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State Water Resources Control Board
Division of Water Rights
Attention: Peter Barnes
P.O. Box 2000
Sacramento, CA 95812-2000

Sent via electronic mail to: PBarnes@waterboards.ca.gov

Dear Mr. Barnes,

American Whitewater appreciates having the opportunity to provide comment in response to the State Water Resources Control Board's Notice of Preparation ("NOP") of an Environmental Impact Report for the proposed amendment to the Pit 1 Hydroelectric Project's (FERC #2687) 401 Water Quality Certification ("401 Certification").

American Whitewater is a 501(c)(3) non-profit organization whose mission is to conserve and protect America's whitewater resources and enhance opportunities to enjoy them safely. Founded in 1954, American Whitewater represents the conservation interests of tens of thousands of whitewater paddlers across the country. As avid whitewater recreationists, we place a high value on protecting naturally functioning river ecosystems and restoring their values. We have a strong membership base in Northern California, and our members recreate on the Pit River Bypass Reach when flows are high enough to enjoy the river by raft, kayak or canoe. We intervened in the FERC relicensing process for the Pit 1 Hydroelectric Project in 1995, and were a key stakeholder in the relicensing negotiations for the FERC license issued in 2003. We have also been involved in the process since we were made aware of the proposal to cancel the summer flushing/whitewater boating flows in 2009, and we have a strong interest in the outcome of these proceedings.

I. Introduction.

Through the CEQA process, American Whitewater seeks to ensure that the daily operation of the Pit 1 Hydroelectric Project both protects endangered species and meets water quality goals and objectives outlined in the Basin Plan, including COLD water habitat, RARE preservation of rare and endangered species and REC-1 contact recreation opportunities. For reasons we outline below, and testified to at the public hearing in Redding on June 8th, 2013, American Whitewater does not believe that the CEQA Project as currently defined in the Notice of Preparation will accomplish these goals. We believe that the Water Board has a duty under CEQA and the Basin Plan to examine numerous reasonable alternatives that will protect the endangered Shasta crayfish in the Pit 1 Bypass Reach and address the ongoing temperature impacts of the Pit 1 Project. As

discussed below, these include developing barriers to keep invasive crayfish out of Shasta crayfish habitat, examining temperature control devices or ways to mitigate the temperature impacts of the project, and assessing a variety of minimum instream flow release scenarios, both with and without temperature mitigation in place.

Further, there are fundamental pieces of scientific information that need to be assessed before the Water Board can make an informed decision about the impacts of the Pit 1 Project on the Shasta crayfish. These issues include population surveys, temperature tolerances of the species, and an assessment of how cancelling the flushing flows will benefit Shasta crayfish when similar, and often more extreme population declines are seen in other populations outside of the influence of the flushing flows.

Finally, the summer flushing/whitewater flows provided a whitewater recreation opportunity between 2003 and 2009. This opportunity was in addition to the whitewater recreation flows required by the license in the fall. In the event that the Water Board determines, using the best available science, that cancelling the flushing flows will benefit the Shasta crayfish, CEQA requires the Water Board to consider full mitigation of the loss.

II. The State Water Board Should Ensure Power Operations Are Not Contributing to the Degradation of Shasta Crayfish.

New information about water quality and the Shasta crayfish has been presented since the 401 Certification was issued for the Pit 1 Project in 2001 that suggests that the entire project as a whole is likely causing significant adverse environmental impacts. We believe that these issues should be analyzed by the Water Board during the reopening proceeding.

The 401 Certification for the Pit 1 Hydroelectric Project includes conditions preserving the Board's authority to reopen and amend the 401 Certification as necessary to assure the Project's continuing compliance with water quality standards, including new or modified designated uses. It appears to be undisputed that Shasta crayfish in the project area are in decline. We believe that this is prima facie evidence that the Pit 1 Project is not complying with the designated uses of cold freshwater habitat (COLD)¹ and preservation of rare and endangered species (RARE).² Accordingly, the Board has an

¹ Cold Freshwater Habitat is defined as "[u]ses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates." Basin Plan, p. II-2.00

² RARE is defined as "[u]ses of water that support aquatic habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered." *Id.* Based on our review the Basin Plan, it appears that the State Water

² RARE is defined as "[u]ses of water that support aquatic habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered." *Id.* Based on our review the Basin Plan, it appears that the State Water Board has not identified surface waters that support the designated use of RARE:

affirmative duty to reopen and amend the 401 Certification to assure that the Project is properly conditioned to protect these uses from further degradation and to contribute to the restoration of the physical, biological, and chemical integrity of project waters. In carrying out its duty, the Board should not limit itself to consideration of PG&E's proposal to eliminate flushing flows, but should consider changes to any controllable factors that may be necessary to protect the endangered Shasta crayfish and bring the Pit 1 Project into compliance with the Basin Plan. As discussed below, the available information indicates that eliminating flushing flows alone will not assure that the CEQA Project as currently defined protects Shasta crayfish.

A. Daily Operations of the Pit 1 Hydroelectric Project Increase Water Temperatures.

The primary sources of water for the Pit 1 Hydroelectric project are the spring waters that emanate near the town of McArthur. These springs, which come together into the Fall River, include Big Lake, Tule River, Ja-She Creek, and Lava Creek, forming one of the largest fresh water spring systems in the country.³ These crystal clear springs provide high quality cold water habitat and are home to the largest remaining Shasta Crayfish populations in existence. These springs also support abundant populations of trout and other cold water species. The Fall River winds its way through the Fall River Valley until it is impounded by the Pit 1 Forebay, where approximately 90% of the flow is diverted and the remaining water is subject to thermal loading before being released into the Lower Fall and Pit Rivers.

The Pit River is a different story. It is listed as temperature impaired on the state's 303(d) list from the confluence of the North and South Forks to Shasta Lake.⁴ Water quality monitoring data in reports by PG&E outline that the Pit 1 Project increases water temperatures throughout the summer during daily operations, playing a role in contributing to the water quality impairment. Between 1990 and 1992, for the period between June through September, the temperature of the Fall River below the Pit 1 Forebay and Fall River Pond was, on average, 2.9 °C (5.22 °F) warmer than the Fall River above project impoundments (with a maximum daily average of 4.8 °C (8.64 °F)), and between 2004 and 2008, the Fall River below project impoundments was 2.2 °C

Surface waters with the beneficial uses of Groundwater Recharge (GWR), Freshwater Replenishment (FRSH), and Preservation of Rare and Endangered Species (RARE) have not been identified in this plan. Surface waters of the Sacramento and San Joaquin River Basins falling within these beneficial use categories will be identified in the future as part of the continuous planning process to be conducted by the State Water Resources Control Board.

Basin Plan, p. II-5.00, note. However, this is a de facto use of project waters, as Shasta crayfish are present. CWA section 401(d) allows the Board to impose "other limitations" on the project in general to assure compliance with various provisions of the Clean Water Act and with "any other appropriate requirement of State law." *PUD No. 1 of Jefferson County v. Washington Dept. of Ecology*, 511 U.S. 700, 711-12 (1994).

³ http://www.parks.ca.gov/?page_id=464, last visited June 20, 2013.

⁴ Information obtained from 2010 Integrated Report–303(d) List, available at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml, last visited June 20, 2013.

warmer (3.96 °F) than above project impoundments (with a maximum daily average of 4.1 °C (7.38 °F)). PG&E 2009 Water Quality Monitoring 5-Year Summary Report, FERC eLibrary no. 20090701-5302, p. 35. PG&E's 2012 water quality report shows that the Pit 1 Project continues to increase water temperatures in the Fall River, with the maximum daily change in temperature being 3.0 °C warmer (5.4 °F). PG&E Pit 1 Water Quality Monitoring Results 2012 Annual Report, FERC eLibrary no. 20130531-5135, p. 16.

Based on our review, these temperature increases appear to violate the water quality objectives for temperature outlined in the Basin Plan, which state that “[a]t no time or place shall the temperature of COLD or WARM intrastate waters be increased more than 5 °F above natural receiving water temperature.”⁵ Further, the Project appears to be out of compliance with water quality standards outlined in the Central Valley Region's Basin Plan, harming COLD water habitat and RARE beneficial uses.⁶

The Water Board is required to examine the factors that are controllable by and related to the Pit 1 Hydroelectric Project that are impacting water quality standards. These “controllable factors” are defined as “those actions, conditions, or circumstances resulting from human activities that may influence the quality of the waters of the State.”⁷ The Pit River is listed as temperature impaired on the 303(d) list due to agricultural runoff. However, “controllable factors are not allowed to cause further degradation of water quality in instances where uncontrollable factors have already resulted in water quality objectives being exceeded. The Regional Water Board recognizes that man made changes that alter flow regimes can affect water quality and impact beneficial uses.”⁸

It would be most efficient for the Water Board to consider the impacts of the daily operations of the Pit 1 Project on the Shasta crayfish in the current proceedings. In the event that the Water Board does not examine the impact of the operations of the Pit 1 Project beyond the flushing flows on beneficial uses, water quality criteria, and potential ongoing take of a state and federally listed endangered species, American Whitewater reserves its right to file a Petition for Reconsideration to address these matters.

B. The Record Does Not Include Adequate Information to show that the Elimination of Flushing Flows Will Protect Shasta Crayfish.

The NOP outlines the CEQA Project Objective as to: “Amend the existing 401 Certification to permanently eliminate or modify the requirement for flushing flows that

⁵ Basin Plan, Water Quality Objective III-8.00 (August 13, 2009).

⁶ In their 2012 Annual Water Quality Report, PG&E cites to the Basin Plan which states that “the natural receiving water temperature of intrastate waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Water Quality Control Board that such alteration in water temperature does not adversely affect beneficial uses.” Basin Plan, p. III-8.00. However, to our knowledge the RWQCB has not found that the alteration in water temperature is not adversely affecting beneficial uses.

⁷ Basin Plan, pp. III-1.00 to III-2.00—The 2nd important point that applies to water quality objectives (September 1, 1998).

⁸ *Id.* (Emphasis added).

may be detrimental to endangered Shasta crayfish.” NOP, p. 3. As indicated on the face of this statement, the record does not contain adequate evidence to show that flushing flows are detrimental to Shasta crayfish, or that elimination of flushing flows will contribute to their recovery.

An EIR must be supported by substantial evidence in the record. *See, e.g., Vineyard Area Citizens for Responsible Growth v. City of Rancho Cordova* (2007) 40 C4th 412, 435; *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 C3d 553, 566, 575. The substantial evidence standard applies to “conclusions, findings and determinations” and also to disputes regarding the scope of an EIR’s analysis of a given topic, the methodology used for studying an impact, and the reliability or accuracy of the data upon which the EIR relied. *City of Long Beach v. Los Angeles Unified Sch. Dist.* (2009) 176 Cal.App.4th 889, 898.

1. Population Trends Indicate That a Cause Other Than Flushing Flows Is Leading to Shasta Crayfish Decline.

A decline in the number of Shasta crayfish found at a 600-meter reach just above Pit River Falls triggered concerns about Shasta crayfish populations in the Pit 1 Bypass Reach. There, 21 Shasta crayfish were found in October 2005, while one was found in September 2008. During this same time period in the same reach, the number of signal crayfish almost tripled and the number of fantail almost doubled. 2010 Shasta Crayfish Annual Report, FERC eLibrary no. 20110525-5070, pp. 11-13.

PG&E cites that this decline has occurred since the new flow regime was implemented with the new license in 2004, which included an increase in minimum instream flows and the summer flushing/whitewater flows. Evaluation of Thermal Effects from Summer Flushing/Whitewater Flows, FERC eLibrary no. 20100106-5009, p. 13. A decline in Shasta crayfish in the Pit 1 Bypass Reach and nowhere else would support this hypothesis. However, similar and often more extreme declines in Shasta crayfish, and corresponding increases in invasive crayfish populations, have been seen throughout the Pit River Basin in the same timeframe, all in areas *without* flushing flows. 2010 Shasta Crayfish Annual Report, FERC eLibrary no. 20110525-5070, pp. 11-13. In light of this information, there is insufficient basis to conclude that the flushing flows are a unique cause of the decline of Shasta crayfish populations in the Pit 1 Bypass Reach.

The Fish and Wildlife Service concluded in their 1998 Shasta Crayfish Recovery Plan (“Recovery Plan”) that “the non-native signal crayfish (*Pacifastacus leniusculus*), which is both a competitor and predator of the Shasta crayfish, is considered the greatest threat to the continued existence of the Shasta crayfish (USFWS 1998, Ellis 1999).” 2011 Shasta Crayfish Technical Review Committee Annual Report, FERC eLibrary no. 20120530-5174, p. 1. The Recovery Plan states that in order to prevent the extinction of the species, invasive signal crayfish must be removed immediately. 1998, USFWS, p. iv.

The inverse relationship between populations of Shasta crayfish and invasive crayfish outlined above further supports this finding.⁹

Shasta crayfish populations have benefitted where recovery efforts have focused on building barriers to keep invasive crayfish out. PG&E reported:

The two largest Shasta crayfish populations, which are in Thousand Springs and upper Spring Creek in the upper Fall River drainage, have not suffered the dramatic declines observed in other Shasta crayfish populations sympatric with signal crayfish (Spring Rivers 2009, 2011). The Shasta crayfish populations at Thousand Springs and upper Spring Creek have benefited from the crayfish barriers and signal crayfish removal surveys implemented as part of the Crayfish Barrier Plan (PG&E 2006a) developed for License Article 413.

PG&E, Pit 1 Shasta Crayfish Study Report, FERC eLibrary no. 20130131-5321, (Jan. 2013), p. 17.

PG&E's proposal to protect Shasta crayfish by eliminating flushing flows contradicts its own evidence that competition from and predation by nonnative crayfish species are the primary cause of Shasta crayfish decline. The Water Board should weigh PG&E's proposal to eliminate flushing flows accordingly, in light of the paucity of evidence supporting that it would benefit Shasta crayfish. It should consider alternatives to amending the 401 Certification to eliminate flushing flows as necessary to protect Shasta crayfish.

2. PG&E's Argument That Flushing Flows' Effect on Temperature Is Contributing to Shasta Crayfish Decline Is Not Supported by the Evidence.

PG&E states that the flushing flows are harming Shasta crayfish because the species is not adapted to short-term fluctuations in temperature (Biological Evaluation, FERC eLibrary no. 20110316-5009, p. 100), and flushing flows reduce the size of coldwater habitat and eliminate diel temperature fluctuations and cooler nighttime water temperatures (2010 Shasta Crayfish Technical Review Committee Annual Report, FERC eLibrary no. 20110525-5070, p. 25). To date, there have not been any studies conducted which define the temperature tolerances of the Shasta crayfish. In combination with the population trends throughout the Pit River Basin, temperature tolerance data for Shasta and signal crayfish must be more substantial than what PG&E provides in order to amend the 401 Certification. Without specific quantitative information about critical and

⁹ Numerous other studies support this finding: "Competition from exotic crayfish species remains a significant threat." Shasta Crayfish 5-Year Review, p. 10, USFWS, 2009; "Shasta crayfish have declined in both abundance and range since the previous comprehensive study (Daniels 1980). According to Light and Clarke (1991) and Erman et. Al. (1992), the rapid range-expansion of *P. Leniusculus* [signal crayfish] seems to be the most immediate threat to the persistence of Shasta crayfish populations." Mojica, C.L., Mire, J.B., Erman, D.C., "The effect of *Pacifastacus leniusculus* on the behavior of the endangered Shasta crayfish (*Pacifastacus fortis*) in an experimental setting," University of California, Berkeley (1993) (prepared for the California Department of Fish and Game), p. 2.

maximum temperature thresholds of Shasta and signal crayfish, temperature surveys and modeling information about the flushing flows, or discussion of other factors that might affect crayfish temperature tolerance, PG&E's citations in their Final Shasta crayfish study report released in January 2013 do not provide the substantial evidence needed.¹⁰

C. The EIR Must Consider Significant Environmental Impacts.

The EIR must analyze the significant environmental effects of the proposed action on any of the listed environmental factors. Pub. Res. Code § 21100(b)(1); 14 CCR §§ 15126(a), 15126.2(a), 15143. American Whitewater is particularly concerned that the proposed action, as defined in the NOP, will have significant environmental impacts on whitewater recreation.

The 2003 license called for *both* 6 days of summer flushing flows (401 Condition #13) and whitewater recreation flows between September 15th and October 30th (Article 424, which lead to 4 days of whitewater flows ordered by FERC in 2011. See FERC Order Approving Final Whitewater Boating Flow Schedule, eLibrary no. 20110614-3011). If not for the Pit 1 Hydroelectric Project, the Pit River could provide year-round whitewater recreation opportunities. The balance that was struck during relicensing restored a total of 10 days of whitewater recreation flows to the Pit River each year.

It is clear that the flushing flows were intended to provide a whitewater recreation opportunity in addition to controlling aquatic vegetation growth and mosquito production.¹¹ Between 2003 and 2009, the summer flushing flows provided an opportunity for six days of whitewater recreation on the Pit 1 Bypass Reach. The public enjoyed this intended purpose of the flushing flows for the whitewater recreation opportunity, and PG&E documented it during each flushing flow by recording the number of boaters on the reach.

In the event that the Water Board determines that the best available science supports a determination that cancelling the flushing flows will benefit the endangered Shasta crayfish, REC-1 beneficial uses of the Pit River, which include contact recreation and rafting and canoeing, will be significantly impacted. CEQA requires that the Water Board develop and analyze mitigation measures to replace the lost recreation opportunities. Pub. Res. Code § 21002.

¹⁰ It is useful to look to other examples for the kind of quantitative information that is necessary to achieve scientific validity. For example, salmonids have been extensively studied, and an example of temperature tolerance data for salmon can be found at: <http://www.krisweb.com/stream/temperature.htm>. The referenced information speaks of lethality thresholds in terms of the upper incipient lethal temperature ("UILT"), and the critical thermal maxima ("CTM").

¹¹ Personal communications with Jim Canaday, former Water Board staff present at the relicensing negotiations and development of the 401, June 6, 2013. While the language was left out of the 401 at PG&E's request, all parties agreed to this fact. Canaday states that "there was an intended co-purpose, and even if the flushing flows were not necessary to control the vegetation and mosquitoes it was still incumbent on the project to provide the summer flushing flows for on-water recreation in the Pit 1 diverted reach.

D. The EIR Should Consider a Reasonable Range of Alternatives to the Proposed Action.

Under CEQA, the Board must develop and analyze a reasonable range of mitigation measures and alternatives. Pub. Res. Code § 21002. The Board has an obligation to develop and consider alternatives to PG&E's proposed action that include other changes to the controllable factors of the Pit 1 Project's operations and facilities. In addition to examining whether cancelling or modifying the flushing flows will benefit Shasta crayfish, the Water Board should analyze whether the following changes will improve Shasta crayfish habitat and protect beneficial uses.

- 1. Install barriers that will exclude invasive crayfish from the Shasta crayfish's preferred habitat in the Pit 1 Bypass Reach.**
- 2. Consider ways to eliminate thermal loading in the Fall River from the Pit 1 Project.** This could include a temperature control device; a pipe, tunnel or ditch to bring cold Fall River water directly into the Pit River; moving the inlet for the diversion to a point lower in the Forebay; or other solutions that would accomplish this goal of bringing colder spring water from the Fall River into the Pit. These solutions should also be considered in combination with a variety of increased flow levels, as outlined below.
- 3. Assess whether increasing minimum instream flows will protect beneficial uses.** 401 Certification Condition 17 states that reasonable protection of beneficial uses shall be measured by and limited to factors controllable by and related to the Pit 1 Hydroelectric Project operations. If initial streamflow releases are not found to be reasonably protective of the beneficial uses of the Fall and Pit Rivers, the Water Board has reserved the authority to make additional flow releases, up to 400 cfs between June 1 and October 31. As outlined above, the Pit 1 Project is contributing to the impairment of an already impaired water body, and fails to reasonably protect the beneficial uses of the Pit River due to controllable factors.

To date, there has not yet been a scientifically sound investigation into whether increasing minimum instream flows will help protect beneficial uses and mitigate the impacts of Pit 1 Project operations on the Fall and Pit Rivers. At the 5-Year Water Quality Review in 2009 required by Condition 17, PG&E recommended that additional flow releases not be required. The Water Board later agreed. 2012 Water Quality report, p. 3.

PG&E's recommendation was based on SNTMP modeling completed with data obtained from 1990-1992 and 2004-2008, including a flushing flow event between August 12th and August 18th, 2008. PG&E 5-Year Water Quality monitoring Report, 2009, p. 100. In their Draft Shasta Crayfish Study Report, PG&E cited this information as evidence for why increased minimum instream flows would not provide a benefit. The California Department of Fish and Wildlife provided comment on the Draft Report on December 21st, 2012, and the agency cited concerns with the SNTMP model and recommended an updated or a new model. PG&E removed the SNTMP model and

related results from their Final Shasta Crayfish Study and has not conducted additional monitoring or modeling of increased instream flows to support their recommendation. We urge the Water Board to revisit the adaptive flow release recommendation and seek an updated and comprehensive model of a variety of minimum instream flow release scenarios, including those that bring cooler Fall River water directly into the Pit River, as discussed above.

III. Conclusion

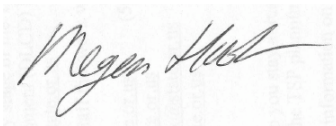
In order to protect the Shasta crayfish and the beneficial uses of the Pit River, the Water Board must look beyond the question of flushing flows and examine the controllable factors of the Pit 1 Hydroelectric Project. We encourage the Water Board to consider the alternatives outlined above, and to seek ways to protect the Shasta crayfish based on substantial evidence.

American Whitewater greatly appreciates your consideration of our comments and concerns on the proposed amendment to the 401 Certification for the Pit 1 Hydroelectric License. We look forward to continuing to be involved as the CEQA process moves forward.

Sincerely,



Dave Steindorf
California Stewardship Director



Megan Hooker
Associate Stewardship Director