Minimum Instream Flow Recommendations: Butte Creek, Butte County

Prepared by:

The California Department of Fish and Game
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April 21, 2009

State of California
Department of Fish and Game

Flex your POWER

Memorandum

Date: May 11, 2009

To: Charles R. Hoppin
Chair
State Water Resources Control Board

From: Donald Koch
Director
Department of Fish and Game

Subject: Department of Fish and Game Minimum Instream Flow Recommendations for Butte Creek, Butte County Pursuant to Public Resources Code Sections 10001-10002

The Department of Fish and Game (Department) has interest in assuring that water flows within streams are maintained at levels which are adequate for long-term protection, maintenance and proper stewardship of fish and wildlife resources. Pursuant to the Public Resources Code (PRC) sections 10001-10002 the Department has developed minimum instream flows for Butte Creek, Butte County.

Butte Creek is a significant watercourse for which minimum instream flow levels need to be established in order to assure the continued viability of stream-related fish and wildlife resources. Butte Creek was selected for development of flow recommendations because it is a significant watercourse with high resource value, and because it is one of only three streams (in addition to Deer and Mill Creek) that harbor a genetically distinct, sustaining population, of Spring Run Chinook Salmon, *Oncorhynchus tshawytscha.*

The Department is transmitting the attached flow recommendations report to the State Water Resources Control Board for consideration as set forth in section 1257.5 of the Water Code. The flow recommendations report contains comments received from the public comment period, and the responses to those comments. Pursuant to PRC sections 10001-10002, the Department also consulted with the Departments of Water Resources, Boating and Waterways, and Parks and Recreation on the attached recommended stream flows identified by the Department for Butte Creek, Butte County.

If you have any questions regarding this memorandum or the attached flow recommendations, please contact Robert Holmes, at (916) 324-0838.

Attachment

cc: Nancee Murray, Senior Staff Counsel, Office of General Counsel
Carl Wilcox, Branch Chief, Water Branch
Craig Wilson, EPM, Water Branch

Minimum Instream Flow Recommendations: Butte Creek, Butte County

Preface

The Department of Fish and Game (Department) has interest in assuring that water flows within streams are maintained at levels which are adequate for long-term protection, maintenance and proper stewardship of fish and wildlife resources. The Department has developed recommended minimum stream flows for Butte Creek, Butte County for transmittal to the State Water Resources Control Board (Water Board) and consideration as set forth in 1257.5 of the Water Code. Submission of these flow recommendations to the Water Board complies with Public Resources Code Section 10001-10002.

The Department is recommending minimum instream flows for Butte Creek from Centerville Head Dam downstream to Parrot-Phelan Diversion Dam. The recommendations are intended as instantaneous requirements throughout the reach. The recommendations are separated into two water year types (normal and dry), and are presented in form of an annual schedule, with each containing a brief summary of the justification for the recommendation, including reference to the data source(s) and method(s).

The Department files the enclosed set of minimum instream flow recommendations for Butte Creek that we believe to be comprehensive and substantially complete based on information currently available. The recommendations were based upon information gathered through the Department's role pursuant to the Federal Power Act Section 10(j) for the Federal Energy Regulatory Commission's (FERC) Project No. 803 hydropower relicense analysis for the Butte Creek DeSabla-Centerville Hydroelectric Project (CDFG, 2008b). The Department has established an administrative file in the Water Branch that contains the cited references. We will make these files available upon request.

The Department may revise the attached recommended minimum instream flows for Butte Creek at a later date based upon new information; specifically new information that may become available through the FERC process as a result of physical and/or operational changes required by the new FERC license.

Cover photo: Spring Run Chinook Salmon at Quartz Bowl in Butte Creek.

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Statement of Findings

Butte Creek is a significant watercourse for which minimum instream flow levels need to be established in order to assure the continued viability of stream-related fish and wildlife resources. Butte Creek was selected for development of flow recommendations because it is a significant watercourse with high resource value, and because it is one of only three streams (in addition to Deer and Mill Creek) that harbor a genetically distinct, sustaining population, of Spring Run Chinook Salmon (SRCS), *Oncorhynchus tshawytscha* (CDFG, 1998).

Background

The flow recommendations for Butte Creek apply between Centerville Head Dam and Parrot-Phelan Diversion Dam. This reach of the creek provides critical habitat for holding and spawning of steelhead and Spring Run Chinook Salmon (SRCS; Figure 1). Outlined below is the background information on the SRCS population status in Butte Creek and associated life history requirements, in addition to background information on the current hydrology, and water quality (temperature) of Butte Creek. Following the background information is an overview of the data sources and water year type definitions used to develop the minimum instream flow recommendations. Lastly, the flow recommendations are outlined, followed by an overview of the uncertainty associated with climate change impacts and the Department's commitment to minimizing such impacts to the State's natural resources. Appendix A contains the Department's response to comments on the draft version of this report that was circulated for comments.

Spring Run Chinook Salmon

SRCS in the Sacramento River drainage were listed as Threatened under California Endangered Species Act in February 1999. SRCS, Central Valley Environmentally Significant Unit, was listed as Threatened under the federal Endangered Species Act in September 1999, and re-affirmed in June 2005 (70 FR 37160; June 28, 2005). The listings were due to significant declines beginning in the late 1960's. The federal Central Valley Project Improvement Act, Public Law 102-575, 1991 (CVPIA) baseline period average for the years 1967 through 1991, was 364 adults with a high of 1,300 during 1988 and 1989, and low of 10 in 1979 (CDFG, 1998). Since 1991 the Butte Creek SRCS population has averaged 5,254 with a high of 20,212 during 1998 and low of 474 during 1994.

SRCS have a unique life history in which adults enter fresh water in the late winter and spring, spending up to eight months in fresh water prior to spawning. This extended fresh water residency requires that adults have access to suitable habitat characterized by deep, cool, highly oxygenated pools to survive the high summer temperatures in the Central Valley. While historically, SRCS populations were found in most of the eastern tributaries of the Sacramento and San Joaquin Rivers, large dams and water development eliminated access to all but the few remaining tributaries such Deer, Mill, and Butte Creeks (CDFG, 1998).

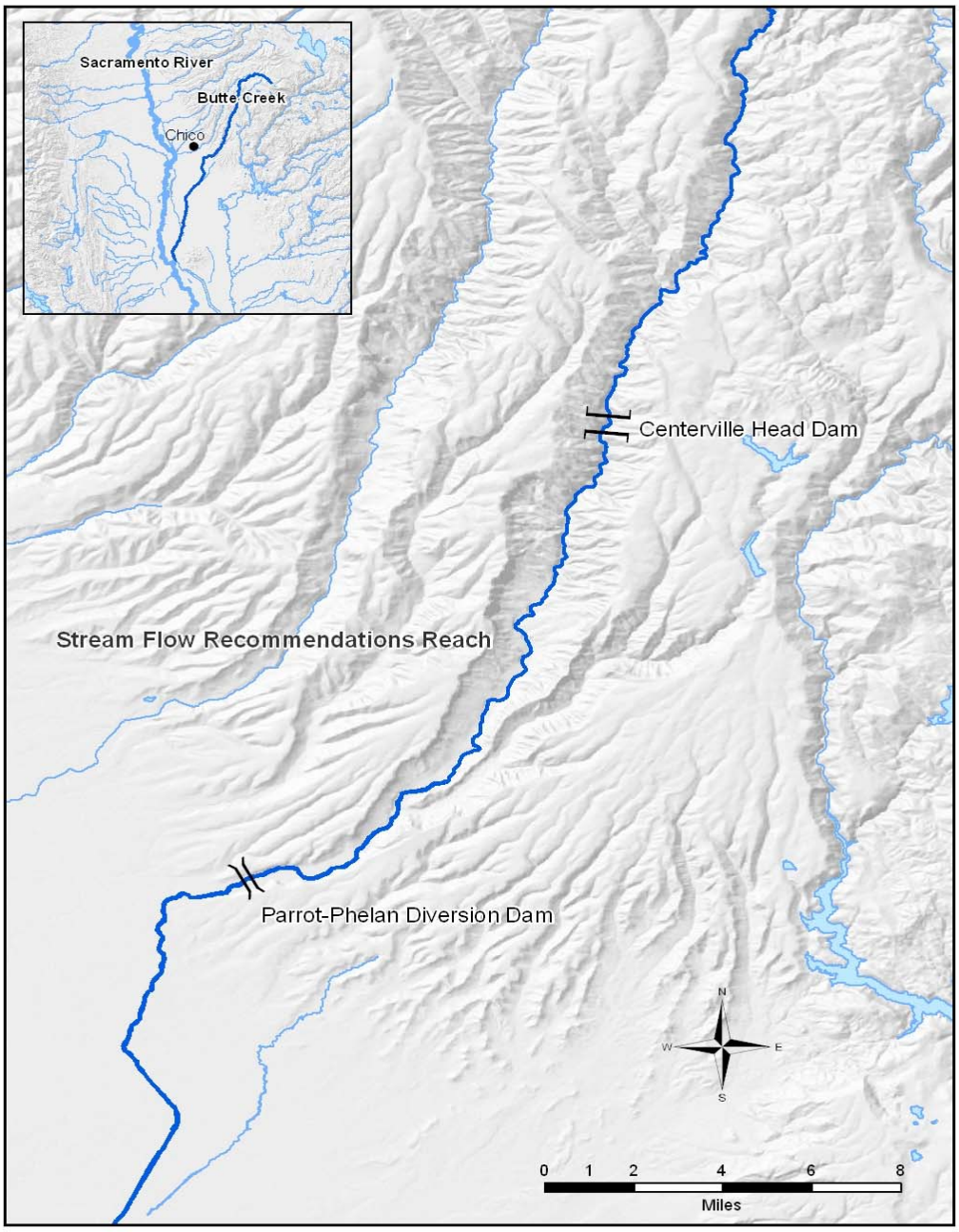

Figure 1: Map of Butte Creek

Hydrology

In addition to SRCS, steelhead and resident trout, Butte Creek is also currently home to the Pacific Gas and Electric Company's (PG&E) DeSabla-Centerville hydroelectric power project. The power project is currently in a relicensing phase through the Federal Energy Regulatory Commission's (FERC) Project No. 803. The project generally consists of three reservoirs, three powerhouses, 14 diversion and feeder dams, 5 canals, and associated equipment and transmission facilities located on Butte Creek and the West Branch Feather River (PG&E, 2007). In 1992 FERC required releases of 40 cubic feet per second (cfs) from June 1 through September 14, in all water year types. The current project license expires on October 2009 and PG&E is seeking a new license to continue operation under FERC.

The hydrology of Butte Creek is complex as a result of PG&E's hydroelectric power project. PG&E diverts Butte Creek water from the Butte Head Dam via the Butte Canal to DeSabla Powerhouse. Approximately 12 miles downstream of Butte Head Dam, the Forks of Butte Diversion Dam diverts water from Butte Creek to the Forks of Butte Powerhouse and returns the water back to Butte Creek immediately upstream of the Centerville Head Dam. Water from the West Branch of the Feather River is diverted at Hendricks Head dam through the Hendricks/Toadtown Canal. The diverted water from Butte Creek and the West Branch of the Feather River combine and flow through DeSabla Forebay, which provides water to DeSabla Powerhouse, where the water is released back to Butte Creek. Just downstream of DeSabla Powerhouse, water is diverted at Centerville Head Dam to the Centerville Canal, which runs through the Centerville Powerhouse and is discharged back into Butte Creek approximately 9 miles upstream of the Parrot-Phelan Diversion Dam.

Water Quality - Temperature

Butte Creek is unique among the remaining SRCS streams in that all of the holding and spawning area for SRCS is below 285 m (931 ft) elevation, while Deer and Mill Creek do not have barriers to passage and SRCS all hold and spawn in areas above that elevation. Due to the lower elevation habitat, Butte Creek exhibits temperatures above the ideal temperatures for holding and spawning Chinook salmon (Ward et al., 2003). At the time of this recommendation, PG&E, the Department, US Forest Service, USFWS, and NOAA Fisheries are exploring various physical and operational modification options to the DeSabla-Centerville hydropower project to be submitted to FERC to consider in their alternatives analysis prior to issuing a new License for FERC Project 803. Additionally, the Water Board has an independent statutory duty under the federal Clean Water Act and the applicable regional water quality control plan to ensure that the operation of the project will not adversely affect water quality or the beneficial uses of the affected lakes and stream reaches, and must issue water quality certification before a license to operate a hydropower project may be issued by FERC. Physical and/or operational modifications to FERC Project 803 may result in significant changes to temperatures within the reach. Until FERC issues a new License for the project, the Department has no way to predict what physical and/or operational changes may be mandated in the new license. Therefore, the

Department reserves the right to revise the attached minimum instream flows for Butte Creek at a later date based upon new information that may become available as a result of new FERC license conditions.

Data Sources

There have been many studies conducted as a result of the modified hydrology of Butte Creek and subsequent water management operations by the PG&E hydroelectric power project. The sources of data used to develop the flow recommendations for Butte Creek included: CDFG, 1998; CDFG, 2008b; PG&E, 2007; USFWS, 2003; and USDOI, 2008. CDFG (2008b) contains the Department's findings pursuant to FERC 10(j) relicense process for PG&E's DeSabla-Centerville hydroelectric power project. The Department filed with FERC a set of minimum instream flow recommendations for Butte Creek that we believe to be comprehensive and substantially complete based on information currently available.

Water Year Types

The Department's recommended minimum instream flow schedules have been separated into two water year types for Butte Creek: Normal and dry. The water year type is based on the forecast of unimpaired runoff of the Feather River at Oroville for the period April through July as provided by the California Department of Water Resources (DWR) Bulletin 120 report of water conditions in California (CDWR, 2003). Each February, March, April, and May, the water year type shall be determined based on the DWR Bulletin 120 forecast for the period April through July and shall operate for that month based on that forecast. The May forecast shall be used to establish the water year type for the remaining months until the next February, when forecasting shall begin again. The water year types are defined as follows:

Dry: Fifty percent or less of the average April though July unimpaired runoff of the Feather River at Oroville;

Normal: Greater than fifty percent of the average April through July unimpaired runoff of the Feather River at Oroville.

The Department's minimum instream flow recommendations are intended to preserve the processes and functions of the river ecosystem. The minimum instream flow recommendations are each presented below as an annual schedule, with each also containing a brief summary of the justification for the recommendation, including the method(s) used.

Flow Recommendations

The Department's minimum instream flow recommendations are outlined in Table 1. These recommendations are based on an analysis of the percentage of available habitat (Weighted

Useable Area = WUA) using a 2-dimensional hydraulic and habitat model (USFWS, 2003) for spawning SRCS, an analysis of historical regulated flows data including inter-basin water transfer from the West Branch of Feather River to Butte Creek data (CDFG, 2008b), and water quality (temperature) benefits (CDFG, 2008b). Spawning habitat was identified as a limiting-factor for SRCS in Butte Creek based on a considerable amount of redd superimposition observed during data collection efforts by the United States Fish and Wildlife Service (USFWS, 2003; USDOI, 2008). The Department's minimum instream flow recommendations for Butte Creek would allow for greater dispersal of redds and reductions in redd superimposition.

Table 1. The Department's Recommendations for Minimum Instream Flows by Month and Water Year Type for Butte Creek.

Butte Creek	Department's Recommended Minimum Instream Flows (cfs) by Water Year	
Month	Normal	Dry
Oct	100	75
Nov	100	75
Dec	100	75
Jan	100	75
Feb	100	75
Mar 1-14	100	75
Mar 15-31	80	75
Apr	80	75
May	80	65
Jun	40	40
Jul	40	40
Aug	40	40
Sep 1-14	40	40
Sep 15-30	100	75

The maximum SRCS spawning habitat WUA in the reach ranged from 190 cfs to 410 cfs (USFWS, 2003). However, an analysis of current water availability indicates there is not enough water to obtain reliable flows above 100 cfs (PG&E, 2007). Therefore, the Department recommends, in a normal year, a minimum instream flow of 100 cfs after the onset of SRCS spawning activity. In dry years, the Department recommends a minimum instream flow of 75 cfs. Additionally, when the flows listed above cannot be met by returning all Butte Creek water plus

all interbasin diversion water to the river, the instream flow requirement shall be the sum of the full natural flow from Butte Creek plus all water that is being diverted through the Hendricks-Toadtown Canal by transbasin diversion. The recommended minimum instream flows during the summer months remain at the current flows of 40 cfs until current efforts through the FERC process that include an investigation of the design and implementation of potential physical modification to DeSabla Forebay are explored.

The Department's flow recommendations outlined above were developed considering the current operations (Current Operations & Proposed Q min) and accretion flows (Accretion/Augmentation to Evaluation Point) as outlined in PG&E (2007) in PG&E's License Application (2007-0514: Attachment 1; Volume IIB; Table E6.3.2.6-19g and Table E6.3.2.6-19f). Further, the flow recommendations represent an instantaneous minimum requirement throughout the reach to protect and enhance steelhead and spring-run Chinook salmon populations.

Climate Change

The Department is committed to minimizing to the maximum extent practical the effects of climate change on the state's natural resources. Changes in temperature and precipitation could result in alteration to existing fresh water systems and an overall reduced availability of water for fish and wildlife species. In addition, these changes may impact groundwater recharge and over drafting as well as impacting hydropower and hatchery project operations, fish populations' passage issues, and water diversion projects. Given the uncertainty associated with climate change impacts, the Department reserves the right to modify the flow recommendations for Butte Creek as the science and understanding of climate change evolves.

Literature Cited

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California Department of Fish and Game (CDFG). 1998. A Status Review of the Spring-Run Chinook Salmon (Oncorhynchus tshawytscha) in the Sacramento River Drainage. Prepared by the Calif. Dept. of Fish and Game, June 1998.

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U.S. Department of the Interior (DOI). 2008. Letter to Honorable Kimberly D. Bose, Secretary, Federal Energy Regulatory, Commission. Comments, Recommendations, terms and conditions, and prescriptions – "Notice of Application Accepted for Filing; Soliciting Motions to Intervene and Protests; Ready for Environmental Analysis and Soliciting Comments, Recommendations, Preliminary Terms and Conditions; and Preliminary Fishway Prescriptions" for the DeSabla-Centerville Hydroelectric Project, Federal Energy Regulatory Commission Project No. 803, Butte Creek and West Branch Feather River Watersheds, Butte County, California. 110pp.

U.S. Fish and Wildlife Service (USFWS), 2003. Flow-Habitat Relationships for Spring-Run Chinook Salmon Spawning in Butte Creek. U.S. Fish and Wildlife Service, SFWO, Energy Planning and Instream Flow Branch, Butte Creek 2-D Modeling Final Report, August 29, 2003. 86pp.

Ward, P.D., T.R. McReynolds, and C.E. Garman. 2004. Butte Creek and Big Chico Creeks Spring-Run Chinook Salmon, *Oncorhynchus tshawytscha*, Life History Investigation, 2000-2001. California Department of Fish and Game, Inland Fisheries Admin. Report 2004-3, 2003. 48 pp.

Appendix A. Department of Fish and Game Response to Comments on Draft Butte Creek Flow Report.

Tom Jereb, Project Manager
Hydro Licensing
Pacific Gas and Electric

COMMENT	RESPONSE
PG&E is puzzled by the letter's reference to the Departments' intent to provide completed flow recommendations to the State Water Resources Control Board (Water Board) and the reference to the Water Board's consideration as set forth in Section 1257.5 of the Water Code. Section 1257.5 of the Water Code applies to applications to appropriate water of which PG&E has no new water right application for its facilities on Butte Creek. Therefore, PG&E suggests there is no need for the Department to provide flow recommendations to the Water Board for the stated purpose.	The Department's flow recommendations for Butte Creek are recommended pursuant to Public Resources Code (PRC) section 10000-10005. PRC section 10001 requires the Department to identify streams or watercourses for which minimum flow levels need to be established to assure the continued viability stream-related fish and wildlife resources. PRC 10002 requires the Department to prepare and transmit flow recommendations to the Water Board for consideration as set forth in Section 1257.5 of the Water Code.
The Department has proposed the Minimum Instream Flow (MIF) for the Butte Creek Reach below Lower Centerville Diversion Dam (LCDD) as specified in their Table I. PG&E disagrees with Department's recommendation and rationale for five primary reasons: First, as noted in Department's rationale, there are periods when the Department's recommended MIF cannot be met because there is inadequate trans-basin diversion to provide that much flow (even before considering that PG&E or Agency proposed increases in MIF requirements in the WBFR below Hendricks Head Dam would further decrease trans-basin diversions). It is unreasonable to specify a MIF that cannot be reliably met during periods of routine canal maintenance, much less during emergency outages due to winter conditions or canal obstructions. Similarly, recommending a MIF that exceeds unimpaired flows in the basin, with no in-basin water storage to reliably provide the MIF, is illogical and relies on a flawed methodology of exclusively using maximum weighted useable area (WUA) metrics without regard to whether sufficient flows even exist to achieve a theoretical maximum WUA.	The Department's flow recommendations are intended to protect and enhance the steelhead and spring-run Chinook salmon populations in Butte Creek. In developing the flow recommendations, the Department reviewed the current hydrology as affected by current conditions (e.g., DeSabla-Centerville hydroelectric power project operations). This review included review of the unimpaired flows in Butte Creek basin in addition to those flows received by trans-basin diversions from the West Branch Feather River through the DeSabla-Centerville hydroelectric project. When all flows from Butte Creek are added to transbasin diversions, there are 5% of the days (in the historical record of impaired flow from 1985-2005) where the Departments recommendations could not be met. The flow recommendations will be adjusted to accommodate this comment. Please note that the flow recommendations do not rely on exclusive use of weighted useable area (WUA) metrics but instead are based upon a combination of WUA, water availability (including trans-basin diversion flows), and the existing hydrological setting. The Department's primary intent in making the flow recommendations is to protect and enhance Butte Creek's steelhead and spring-run Chinook salmon populations. Butte Creek is a unique system and represents a unique situation, and therefore requires a unique flow prescription.
Secondly, the gains in WUA for spawning salmon from the Department's MIF proposal are relatively small compared to the proposed increase in flow. The PG&E's proposed MIF already adds up to 50 cfs in dry years (from 10 to 60 cfs), and 45 cfs in normal years (from 30 to 75 cfs), resulting in gains of approximately 40% (from -23% to 63%) and 31 % (from -39% to 70%) in percent of maximum WUA, respectively, compared to existing conditions (based on use of Gard 2003 criteria and WUA values for Middle Butte Creek from PG&E's Final License Application). The Department's proposed increases to 75 cfs and 100 cfs in dry and normal years would require an additional 15 cfs and 25 cfs, respectively, above the PG&E's proposal. The Department proposal thereby requires flow increases of 30% (65 additional cfs versus 50 compared to existing conditions) in dry years, and 56% (70 additional cfs versus 45) in normal years above the PG&E's proposal, yet only provides	The Department is obligated pursuant to the PRC to identify what flows are required for the continued viability of fish and wildlife resources. The Department's recommended minimum instream flows for Butte Creek represent those flows that are both needed to protect and enhance Butte Creek's steelhead and spring-run Chinook salmon populations and that are physically attainable given the existing habitat conditions and the current hydrological setting. Butte Creek supports one of the most important populations of Chinook salmon in the Central Valley. Increases in habitat in this watershed are vital to the continued sustainability of this steelhead and salmon population. The needed flows are necessary to protect these important public trust resources.

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gains of 7-8% in maximum WUA (63% to 70% in dry years, 70% to 78% in normal years) compared to the PG&E's proposal. Increasing MIF by an additional 30-56% for an extra 7-8% in WUA gains does not represent a reasonable balance of developmental and nondevelopmental resources, particularly given the substantial enhancement of WUA already provided by the PG&E's proposed MIF.	
Third, it should also be pointed out that both the PG&E's and the Department's MIF proposals for Chinook spawning will allow redd superimposition to occur in the diverted reach below LCDD as a result of the limited availability of spawning gravels. Using data from CDFG 2004 and the USFWS (Gard 2003) to estimate available spawning habitat and maximum spawners accommodated at various flows, a Department proposed release of 100 cfs during normal water years would support a maximum of 242 -2093 spawners while a PG&E proposed release of 75 cfs would support 228-1992 spawners. During the seven year period 2001 -2007, the Department's adjusted holding estimates for salmon observed above Centerville Powerhouse ranged between 6,547 and 12,608 salmon, suggesting that neither MIF proposal will be able to adequately address the exceptional adult salmon returns that have occurred above Centerville Powerhouse in recent years.	The Department's minimum instream flow recommendations for Butte Creek reflect an increase in the minimum flows over current minimum instream flow conditions. Generally, increases in flow in Butte Creek are associated with increases in spawning habitat (USFWS, 2003). The scientific foundation for the Department's flow recommendations cannot be used to identify flows that will completely avoid superimposition in the spawning reach downstream of Centerville Head dam. However, the Department believes that an eight percent increase in spawning habitat will likely decrease superimposition. The increases in flow recommended by the Department for Butte Creek are linked to increases in spawning habitat as predicted by the flow-habitat relationships identified by the USFWS (2003). In normal years, the 100 cfs the Department recommends provides 2,772 additional square feet of habitat above PG&E's proposed 75 cfs for a State and Federally listed species. In dry years, 75 cfs provides an additional 2,230 square feet of habitat above PG&E's proposed 60 cfs. While it is true that salmon have returned in large numbers in recent years, the minimum flow recommendations are intended to address periods when returns might not be as good. Moreover, Butte Creek is a potential source of Recovery of a listed species. The additional habitat, while by some measures may be considered a small increase, may have significant long term benefits to this population and the species as a whole.
Fourth, PG&E disagrees with the Department's recommendation to initiate spawning flows below LCDD on September I. PG&E's current and proposed release schedule calls for initiating spawning flow releases on September 15. This schedule was initially established by the Department and PG&E, with the development of the 1983 Fish and Wildlife Agreement, and was based on temperature information collected at LCDD that demonstrated that water temperatures at the diversion dam do not drop to suitable spawning temperatures (13.3 C, 56 F) until around the third week of September. PG&E and the Department have continued to collect summer temperature data at LCDD and the Quartz Bowl Pool (located approximately one mile below LCDD) associated with various monitoring programs since 1999. These data continue to confirm that suitable spawning temperatures below LCDD do not occur until late September.	The Department will modify the recommended flow schedule to reflect initiating spawning releases on September 15 instead of September 1.
Fifth, there is a significant loss in electrical generation from shutting down or reducing Centerville Powerhouse operations, as required by the Department MIF. The Department proposal approximately doubles the generation loss (compared to Base *Case)* at Centerville Powerhouse, from an 8.9% loss under the PG&E's proposal, to 76.5% under the Department proposal. This electrical generation loss must be replaced by other generation sources which may have carbon emitting effects and thereby effects on climate change. The Department needs to address these effects in its recommendations.	The Department is proposing minimum instream flow recommendations that are intended to protect and enhance the steelhead and spring-run Chinook salmon populations in Butte Creek. These flow recommendations are developed for transmittal to the Water Board for consideration when acting on any pending or new applications to appropriate water (Water Code Section 1257.5) within the reach of Butte Creek from Centerville Head dam downstream to Parrot-Phelan Diversion dam. Notwithstanding the purpose of the Department's recommendations, it is our understanding that the power generated at this project qualifies under the California Renewable Portfolio Standard to meet some of PG&E's requirement under

COMMENT	RESPONSE
	that standard for renewable energy and as such, any lost generation would need to be replaced with another source that qualifies as renewable.

Steven Herrera, Chief
Water Rights Permitting Section
Division of Water Rights
State Water Resources Control Board

COMMENT	RESPONSE
1. Specificity of Recommendation and Geographic Scope: The report includes minimum instream flow recommendations in cubic feet per second (cfs) for the subject reach of Butte Creek on a monthly or semi-monthly basis. The report does not specify whether the recommended flows are intended for application at a particular compliance point, such as a downstream gage location, or as instantaneous requirements throughout the entire reach (e.g. measured at each new point of diversion). Absent identification of a compliance point, Division staff will assume the recommendation is intended as an instantaneous requirement throughout the reach.	The recommendation is intended as an instantaneous requirement throughout the reach. The report will be modified to clarify this.
2. Scientific Justification and Conservation Target(s): The minimum instream flow recommendations range from 40 to 100 cfs and are based upon information gathered through DFG's role pursuant to the Federal Power Act Section 10(j) for FERC Project 803. Specifically, this information includes an analysis of the percentage of available habitat for spawning Spring-run Chinook salmon (USFWS 2003), an analysis of historical regulated flows data (DFG 2008), and water quality (temperature) benefits (DFG 2008). The maximum weighted usable area (WUA) for Spring-run Chinook salmon habitat corresponds with flows ranging from 190 to 410 cfs. According to the DFG, Federal Power Act Section 10(j) recommendations (DFG 2008), the normal year release recommendation of 100 cfs from Centerville Diversion Dam corresponds with 77.6% WUA and the dry year release requirement corresponds with 68.2% WUA. Division staff suggests that the report clarify why the WUA values of 77.6% and 68.2% represent appropriate thresholds for setting minimum flow levels. The DFG 10(j) conclusion suggests that the benefits of enhancing salmonid spawning habitat to these levels outweigh the costs of reduction in hydropower generation (DFG, 2008). The DFG public resources code flow recommendation report suggests that an analysis of current water availability indicates there is not enough water to obtain reliable flows above 100 cfs. In light of these conclusions, Division staff suggests that the report also clarify whether the recommended flows are strictly reflective of habitat conditions in Butte Creek or are based on the operations of the PG&E DeSabla-Centerville hydroelectric power project. Division staff assume that this and future instream flow recommendations will be reflective of the habitat requirements to "assure the continued viability of stream-related fish and wildlife resources" (Pub. Res. Code § 10002) regardless of past, current, or future impairment resulting from water diversion projects.	The Department's flow recommendations are based on both the flow needs of steelhead and spring-run Chinook salmon and the operations of the hydroelectric power project. The flow recommendation report has been modified to clarify that the Department's flow recommendations included consideration of the current operations (Current Operations & Proposed Q min) and accretion flows (Accretion/Augmentation to Evaluation Point) as outlined in PG&E (2007) in PG&E's License Application (2007-0514: Attachment 1; Volume IIB; Table E6.3.2.6-19g and Table E6.3.2.6-19f).
3. Background information and references: The report preface indicates that DFG has established an administrative file in the Water Branch that contains the cited references. Division staff appreciate the availability of these references but suggest, for purposes of	The Butte Creek flow recommendations report has been modified to better reflect the location of relevant water availability data cited under PG&E (2007) in PG&E's License Application (2007-0514: Attachment 1; Volume IIB; Table E6.3.2.6-19g and Table

COMMENT	RESPONSE
streamlining the review process, key portions of the references be summarized in the text of the report and/or included as appendices and circulated with the report. For example, the flow recommendations put forth by DFG are apparently reduced from the levels which correspond with maximum available Spring Run Chinook Salmon spawning habitat area identified in a 2003 report by U.S. Fish and Wildlife Service (USFWS, 2003). The reference provided for this adjustment of flows is the Pacific Gas and Electric Company DeSabla-Centerville Relicensing website (PG&E, 2007). This website contains a variety of documents related to the Federal Energy Regulatory Commission relicensing process. It would be helpful to reviewing parties if the report identified the specific references from which the reduction of flows was established and/or included a summary of the relevant background information within the text of the report.	E6.3.2.6-19f).

Allen Harthorn
Executive Director
Friends of Butte Creek

Chris Shutes
FERC Projects Director
California Sportfishing Protection Alliance

COMMENT	RESPONSE
We support this as a strictly interim measure until a final flow solution is worked out through ongoing FERC relicensing process for the Desabla – Centerville Hydroelectric Project. While we believe that the standards proposed by DFG under Resources Code 10000 are more protective of those that are currently in place, we believe that they are not sufficiently protective of the resource that is the cornerstone of the preservation of Central Valley spring-run Chinook salmon.	Comment acknowledged.
FBC and CSPA are concerned that the Water Branch has not made recommendations for instream flow for Butte Creek downstream of Parrot-Phelan. Over the last several years, significant numbers of spring-run have been stranded in Butte Creek downstream of Highway 99, without enough flow to allow passage to the upper portion of the Creek.	Department staff intends to make flow recommendations downstream of Parrot-Phelan but at present the scientific information needed to justify flow recommendations is not available. In 2008 the Department developed a list of 22 priority streams or watercourses for future instream flow work pursuant to PRC section 10004. Butte Creek is ranked as a priority stream on this list for an instream flow assessment in reaches downstream of Parrot-Phelan. Upstream passage for steelhead and spring-run Chinook salmon will be an important factor in that assessment. As funds become available, this research will be completed.

James C. Kutz, Chairman
Butte Creek Watershed Conservancy

COMMENT	RESPONSE
It is of concern to the Conservancy that an adaptive plan be utilized, using minimal flows to sustain the reserve of cooler waters in the holding reservoirs in the West Branch of the Feather River drainage, in conjunctive use with the cooling water from Butte Creek Head Dam diversion and Centerville Head Dam diversion for the months most	Comment acknowledged.

COMMENT	RESPONSE
prone to heat storms. We are dealing with a finite water resource here and hard to predict weather patterns. Adaptive management should not be hampered with demands for water flows that may or may not be available from both drains in any given years, let alone undeliverable do to acts of nature and structural deficiencies or threaten the intended use of cooling warmer reaches of Butte Creek for Spring Run Salmon management.	
At the same time water flow should be such that PG&E can operate the Centerville Generating Plant to maximize power production. PG&E solely maintains the flumes, canals, reservoirs and powerhouses at a cost that should be optimally offset by the profits of its production of green energy and sales.	Comment acknowledged.
We will add that with PG&E out of the picture, management of the Spring Run Salmon on Butte Creek would be easier; we would not have to deal with the diversions or a successful Spring Run Salmon Run of the size we are experiencing.	Comment acknowledged.
It is our recommendation the minimums remain as they are, the salmon holding areas remain as managed for areas below Centerville power house where suitable habitat is available and that the adaptive management team be allowed to continue the proven success that they have had to date!	Comment acknowledged.