September 1, 70p.

Kamman, G.R., Kamman, R.Z. and Lapine, S., 2010. Point Reyes National Seashore, Restore Critical Dune Habitat to Protect Threatened and Endangered Species, 100% construction drawings. Prepared for: Point Reyes National Seashore Association and National Park Service, June 1, 13 sheets.

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- Kamman, G.R. and Lapine, S., 2010. Former Reservoir Fill Site, Restoration at Muir Beach, Golden Gate National Recreation Area (100% Construction drawings). Prepared for Golden Gate National Parks Conservancy, May 12, 2 sheets.
- Kamman, G.R. and Lapine, S., 2010. Alluvial Fan Fill Site, Restoration at Muir Beach, Golden Gate National Recreation Area (100% Construction drawings). Prepared for Golden Gate National Parks Conservancy, May 12, 2 sheets.
- Kamman, G.R., Kamman, R.Z. and Lapine, S., 2010. Technical Specifications, Point Reyes National Seashore, Restore Critical Dune Habitat to Protect Threatened and Endangered Species, 100% plan set. Prepared for: Point Reyes National Seashore Association and National Park Service, June 1, 132p.
- Kamman G.K. and Lapine, S., 2010, Dragonfly Creek Restoration Design, in: State of California, Department of Transportation, Project plans for construction on adjacent to State Highway in the City and County of San Francisco 0.3 mile south of Route 1/101 separation, March 25, 30 sheets.
- Kamman G.R. and Lapine, S.L., 2009, Project Plans for Construction on Eastern Tributary of Tennessee Hollow Creek, The Presidio of San Francisco, CA. Prepared for: The Presidio Trust, on behalf of State of California, Department of Transportation., September 23, 10 sheets.
- Kamman, R.Z., Kamman G.K., and Beahan, C., 2008, 100% Design Drawings, Plans for construction of Vineyard Creek Channel Enhancement Project, from end of Arbor Circle to McClay Road, Project No. 2008-006. Prepared for Marin County Department of Public Works, Flood Control and Water Conservation District Zone 1 and City of Novato, CA, June, 28 sheets.
- Kamman G.K., Kamman, R.Z., and Beahan, C., 2008, Contract documents including: notice to contractors, proposals, special provisions and contract documents for Vineyard Creek Channel Enhancement Project, from end of Arbor Circle to McClay Road, Novato California. Prepared for Marin County Department of Public Works, Flood Control and Water Conservation District Zone 1, June, 144p.
- Kamman G.K. and Kamman, R.Z., 2008, Giacomini Wetland Restoration Project, Phase 2 (2008) Construction Drawings. Prepared for Golden Gate National Recreation Area and Point Reyes National Seashore, May, 33 sheets.
- Kamman G.K., Kamman, R.Z., and Beahan, C., 2007, Giacomini Wetland Restoration Project, Phase I (2007) Construction Drawings. Prepared for Golden Gate National Recreation Area and Point Reyes National Seashore, August, 23 sheets.
- Kamman G.K., Kamman, R.Z., and Beahan, C., 2007, Technical Specifications for Giacomini Wetland Restoration Project, Phase I (2007) Construction. Prepared for Golden Gate National Recreation Area and Point Reyes National Seashore, with contributions from Winzler & Kelly, August, 185p.
- Kamman G.K. and Kamman, R.Z., 2008, Technical Specifications for Giacomini Wetland Restoration Project, Phase 2 (2008) Construction. Prepared for Golden Gate National Recreation Area and Point Reyes National Seashore, May, 243p.
- Kamman, G.R., Kamman R.Z., and Beahan, C., 2007, 100% Specifications, Lower Redwood Creek floodplain and salmonid habitat restoration at the Banducci site, Golden Gate National Recreation

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Area, Marin County, CA. Prepared for Golden Gate Parks Conservancy and National Park Service, June 8, 46p.

Kamman, R.Z., Kamman G.K., and Beahan, C., 2007, 100% Design Drawings, Lower Redwood Creek Restoration, The Banducci Site, Golden Gate National Recreation Area, Marin County, CA. Prepared for Golden Gate Parks Conservancy and National Park Service, February 28, 7 sheets.

Kamman G.K. and Kamman, R.Z., 2006, Feasibility Study and Construction Drawings for Freshwater Marsh and High Water Wildlife Refugia on the West Pasture of the Giacomini Dairy. Prepared for Golden Gate National Recreation Area and Point Reyes National Seashore, September.

Kamman, G.R., 2002, Haypress Pond Restoration Grading Plan, Tennessee Valley, Sausalito, CA. Prepared for Golden Gate National Recreation Area, National Park Service, January 10, 15p.

5.0 ACADEMIC APPOINTMENTS

San Francisco State University, 2012 through 2014, Wetland hydrology. SFSU College of Extended Learning, Romberg Tiburon Center, CA, 2-day course, 1.6 CEU.

San Francisco State University, 2011, Introduction to wetland hydrology. Basic Wetland Delineation Training, SFSU College of Extended Learning, Romberg Tiburon Center, CA, March 28-April 1.

University of California, Berkeley Extension, 2001 through 2008, Hydrologic and geomorphic processes in stream restoration. Civil and Environmental Engineering, Certificate Program in California Water Management and Ecosystem Restoration, Berkeley, CA, 2-day course, 1.0 CEU.

San Francisco State University, 2007, Introduction to tidal wetland hydrology. SFSU College of Extended Learning, Romberg Tiburon Center, CA, May 11-12, 1.6 CEU.

City of San Jose, 2005, Hydrologic and geomorphic processes in stream restoration. City of San Jose's Environmental Services Department, Watershed Protection Division, San Jose, CA, January 26.

Miami University Geology Field Station, Dubois, WY, 1989, Instructor, Summer Session, May-July.

Miami University, Oxford, Ohio, 1985-89, Instructor and Research/Teaching Assistant (MS candidate).