Chapter 7
Alternatives

Introduction

This chapter presents the screening process for determining the reasonable range of alternatives for CEQA and NEPA compliance purposes and provides a comparative evaluation of the potential environmental effects of the DFG's hatchery and stocking program (Program) and the reasonable range of alternatives to that Program. The alternatives analyzed in detail in this EIR/EIS include variations of the current Program described in Chapter 2.

CEQA and NEPA Alternatives Requirements

In accordance with State CEQA Guidelines Section 15126.6, EIRs must evaluate a "range of reasonable alternatives to the project, or to the location of the project, which could feasibly attain the basic [fundamental] objectives of the project." The discussion of alternatives should focus on "alternatives capable of eliminating any significant adverse impacts [of the proposed project] or reducing them to below a level of significance, even if these alternatives could impede to some degree the attainment of the project objectives or would be more costly." CEQA further directs that "the significant effects of an alternative shall be discussed, but in less detail than the significant effects of the project as proposed." The factors relevant to the Program that should be taken into account when addressing the feasibility of alternatives include consistency with project objectives, economic viability, consistency with existing plans or planning documents, regulatory limitations, and jurisdictional authority.

State CEQA Guidelines Section 15364 defines *feasible* as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." The final decision regarding the feasibility of alternatives lies with the decision-maker for a given project, who must make the necessary findings addressing the potential feasibility of reducing the severity of significant environmental effects (PRC 21081, State CEQA Guidelines Section 15091).

The Council on Environmental Quality's (CEQ's) regulations implementing NEPA (40 CFR Section 1502.14) provide for a rigorous analysis and comparison of alternatives to the proposed action to provide a clear basis for choice among options by decision makers and the public. The CEQ guidance states that agencies will do the following.

- Rigorously explore and objectively evaluate all reasonable alternatives, and, for alternatives that were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.
- Devote substantial treatment to each alternative considered in detail, including the proposed action, so that reviewers may evaluate their comparative merits.
- Include reasonable alternatives not within the jurisdiction of the lead agency.
- Include the alternative of no action.

- Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference.
- Include appropriate mitigation measures not already included in the proposed action or alternatives.

The CEQA and NEPA guidance for alternatives development and analysis has been used in the alternatives development, screening, and analysis presented below.

Alternatives Development and Screening

Alternatives analyzed in this EIR/EIS were developed considering the Program goals of both DFG and USFWS, potential significant environmental impacts of the Program as described in preceding chapters, feasibility of potential alternatives, and input received during the public scoping process.

Alternatives Development Process

Objectives/Purpose

As stated in both Chapters 1 and 2, the fundamental objectives of DFG's Program are to continue the rearing and stocking of fish from its existing hatchery facilities for the recreational use of anglers and for mitigation of habitat loss due to blocked access to upstream spawning areas, and for construction of the Banks Pumping Plant by DWR. These fundamental objectives should be accomplished while addressing the impacts of hatchery-stocked and privately stocked fish on native, sensitive, or legally protected fish and wildlife species. The purpose of the USFWS's SFRA funding action is to support operations of all 14 DFG trout hatchery facilities and the Mad River Hatchery for steelhead and associated stocking, and operation of the DFG Fishing in the City program and Classroom Aquarium Education Project (CAEP). The need addressed by the proposed action is the support of viable recreational fishing in California, through increased angler success that is provided by stocking of hatchery fish in both urban and rural water bodies. Provision of SFRA funds for support of private stocking permits or operation of other anadromous fish hatcheries and their associated stocking efforts is outside the scope of actions contemplated by USFWS at this time.

Based on both the DFG and USFWS objectives, the central theme of the Program is to provide recreational sport fishing and mitigation for habitat loss in California using the existing network of DFG-managed hatcheries. This objective is balanced by the need to avoid any significant effects on native, sensitive, or legally protected fish and wildlife species of the state, in the process of providing for that recreational opportunity and mitigation for habitat loss. Because of these dual objectives, the alternatives development process has focused on ways to avoid effects that the current Program (hatchery and stocking activities from 2004 to 2008) may be having on native, sensitive, or legally protected biological resources, while still providing for recreational opportunities and mitigating for habitat loss. At the outset of the alternatives development process, the potential adverse Program effects identified that generated alternatives include:

- declines in certain amphibian species populations in higher-elevation lakes and streams , in part due to predation by stocked trout;
- alterations in the genetic makeup of native trout species due to interbreeding with stocked strains of rainbow trout;

- declines in native salmon, steelhead, and trout populations, in part due to predation and competition for spawning grounds, food, and space from hatchery-reared fish;
- alterations in the genetic makeup of native salmon and steelhead due to interbreeding with stocked strains of salmon and steelhead;
- declines in native salmon, steelhead, and trout populations due to non-target harvest associated with fishing for stocked fish; and
- potential for damage to native, sensitive, or legally protected fish and wildlife from issuance of private stocking permits or from exemptions in requiring private stocking permits.

Input from the Public Scoping Process

Suggestions for changes in the Program made during the public scoping process also played a role in developing alternative hatchery and stocking management strategies. These suggestions are listed below.

- Hatchery operations:
  - Consider tagging all hatchery-raised salmon and steelhead.
- Hatchery locations:
  - Consider the possibility for smaller, watershed-based hatcheries that would repopulate local stocks of rainbow trout, steelhead, and salmon.
- Stocking practices:
  - Emphasize fish planting in water bodies where fisheries would be self-sustaining but where fishing pressure exceeds natural productivity.
  - Plant native fish species rather than introduced species where streams allow for reproduction and self-sufficient trout fisheries.
  - Release hatchery salmon smolts at the same time the native smolts are moving downstream to reduce the predation pressure.
  - Prohibit stocking of hatchery-reared fish where fish do not naturally occur.
  - Suspend trout stocking where surveys have revealed the presence of sensitive native aquatic and amphibian species, except reservoirs.
- Other alternative-related suggestions:
  - Consider an alternative that eliminates hatchery and stocking operations in the state.

Management Strategies

A wide range of management actions could be taken by DFG and USFWS to meet CEQA's fundamental project objectives and NEPA's purpose and need. Most of them involve changes in the location and amounts of fish that are stocked or changes in the brood stock that are the source of hatchery-raised fish. A systematic approach has been taken to consider the full range of options available to DFG and USFWS; this has involved the framing of alternative strategies and exposing those strategies to a series of criteria developed cooperatively by DFG and USFWS. The alternative strategies are framed around the principal potential adverse effects of the current Program. The

impacts and some of the general strategies developed for the alternatives development and screening processes are identified below.

Trout Stocking

- To address declines in certain amphibian species populations in higher-elevation lakes and streams in part due to predation by stocked trout, continue with DFG's current program of surveying watersheds to identify amphibian populations and subsequently developing aquatic biodiversity basin management plans to balance the need for recreational fishing opportunities and protection of sensitive, native or legally-protected amphibians. This process is a fundamental element of developing plans to stock trout in high-elevation lakes and streams. Consider the suspension of planting in these high mountain areas until the survey and planning work has been completed.
- To address alterations in the genetic make-up of native trout species due to interbreeding with stocked strains of rainbow trout, eliminate trout planting in waters occupied by native trout populations, or plant triploid trout where necessary to maintain a recreational put and take fishery. Consider the development of specialty native trout hatcheries to augment existing native trout populations.
- To address declines in native trout populations, in part due to competition for spawning grounds, food and space from hatchery-reared fish, eliminate trout planting in waters occupied by native trout populations. Consider the eradication of non-native fish populations in waters within the range of native trout populations.
- To address the impacts of non-target harvest on native fish species from planting trout, clarify the role of recreational fishing in species management plans and recommend special fishing regulations that minimize risk of non-target harvest of native species.

Salmon and Steelhead Stocking

- To address declines in wild populations of native salmon and steelhead, in part due to predation and competition for spawning grounds, food, and space from hatchery-reared fish, continue to develop and refine hatchery genetic management plans (HGMPs) in coordination with the NMFS. In the interim, consider making recommendations to hatchery owners regarding the modification of current stocking practices to minimize the potential interaction of wild and hatchery salmon and steelhead.
- To address the impacts of non-target harvest on wild populations of native fish species from planting salmon and steelhead, continue to develop harvest plans that limit the potential for take of wild fish. Consider the development of more extensive marking, tagging, mark-selective fisheries, and monitoring programs to control non-target harvest.
- To address alterations in the genetic makeup of wild salmon and steelhead populations due to interbreeding with stocked strains of salmon and steelhead, continue to develop and refine hatchery genetic management plans in coordination with the NMFS. In the interim, consider making recommendations to hatchery owners regarding the modification of current marking, tagging, brood stock management, stocking practices, and monitoring to minimize the potential interaction of wild and hatchery salmon and steelhead.

Alternatives Screening

As stated in the introduction to this chapter, there are a number of factors to be considered when determining the potential feasibility of alternatives. State regulation gives guidance in this regard. The OPR's State CEQA Guidelines, Section 15126.6 (f)(1), states, "Among the factors that may be taken into account when addressing the feasibility of alternatives are the site suitability, economic viability, availability of infrastructure, general plan consistency, other plans and regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent)."

These factors and others have been used as screening criteria when considering alternatives to the existing DFG Program described in Chapter 2. The criteria used in screening alternatives are listed below.

- The alternative meets the trout production goals contained in CFGC section 13007.
- The alternative meets the objectives contained in certain sections of the Fish and Game Code that regulate trout and salmon stocking (e.g. Division 2, Chapter 3).
- The alternative provides for recreational and commercial fishing opportunities through better management for California's fishing public.
- The alternative mitigates for the reduction in salmon and steelhead populations caused by loss of habitat through dam construction on major anadromous fish rivers and streams, or loss of anadromous fish through operations at the Banks Pumping Plant in the South Delta.
- The alternative avoids or minimizes potential significant effects on native, sensitive, or legally protected fish and wildlife species.
- The alternative provides for the long-term recovery and survival of native fish stocks in California waters.
- The alternative is consistent with state fish and wildlife management plans.

Many of the alternatives suggested did not meet the basic criteria for evaluation in the EIR/EIS. Where possible, some of the elements suggested were incorporated into a broader alternative, and these alternatives are described below. These alternatives are also analyzed for potential effects on the environment. The alternatives considered but rejected from further evaluation are described below, and the rationale for elimination is discussed.

Alternatives Considered and Eliminated from Detailed Discussion

During the alternatives development and screening process, a number of Program alternatives were considered but dropped from further consideration. These alternatives are described briefly below, and the rationale for their removal from further consideration is identified.

- Eliminate California Department of Fish and Game–Operated Hatcheries
    - This alternative was eliminated because it does not meet CFGC (California Fish and Game Code) to operate hatcheries to provide fish for stocking to meet recreational demand and CFGC 13007. While consideration was given to purchasing fish from other commercial businesses for stocking to meet recreational demand, it was determined that it would be most economically efficient for DFG to continue operating hatcheries to provide these fish.

DFG also has much more control over how the fish are produced to ensure both fish health and minimize the introduction of pathogens and invasive species through planting.

- Eliminate Trout Stocking in Flowing Waters
    - This alternative was suggested as patterned after a similar practice followed by the State of Montana regarding its stocking guidelines. Demand for recreational fishing in flowing waters is far greater in California than in Montana. Eliminating stocking altogether in flowing waters would place considerable pressure on native and wild stocks that already exist in flowing waters and would eliminate a large proportion of the recreational fishing opportunities for anglers that wish to camp and fish along flowing waters in California.
- Establish Permanent Trout Stocking Closures
    - This alternative was not considered as suggested; however, the concept of no longer stocking specific areas is included with both Alternatives 2 and 3.
- Develop and Operate Conservation and Restoration Trout Hatcheries
    - There are some hatcheries in the DFG system that provide for conservation and restoration on an as-needed basis; however, the Fish and Game Commission policy has specific guidelines that require the use of other management actions to conserve and restore native trout populations. See Appendix B for more detailed information on these policies.

Alternative Programs

The alternatives presented below are divided into the discrete segments of the overall DFG Program because the segments can be operated as separate and distinct operations. There are no alternatives proposed for hatchery operations, the Fishing in the City program, or the CAEP because no significant, unmitigable effects were found for these overall Program elements. Ultimately, the DFG may decide to adopt one or a combination of the alternatives presented below to form DFG's hatchery and stocking program in future years.

Alternative 1: No Project/No Action

For the Purposes of CEQA, The No Project alternative is considered to be a continuation of the existing Program. This is consistent with direction given per CEQA guidelines section15126.6(e)(3)(A) where "no Project is the continuation of an existing plan, policy or operation into the future". No modifications would be made to the hatcheries' operation and stocking activities undertaken by DFG over the past 5 years.

Additionally, The No Action alternative for the USFWS would be to eliminate all SFRA funding to DFG to operate trout hatcheries and the Mad River Hatchery. The inland stocking program is primarily funded by HIFF which receives one-third of revenues from fishing license sales. Minor revenues are received from reimbursable contracts. The revenues and spending authority from HIFF are insufficient to produce the amount of fish mandated in DFG 13007. SFRA funding support would contribute to full implementation of DFG 13007. Redirection of DFG funds from other programs to substitute for SFRA funds that are not reinstated would have major impacts on other DFG activities due to the reduction in funds. Therefore, in the absence of SFRA funding the program would continue, although constrained, and impacts from the program would be similar. For this reason there is no separate analysis of State No Project pursuant to CEQA and the federal No Action under

NEPA. Existing practices analyzed in Chapters 3 through 6 represents the ongoing Program and constitute the No Project/No Action alternative, although SFRA funding would be absent."

Alternative 2: Continue to Operate Hatcheries as in the Past Five Years and Stock Fish Based on New Guidelines

This alternative provides guidance that will be followed throughout DFG to address the impacts described within the current program as the No Project/No Action alternative. New guidance was developed by DFG to minimize impacts associated with the current trout stocking program and will rely on the process currently underway to prepare and implement HGMPs for each of the anadromous fish hatcheries. This HGMP process entails negotiating with the NMFS on how to operate hatcheries to minimize adverse effects of planting hatchery-raised anadromous fish on wild populations.

A variety of potentially significant adverse impacts on biological resources arise out of the Program's current operations and stocking activities. For some of these impacts, mitigation described in Chapter 4 would be sufficient to reduce those impacts to less than significant. For others, mitigation proposed in Chapter 4 has the potential to reduce impacts to less than significant, but existing information is inadequate to confirm that outcome. The impacts would remain significant until and unless demonstrated otherwise by monitoring to be performed during and after mitigation implementation. Some of these measures are presented only as recommendations, because they apply to salmon and steelhead mitigation hatcheries that are operated under mitigation agreements. A few impacts are reasonably certain to remain significant regardless of mitigation, for reasons detailed in Chapter 4. These impacts and mitigation measures are summarized in Table 7-1.

Table 7-1. Summary of Potentially Significant Impacts on Biological Resources Associated with the DFG Hatchery and Stocking Program

Impact	Mitigation Measure
Potentially Significant Impacts Reduced to Less than Significant by Mitigation	
BIO-8: Effects of Aquaculture Chemicals and Drugs in Rivers and Streams	BIO-8: Implement Alternative Technologies for Reducing Copper Concentrations in Discharges from Darrah Springs Hatchery as Required in Order R5-2004-0113
BIO-10: Effects Due to the Spread of Invasive Species through Hatchery Discharge	BIO-10: Develop and Implement Hazard Analysis and Critical Control Point Plans at Each DFG Hatchery
BIO-12: Pathogen Effects on Native Amphibian Populations	BIO-12: Develop and Implement Pathogen Monitoring and Control Management Practices
BIO-13: Effects from Stream Flow Alteration or Groundwater Draw-Down Due to Hatchery Water Supply Intakes	BIO-13: Manage Black Rock Rearing Ponds Pumping to Protect *Calochortus excavatus* Population
BIO-203: Impacts of Introducing Aquatic Invasive Species into Native Ecosystems as a Result of the Salmon and Steelhead Stocking Program	BIO-10: Develop and Implement Hazard Analysis and Critical Control Point Plans at Each DFG Hatchery
BIO-49: Predation and Competition Effects from Stocked Trout on Steelhead DPSs (Except Northern California DPS and Klamath Mountains Province DPS) and Chinook Salmon ESUs	BIO-49: Implement Pre-Stocking Evaluation Protocol for Steelhead and Chinook Salmon
BIO-69: Predation and Competition Effects from Stocked Trout on Oregon Spotted Frog	BIO-69: Implement Pre-Stocking Evaluation Protocol for Oregon Spotted Frog
BIO-71: Predation and Competition Effects from Stocked Trout on California Red-Legged Frog	BIO-71: Implement Pre-Stocking Evaluation Protocol for California Red-Legged Frog
BIO-72: Predation and Competition Effects from Stocked Trout on Foothill Yellow-Legged Frog	BIO-72: Implement Pre-Stocking Evaluation Protocol for Foothill Yellow-Legged Frog
BIO-73: Predation and Competition Effects from Stocked Trout on Cascades Frog	BIO-73: Implement Pre-Stocking Evaluation Protocol for Cascades Frog
BIO-74: Predation and Competition Effects from Stocked Trout on Mountain Yellow-Legged Frog	BIO-74: Implement Pre-Stocking Evaluation Protocol for Mountain Yellow-Legged Frog
BIO-75: Predation and Competition Effects from Stocked Trout on Northern Leopard Frog	BIO-75: Implement Pre-Stocking Evaluation Protocol for Northern Leopard Frog
BIO-83: Predation and Competition Effects from Stocked Trout on San Francisco Garter Snake	BIO-83: Implement Pre-Stocking Evaluation Protocol for San Francisco Garter Snake
BIO-87: Predation and Competition Effects from Stocked Trout on Willow Flycatcher	BIO-87: Implement Pre-Stocking Evaluation Protocol for Willow Flycatcher
BIO-103: Effects from Trout Stocking Program Non-Target Harvest on Central Valley DPS Steelhead, Central California Coast DPS Steelhead, South-Central Coast DPS Steelhead and Southern California DPS Steelhead	BIO-103: Implement Pre-Stocking Evaluation Protocol for Central Valley DPS Steelhead, Central California Coast DPS Steelhead, South-Central Coast DPS, and Southern California DPS Steelhead
BIO-105: Effects from Trout Stocking Program Non-Target Harvest on Klamath-Trinity River Spring-Run, Sacramento River Winter-Run, Central Valley Spring-Run, and California Coast Chinook Salmon ESUs	BIO-105: Implement Pre-Stocking Evaluation Protocol for Klamath-Trinity River Spring-Run, Sacramento River Winter-Run, Central Valley Spring-Run, and California Coast Chinook Salmon ESUs

Impact	Mitigation Measure
BIO-107: Impacts of Introducing Pathogens to Native Amphibian Populations as a Result of the Trout Stocking Program	BIO-107: Implement Monitoring and Best Management Practices Program to Minimize Risk of Disease Transmission to Native Amphibian Populations
BIO-108: Impacts of Introducing Aquatic Invasive Species into Native Ecosystems as a Result of the Trout Stocking Program	BIO-10: Develop and Implement Hazard Analysis and Critical Control Point Plans at Each DFG Hatchery
BIO-118: Genetic Effects on Central Valley DPS Steelhead, Central California Coast DPS Steelhead, South-Central Coast DPS Steelhead, and Southern California DPS Steelhead from Interbreeding with Stocked Trout	BIO-118: Evaluate Trout Stocking Locations and Stock Triploid Trout as Needed to Reduce the Potential for Interbreeding with Steelhead
BIO-119: Effects of Unintended Releases of Hatchery-Reared Trout	BIO-119: Minimize Unintended Releases
BIO-139: Predation and Competition Effects from Stocked Salmon and Steelhead on Steelhead, Klamath Mountains Province DPS	BIO-139: Complete Hatchery Genetics Management Plans
BIO-145: Predation and Competition Effects from Stocked Salmon and Steelhead on Coho Salmon, Southern Oregon/Northern California Coast ESU	BIO-139: Complete Hatchery Genetics Management Plans
BIO-147: Predation and Competition Effects from Stocked Salmon and Steelhead on Chinook Salmon, Upper Klamath-Trinity Rivers ESU	BIO-139: Complete Hatchery Genetics Management Plans
BIO-150: Predation and Competition Effects from Stocked Salmon and Steelhead on Chinook Salmon, Central Valley Spring-Run ESU	BIO-139: Complete Hatchery Genetics Management Plans
BIO-151: Predation and Competition Effects from Stocked Salmon and Steelhead on Chinook Salmon, Central Valley Fall-/Late Fall–Run ESU	BIO-139: Complete Hatchery Genetics Management Plans
BIO-190: Salmon and Steelhead Stocking Program Non-Target Harvest Effects on Central Valley Fall- and Late Fall–Run Chinook Salmon ESU	BIO-190: Reduce the Potential for Non-Target Harvest on Fall- and Late Fall–Run Chinook ESU
BIO-192: Salmon and Steelhead Stocking Program Non-Target Harvest Effects on Upper Klamath-Trinity Rivers Chinook Salmon ESU	BIO-192: Reduce the Potential for Non-Target Harvest on Upper Klamath-Trinity Rivers Chinook Salmon ESU
BIO-202: Impacts of Introducing Pathogens to Native Amphibian Populations as a Result of the Salmon and Steelhead Stocking Program	BIO-107: Implement Monitoring and Best Management Practices Program to Minimize Risk of Disease Transmission to Native Amphibian Populations
BIO-207: Genetic Effects on Central Valley Spring-Run Chinook Salmon ESU from Stocking Salmon and Steelhead	BIO-139: Complete Hatchery Genetics Management Plans
BIO-208: Genetic Effects on Chinook Salmon, Central Valley Fall-/Late Fall–Run ESU, from Stocking Salmon and Steelhead	BIO-139: Complete Hatchery Genetics Management Plans
BIO-211: Genetic Effects on Chinook Salmon, Upper Klamath/Trinity Rivers ESU, from Stocking Salmon and Steelhead	BIO-139: Complete Hatchery Genetics Management Plans

Impact	Mitigation Measure
BIO-213: Genetic Effects on Coho Salmon, Southern Oregon/Northern California Coast ESU, from Stocking Salmon and Steelhead	BIO-139: Complete Hatchery Genetics Management Plans
BIO-214: Genetic Effects on Steelhead, California Central Valley DPS, from Stocking Salmon and Steelhead	BIO-139: Complete Hatchery Genetics Management Plans
BIO-215: Genetic Effects on Steelhead, Northern California DPS, from Stocking Salmon and Steelhead	BIO-139: Complete Hatchery Genetics Management Plans
BIO-216: Genetic Effects on Steelhead, Klamath Mountains Province DPS, from Stocking Salmon and Steelhead	BIO-139: Complete Hatchery Genetics Management Plans
BIO-226: Predation and Competition Impacts from Fishing in the City Program–Stocked Fish on Sensitive, Native, or Legally Protected Fish and Wildlife Species	BIO-226: Implement Private Stocking Permit Evaluation Protocol
BIO-228: Impacts of Introducing Pathogens to Native Amphibian Populations Through FICP Stocking	BIO-233b: Implement Private Stocking Permit Evaluation Protocol
BIO-229: Impacts of Introducing Aquatic Invasive Species into Native Ecosystems Through FICP Stocking	BIO-229: Require and Monitor Invasive Species Controls at Private Aquaculture Facilities
BIO-233: Predation and Competition Impacts from Fish Released Under Private Stocking Permits on Sensitive, Native, or Legally Protected Fish and Wildlife Species	BIO-233a: Eliminate Private Stocking Exemption BIO-233b: Implement Private Stocking Permit Evaluation Protocol
BIO-236: Impacts of Introducing Pathogens to Wild Populations of Native Fish and their Habitats through Private Stocking Permit Fish Releases	BIO-236: Require Aquaculture Products Stocked in Waters of the State to be Certified Free of Disease
BIO-237: Impacts of Introducing Pathogens to Native Amphibian Populations and Their Habitats through Private Stocking Permit Fish Releases	BIO-233a: Eliminate Private Stocking Exemption BIO-233b: Implement Private Stocking Permit Evaluation Protocol
BIO-238: Impacts of Introducing Aquatic Invasive Species to Wild Populations of Native Fish and Native Amphibian Populations and Their Habitats through Private Stocking Permit Fish Releases	BIO-238: Require and Monitor Invasive Species Controls for Private Stocking Permits
BIO-243: Predation and Competition Impacts from Stocked Trout on California Black Rail	BIO-87: Implement Pre-Stocking Evaluation Protocol for California black rails
BIO-252: Impacts from Introduction of Invasive Species and Pathogens on Supplemental Evaluation Species	BIO-107: Implement Monitoring and Best Management Practices Program to Minimize Risk of Disease Transmission to Native Amphibian Populations
BIO-254: Predation and Competition Impacts from Stocked Salmon and Steelhead on California Black Rail	BIO-87: Implement Pre-Stocking Evaluation Protocol for California Black Rails
BIO-263: Impacts of Invasive Species and Pathogens Released through Stocking Salmon and Steelhead on Supplemental Evaluation Species	BIO-107: Implement Monitoring and Best Management Practices Program to minimize risk of Disease Transmission to Native Amphibian Populations

Impact	Mitigation Measure
BIO-266: Impacts of Invasive Species and Pathogens Released through Fishing in the City Program Stocking on Supplemental Evaluation Species	BIO-229: Require and Monitor Invasive Species Controls at Private Aquaculture Facilities BIO-233B: Implement Private Stocking Permit Evaluation Protocol
BIO-269: Predation and Competition Impacts from the Private Stocking Program on Supplemental Evaluation Species	BIO-233a: Eliminate Private Stocking Exemption BIO-233b: Implement Private Stocking Permit Evaluation Protocol
BIO-270: Impacts from Introduction of Invasive Species and Pathogens on Supplemental Evaluation Species	BIO-233a: Eliminate Private Stocking Exemption BIO-238: Require and Monitor Invasive Species Controls for Private Stocking Permits
BIO-120: Disturbance of Riparian Systems Due to Use of Vehicles and Foot Travel to Access Fishing Locations as a Result of the Trout Stocking Program	BIO-120: Minimize Disturbance in Riparian Areas
Impacts Expected to Remain Significant after Mitigation	
BIO-123: Distribution of Invasive Species by Anglers as a Result of the Trout Stocking Program	BIO-123: Educate Anglers to Control Invasive Species
BIO-224: Distribution of Invasive Species by Anglers as a Result of Salmon and Steelhead Stocking Program	BIO-123: Educate Anglers to Control Invasive Species
BIO-240: Distribution of Invasive Species by Anglers as a Result of the Private Stocking Permit Program	BIO-123: Educate Anglers to Control Invasive Species BIO-233a: Eliminate Private Stocking Exemption

Hatchery Operations Guidelines

Hatchery operation guidelines are circumscribed by mitigation measures, detailed in Table 7-1 (impacts BIO-8 to BIO-13 inclusive), that are chiefly addressed to existing issues at specific hatcheries. All existing potentially significant impacts to biological resources can be fully addressed and reduced to less than significant by implementation of the identified mitigation measures.

Trout Stocking Program Guidelines

Decisions regarding planting in high-mountain lake (HML) areas are made as described in Chapter 2. As described in Chapter 2, decisions about stocking in all other areas are less structured and, in some cases, counter to Fish and Game Commission policy. Trout program guidelines are circumscribed by mitigation measures, detailed in Table 7-1 (impacts BIO-30 to BIO-122 inclusive), that are in most cases expected to be resolved by successful implementation of the pre-stocking evaluation protocol (PSEP), described in Appendix K, which constitutes a structured approach to stocking intended to identify situations where stocking has the potential to adversely affect decision species and their habitat, and to ensure that stocking would not result in any significant impact on those species. A few impacts call for other remedies. Mitigation Measure BIO-106 addresses the risk of disease transmission to native amphibian populations by requiring implementation of best management practices (BMPs) and a monitoring program to detect amphibian diseases in hatchery fish and avoid stocking such fish. Mitigation Measure BIO-118 requires a more formal approach to detecting and avoiding unintended stocking of hatchery fish than now exists and offers a means to both minimize and identify such unintended releases. Mitigation Measure BIO-119 calls for measures intended to minimize the risk that stocking and angler activities in riparian and aquatic habitats may result in local impacts on populations of threatened and endangered plants, and Mitigation Measure BIO-122 proposes to maintain and improve the existing program to minimize

introduction of invasive species by anglers. Both Impacts BIO-119 and BIO-122, however, are still expected to have significant and unavoidable effects on biological resources.

Salmon and Steelhead Stocking Program Guidelines

Decisions regarding the stocking of anadromous salmon and steelhead will be addressed by DFG through the HGMP process. Through this process DFG will continue to work with NMFS toward implementation of a comprehensive action plan that addresses the production goals of the stocking programs, ESA obligations to protected species, and public trust responsibilities to protect other wild populations of salmon and steelhead. To supplement the HGMP process, DFG will recommend to the owners of the salmon and steelhead hatcheries that they form an independent review panel to provide ecological and hatchery operations recommendations that can be later incorporated into the HGMPs, as appropriate. Mitigation Measure BIO 138 describes the process of developing an HGMP for each hatchery program.

Harvest strategies that would likely affect wild and hatchery salmon and steelhead are currently being addressed by DFG through a review of harvest. DFG is currently evaluating mass marking and mark-selective fisheries as part of a broader proposed fishery management system designed to maximize fishing opportunity while meeting the annual conservation objectives and ESA consultation requirements for all West Coast salmon and steelhead stocks. Mitigation Measures BIO 187, 188, and 190 describe the process to develop harvest plans that address non-target harvest effects.

Fishing in the City, Classroom Aquarium Education Project, and Private Stocking Program Guidelines

Fishing in the City, Classroom Aquarium Education Project, and private stocking program guidelines are circumscribed by mitigation measures detailed in Table 7-1 (impacts BIO-223 to BIO-237 inclusive). No mitigation is required for the Classroom Aquarium Education Project, which has only less-than-significant impacts. For the other programs, the principal concern is stocking in waters used by decision species and their habitat, and the principal remedy is a protocol analogous to the PSEP, modified somewhat to meet the requirements of the existing Fishing in the City and private stocking programs (mitigation measures BIO-223 and BIO-230b). An additional required measure is mitigation measure BIO-230a; this measure seeks to eliminate the private stocking exemption and instead requires site-specific evaluation by DFG personnel of all sites proposed for private stocking. Mitigation Measure BIO-235 seeks to require monitoring for invasive species at all private aquaculture facilities permitted under the private stocking program.

Other Identified Issues

Currently, there are no requirements for any kind of certification or inspection at private aquaculture facilities for diseases that impact fish or amphibians. Finally, Impact BIO-221, distribution of invasive species by anglers, is a significant and unavoidable impact for much the same reasons as the analogous impact, BIO-122, under the trout stocking program.

Alternative 3: Permanently Operate the Hatchery and Stocking Program as Directed in Interim Order Dated November 20, 2008 (Interim Order)

To address potential adverse effects from stocking trout in habitats occupied or potentially occupied by native aquatic species, the following alternative was developed by following the guidelines provided in the order modifying judgment dated November 24, 2008.

This alternative would take the interim measures outlined in the Interim Order and assume the continuation of those measures. In summary, DFG would not stock nonnative fish in any California fresh water body where monitoring surveys performed for or by the DFG have demonstrated the presence of any of 25 specified species. DFG would also not stock nonnative fish in any California fresh water body where monitoring surveys for the presence of any of those 25 specified species have not yet been conducted.

The Interim Order has certain specified exemptions to this broad prohibition:

1. Renewal or reissuance of private stocking permits on similar terms as those issued in 2005-2008;
2. fish stocking actions that are specifically approved or conducted by DFG to support scientific research under the auspices of a recognized federal, state, or local government agency, tribe, or bona fide scientific consultant, school, or university, including the DFG's CAEP;
3. mitigation mandated by law, including mitigation stocking programs or stocking required by a Federal Energy Regulatory Commission (FERC) license or order, federal legislation, state or federal court orders, required mitigation via a NEPA or CEQA decision document, or a federal ESA or state CESA compliance decision document;
4. anadromous fish mitigation stocking programs operated by DFG at ten specified hatcheries;
5. Fishery enhancement as specified in CFGC section 7861.3;
6. human-made impoundments greater than 1,000 acres in size;
7. human-made impoundments less than 1,000 acres in size that are not hydrologically connected to rivers or other natural water bodies or that are not within the federally proposed red-legged frog critical habitat or where red-legged frogs are known to exist; or
8. projects exempt by CEQA.

Table 7-2. List of Species in Interim Order

Scientific Name	Common Name
Amphibians	
Bufo californicus	Arroyo toad
Rana aurora draytonii	California red-legged frog
Rana cascadae	Cascades frog
Rana boyhi	Foothill yellow-legged frog
Rana pipiens	Northern leopard frog
Rana muscosa	Mountain yellow-legged frog
Rana aurora aurora	Northern red-legged frog
Rana pretiosa	Spotted frog
Ascaphus truei	Tailed frog
Fish	
Gila bicolor thalassina	Goose Lake tui chub
Mylopharodon conocephalus	Hardhead
Catostomus microps	Modoc sucker
Rhinichthys osculus ssp. (two species)	Owens speckled dace
Gila bicolor snyderi	Owens tui chub
Catostomus santaanae	Santa Ana sucker
Oncorhynchus mykiss aguabonita	Golden trout
Oncorhynchus mykiss irideus	Southern California steelhead ESU
Oncorhynchus mykiss irideus	South-central California steelhead ESU
Oncorhynchus mykiss irideus	Central California steelhead ESU
Oncorhynchus mykiss irideus	Summer-run steelhead trout
Oncorhynchus mykiss ssp. (two species)	McCloud River redband trout
Gila orcutti	Arroyo chub
Oncorhynchus tshawytscha	Winter run Chinook salmon
Oncorhynchus clarkii clarkii	Coastal cutthroat trout
Oncorhynchus tshawytscha	Spring-run Chinook salmon

Trout Stocking

Applying the above set of criteria to the waters currently stocked by DFG would conclude with development of the following two lists: a list of stocked water bodies and a list of non-stocked water bodies. If DFG continues to stock waters on the list of stocked water bodies, then impacts of the current program, or No Project/No Action alternative, would be partially mitigated. It is anticipated that some of these locations might be surveyed in the future depending on recreational needs, but it is assumed that there would be no additional surveys performed in order to quantify impacts. In some instances, not stocking water bodies on the non-stock list may not alleviate any of the impacts from the stocking program because it is anticipated that at least some populations of planted fish have become self-sustaining and the impacts in those water bodies would continue. Because no additional surveys would be performed, these situations would remain largely unknown. It is also unknown if fishing recreation would completely cease at those locations where fish planting has

ceased, and impacts associated with people fishing may not be mitigated. For the purposes of this analysis, the following assumptions are made.

- Trout production will continue as mandated by CFGC Section 13007, and those fish will be stocked into water bodies on the stock list.
- No further surveys will be performed to determine the absence or presence of sensitive species, and the stock and non-stock lists will remain as is.
- Impacts on sensitive amphibians and aquatic species will only be partially mitigated, and impacts will continue in approximately 40% of the waters formerly stocked due to the presence of self-sustaining populations.
- People will no longer fish in water bodies where stocking has ceased, and this assumption will lead to an overstatement of the actual economic and recreation impacts associated with this alternative.

Table 7-3 presents a summary of the number of water bodies by DFG region to be stocked and not stocked as a result of applying the interim and long-term stocking management guidelines. This information is presented in detail by county and water body in Appendix J.

Table 7-3. Summary of Stocked and Not Stocked Locations by DFG Region Under Alternative 3

DFG Regions	Numbers of Stocked Locations	Numbers of Non-stocked Locations
Bay Delta Region	29	12
Central Region	178	26
Inland Deserts Region	168	4
Northern Central Region	139	51
Northern Region	210	89
South Coast Region	49	8
Total	773 (80.2%)	190 (19.8%)

Source: Starr pers. comm.
Note: Table represents locations scheduled to be stocked in 2009

Salmon and Steelhead Stocking

Implementing the described stocking criteria for this alternative would mean that stocking anadromous fish would continue pursuant to the current, or No Project/No Action, alternative because the anadromous fish hatcheries operated by DFG are either for mitigation or enhancement[1]. Most anadromous fish hatcheries are currently operating pursuant to draft HGMPs, and DFG will continue to work with the NMFS to approve and implement HGMPs. Because DFG will continue to pursue the HGMP process, the salmon and steelhead stocking programs will also be operating pursuant to Alternative 2 and the new guidelines anticipated for the anadromous fish hatcheries.

[1] DFG operates ten salmon and steelhead hatchery facilities. Of these, only the Mad River and Merced Hatchery are owned and operated by DFG. The other eight hatcheries were constructed to mitigate the loss of upstream salmon and steelhead habitat and production by the construction of large dams.

Impact Discussion

The following paragraphs present the impacts that would occur as a result of implementing the alternatives to the program. Because DFG would continue to operate the Hatchery and Stocking Program, independent of USFWS funding, impacts from each alternative would be similar, with or without SFRA funding.

Alternative 1: No Project/No Action

The following impacts are associated with the DFG CEQA No Project alternative, and are being considered the No Action alternative because USFWS withdrew most SFRA funding until preparation of the EIR/EIS is complete. However, USFWS could continue to withdraw funding as part of any of the alternatives independent of the DFG decision.

Biological Impacts

Impacts of the salmon and steelhead stocking programs would continue as described in Chapter 4 pending the successful development and implementation of HGMPs for each of the stocking programs and a new harvest plan. Impacts from trout stocking would also continue as described in Chapter 4 until the proposed pre stocking evaluation process is implemented.

Recreation Impacts

Recreational Impacts of the current stocking program are beneficial, and fisherman and local businesses would continue to benefit from the stocking of trout for recreational purposes. According to the USFWS (2007) and Jackson (2007), nearly 10 million days of recreational fishing were expended in California in 2006. This total included fishing for trout, steelhead, inland salmon, and ocean salmon. The estimated dependence of this effort on stocked fish ranges from 44% for steelhead to 50%–60% for river-based Chinook salmon and 90% for ocean-based Chinook salmon.

Economic Impacts

An estimated $1.1 billion was spent on freshwater fishing trips and equipment in California in 2006, and a nearly equal amount was spent on saltwater fishing trips and equipment (U.S. Fish and Wildlife Service 2007). The state's commercial salmon fishing industry, which operates entirely in ocean waters, generated total income of $24.4 million in 2005 and $8.9 million in 2006.

Alternative 2: Continue to Operate Hatcheries as in the Past Five Years and Stock Fish Based on New Guidelines

The concept for Alternative 2 is to provide a framework for mitigating the ongoing impacts of the current hatchery and stocking program. Once implemented the guidelines for mitigating the impacts of the hatchery and stocking program would reduce impacts to less than significant (as described in the Chapter 4).

Biological Impacts

Impact BIO-272: Hatchery Operations Guidelines (Less than Significant)

All existing potentially significant impacts to biological resources can be fully addressed and reduced to less than significant by implementation of the identified mitigation measures BIO-8 to BIO-13. There are no further unmitigated impacts of implementing this Alternative and the impacts would be less than significant.

Impact BIO-273: Trout Stocking Program Guidelines (Less than Significant)

Decisions regarding planting in high-mountain lake (HML) areas are made as described in Chapter 2. As described in Chapter 2, decisions about stocking in all other areas are less structured and, in some cases, counter to Fish and Game Commission policy. Implementing trout program guidelines as described in the pre-stocking evaluation protocol (PSEP), described in Appendix K, would ensure that stocking would not result in any significant impact on those species.

Impact BIO-274: Impacts due to Anglers on the Spread of Invasive Species (Significant and Unavoidable)

Mitigation Measure BIO-123 proposes to maintain and improve the existing program to minimize introduction of invasive species by anglers. However, the impact is still expected to be significant and unavoidable after mitigation..

Impact BIO-275: Salmon and Steelhead Stocking Program Guidelines (Significant and Unavoidable)

Decisions regarding the stocking of anadromous salmon and steelhead will be addressed by DFG through the HGMP process. Through this process DFG will continue to work with NMFS toward implementation of a comprehensive action plan that addresses the production goals of the stocking programs, Mitigation Measure BIO 138 describes the process of developing an HGMP for each hatchery program.

Harvest strategies that would likely affect wild and hatchery salmon and steelhead are currently being addressed by DFG through a review of harvest. DFG is currently evaluating mass marking and mark-selective fisheries as part of a broader proposed fishery management system designed to maximize fishing opportunity while meeting the annual conservation objectives and ESA consultation requirements for all West Coast salmon and steelhead stocks. Mitigation Measures BIO 187, 188, and 190 describe the process to develop harvest plans that address non-target harvest effects.

Implementing mitigation measures for the anadromous hatchery and stocking program is complicated because DFG does not own most of the anadromous hatcheries, and must stock salmon and steelhead to as mitigation for past water development projects. While it is not in DFG's discretion to make wholesale changes to hatchery operations and stocking guidelines, DFG has outlined a process for minimizing the impacts from stocking anandromous fish. Once these plans are developed the impacts to anadromous fisheries will be less than significant, but will remain significant and unavoidable until then.

Impact BIO-276: Classroom Aquarium Education Project (Less Than Significant)

There are no further guidelines developed for the Classroom Aquarium Education Project because the guidelines that are being implemented for this program limit the impacts to less than significant.

Impact BIO-277: Fishing in the City Program (Less than Significant with Mitigation)

The principal concern with the Fishing in the City Program is stocking in waters used by decision species and their habitat, and the principal remedy is a protocol analogous to the PSEP, modified somewhat to meet the requirements of the existing Fishing in the City program (mitigation measures BIO-226 and BIO-233b). Implementing this protocol would reduce the impact to Less than Significant.

Impact BIO-278: Private Stocking Program Guidelines (Significant and Unavoidable)

The protocol developed in mitigation measures BIO-233a and BIO-233b would be implemented for the Private Stocking Permit Program. While implementing this protocol would lessen the impact, these impacts would continue to be significant and unavoidable because until the FGC adopts regulations to remove exemptions for specific Counties.

Recreation Impacts

This section and the following section assess the recreation and economic impacts of Alternative 2. For this EIR/EIS, recreation impacts consist of changes in recreation opportunities resulting from changes in DFG trout and inland salmon stocking. Changes in fishing use under various stocking scenarios were estimated to provide an indicator of the associated changes in recreation opportunities. Potential changes in stocking of steelhead and coastal Chinook salmon were previously considered for this EIR/EIS, but have not been incorporated into any alternatives, so no recreation impacts associated with changes in steelhead or coastal Chinook salmon fishing opportunities have been analyzed.

Changes in recreation use are typically accompanied by changes in recreation-related spending, thus causing economic impacts. Although recreation and economic impacts are in this sense parallel, they represent different aspects of the same process. Recreation impacts result when recreationists are faced with different opportunities to select from and consequently alter their recreation patterns. Economic impacts result when the groups of people who formerly engaged in one recreation pattern are induced to vary that pattern and thereby change recreation-related spending levels and patterns in specified regions. In other words, recreation impacts reflect different choices made by recreationists; economic impacts reflect changes in regional spending patterns resulting from the collective decisions of affected recreationists.

One of the key criteria DFG uses for selecting waters to stock is whether stocking is needed to augment natural production to meet demand for fishing opportunities. Thus, fishing opportunities would generally decline at waters where stocking is terminated. Under this alternative, DFG would maintain current hatchery production levels and statewide trout and inland salmon stocking levels. At many waters where stocking continues, stocking would increase in relation to concurrent stocking reductions at waters where stocking is terminated. Such stocking increases would enhance fishing opportunities and would partially compensate for the loss of opportunities at unstocked waters.

Cessation of trout or inland salmon stocking would not necessarily result in the immediate elimination of fishing opportunities. Many waters where stocking would be discontinued support some natural reproduction, which may be sufficient to support a sustained fishery. Whether or not natural reproduction occurs, existing fish populations would in most cases persist for 1 or more years, while surviving fish grow and offer enhanced trophy fishing opportunities. However, some popular low-elevation reservoirs have reported sharp declines in trout abundance since stocking was suspended in 2008 (Brooks, Ecdao, Long, and Hill pers. comms.).

Many waters where stocking of trout or inland salmon would be suspended, especially waters at lower elevations, also support warm-water fisheries (e.g., bass and pan fish) that would persist through a combination of natural reproduction and stocking from private hatcheries.

Reduction or elimination of fishing opportunities at some waters would not necessarily result in proportionate reductions in fishing use. Faced with the prospect of not being able to fish at their preferred locations, many anglers would select alternate waters to fish. Depending on the availability of comparable fisheries near waters where stocking is terminated, anglers may select substitute fishing sites with minimal changes in their travel and spending patterns. In other cases, anglers may select substitute waters located in different counties or regions of California. Others may decide to forego fishing and engage in alternate forms of recreation or to reduce their total recreation use.

Under Alternative 2, a total of 187 of the 953 waters (20%) that DFG stocked with trout and inland salmon during the baseline period would initially be removed from the stocking program. Nearly all of the waters where stocking would cease have recently been surveyed and are known to support sensitive species with which trout and inland salmon are likely to compete. Over the next two years, however, aquatic biodiversity management plans will be prepared and implemented for many of these waters, thus allowing them to receive stocked trout or inland salmon without substantially impairing sensitive species. Which waters would return to the stocking program through this process is currently unknown. For this alternative, it is assumed that 45% of the waters initially removed from the stocking program (i.e., 85 waters) distributed throughout the state would return to the stocking program.

Many waters that were not stocked during the baseline period may also be candidates for trout or inland salmon stocking. For example, at least 200 lakes located in DFG Region 2 that have not been stocked for at least 10 years are known to be candidates for stocking (Milliron pers. comm.). Additional candidate waters are located throughout the state. DFG plans to assess waters that are candidates for trout or inland salmon stocking and, if appropriate, eventually bring them into the stocking program. For Alternative 2, it is assumed that 50 such California waters are stocked with trout or inland salmon within 10 years to establish sport fisheries.

Hatchery production would not change under this alternative. Surplus fish resulting from cessation of stocking at specified waters would be planted into other waters stocked during the baseline period, although the specific waters where stocking would increase are not known. The resulting increases in fish abundance would enhance fishing opportunities at the affected waters and reduce the recreation impact within counties where stocking sites would be lost and fishing displaced. On the other hand, enhancing fishing opportunities at some waters while reducing them at other waters would concentrate fishing use and could result in congestion at some waters, thus diminishing the quality of the fishing experience or deterring some anglers from fishing. The net recreation impact of increasing fish abundance at selected waters would be positive, however.

Stocking changes under this alternative would cause adverse county-level recreation impacts directly related to the total number of waters where stocking was discontinued and the relative popularities of the affected waters. Conversely, the decline in fishing use would be reduced if substitute fishing opportunities were readily available for displaced fisheries. The availability of substitute waters is indicated by the number and the proportion of formerly stocked waters where stocking would continue. At the county level, the magnitude and intensity of the recreation impact depend on these same factors: the number, proportion, and popularity of waters where fishing is displaced and the availability of comparable substitute waters.

Some information is available on loss of fishing use since trout stocking was suspended in 2008. Fisheries at Loch Lomond Reservoir (Santa Cruz County), Hennessey Lake (Napa County), and San Pablo Reservoir (Contra Costa County) have experienced 50-70% declines in fishing since stocking was suspended (Brooks, Long, and Hill pers. comms.). In contrast, Coyote Reservoir in Santa Clara County has seen relatively little change in fishing use, as anglers have turned their attention to bass and other species (Ecdao pers. comm.). This analysis assumes that most anglers who lose the opportunity to fish their preferred water would decide to fish at other county waters, if such waters are available. The proportion of baseline fishing use assumed to be lost to the county for this assessment ranges from 15%-33.3%. Relatively less use was assumed to be lost in counties where many fisheries similar to the affected fisheries would continue to be stocked. The maximum displacement rate was assumed to apply in counties where nearly no opportunities would remain to fish for stocked trout or inland salmon. Waters where stocking would be suspended under this alternative were generally assumed to have already lost their viability as sport fisheries.

Reliable data on fishing use at the affected waters are sparse. Numerous public agencies responsible for managing the affected waters and the surrounding lands were contacted to determine whether fishing use had been documented at the site and, if not, to identify the people most knowledgeable regarding local fishing use. Such efforts were somewhat successful in the case of HMLs in Siskiyou County (Whelan, Eaker, and Lee pers. comms.) and Trinity County (Aguilar pers. comm.), Lafeyette and San Pablo Reservoirs in Contra Costa County (Hill pers. comm.), Henessey Lake in Napa County (Long pers. comm.), Coyote Reservoir in Santa Clara County (Ecdao pers. comm.), Loch Lomand Reservoir in Santa Cruz County (Long pers. comm.), Putah Creek in Solano County (Georges pers. comm.), and Kern River in Kern County (TCW Economics 2005). Use levels at all other affected waters were inferred from the use levels at waters for which data were available. Nearly all use estimates reported in Table 7-4 are imprecise and reliably indicate only the order of magnitude of use at each listed water, rather than the absolute use level. As a result, estimated changes in fishing use under Alternatives 2 and 3 (Table 7-4) are also imprecise. They are intended to support the qualitative assessments of changes in fishing opportunities discussed below and to provide a basis for estimating economic impacts of the alternatives.

Estimated baseline fishing use at all waters where stocking would be suspended totals roughly 400,000 annual fishing days (Table 7-4). These waters account for 20% of the waters stocked in California during the baseline period. Extrapolating suggests that the DFG stocking program supports roughly 2 million fishing days per year, or 24% of the estimated 8.5 million days spent fishing for trout and inland salmon statewide during the baseline period (Table 5-1). This result implies that fishing for planted trout and inland salmon accounts for substantially less recreation in the state than fishing for wild trout, which may be implausible. The low proportion of trout and inland salmon fishing ostensibly accounted for by the waters where stocking would be suspended suggests that the estimates of fishing use displacement discussed below may be low. Actual losses of fishing resulting from suspension of stocking could be larger than the estimated levels.

Table 7-4. Baseline and Long-Term Fishing Use Displaced from Local County for Waters Where Stocking Would Be Discontinued

County	Water	Annual Fishing Days	Fishing Days Displaced Per Year	
			Alternative 2	Alternative 3
Region 1				
Humboldt				
	Freshwater Lagoon	2,000	150	300
Lassen				
	Ash Creek Upper	400	30	60
Mendocino				
	Emily Lake	400	24	80
	Mill Creek Lake	400	24	80
Modoc				
	Pit River South Fork	1,000	75	150
Shasta				
	Brandy Creek	400	30	60
	Clear Creek above Whiskeytown Reservoir	1,000	75	150
Siskiyou				
	Antelope Creek	400	24	80
	Boulder Lake East	800	48	160
	Boulder Lake Middle	800	48	160
	Boulder Lake West	400	24	80
	Butte Creek	400	24	80
	Cabin Meadow Lake	400	24	80
	Caldwell Lake #1	400	24	80

County	Water	Annual Fishing Days	Fishing Days Displaced Per Year	
			Alternative 2	Alternative 3
	Caldwell Lake #2	400	24	80
	Calf Lake	400	24	80
	Campell Lake	800	48	160
	Castle Lake	2,000	120	400
	Dobkins Lake	400	24	80
	Duck Lake Big	800	48	80
	Duck lake Little	400	24	80
	Elk Lake Little	800	48	160
	English Lake Lower	800	48	160
	Fox Creek Lake	800	48	160
	Granite Lake Green	800	48	160
	Gumboot Lake Lower	8,000	480	1,600
	Hancock Lake Big	800	48	160
	Kangaroo Lake	5,000	300	1,000
	Lily Pad Lake	800	48	160
	Mavis Lake	400	24	80
	Meeks Meadow Lake	400	24	80
	Mill Creek Lake West	400	24	80
	Paradise Lake	800	48	160
	Paynes Lake	400	24	80
	Rock Fence Lake	400	24	80
	Ruffey Lake Upper	400	24	80
	Russian Lake Upper	400	24	80
	Sacramento River South Fork	8,000	480	1,600
	Seven Lake Lower	400	24	80
	Shasta River, Little	400	24	80
	Sky High Lake Lower	400	24	80
	Sky High Lake Upper	400	24	80

County	Water	Annual Fishing Days	Fishing Days Displaced Per Year	
			Alternative 2	Alternative 3
	Taylor Lake	400	24	80
	Telephone Lake	400	24	80
	Toad Lake	400	24	80
	Trail Gulch Lake	400	24	80
	Ukonom Lake	400	24	80
	Virginia Lake	400	24	80
	Waterdog Lake	400	24	80
	West Park lake Lower	400	24	80
	West Park lake Upper	400	24	80
Tehama				
	Plum Creek	400	30	60
Trinity				
	Boulder Lake Big	800	60	200
	Boulder Lake Canyon	800	60	200
	Boulder Lake Little	800	60	200
	Bull Lake	400	30	100
	Canyon Ck Lake Upper	800	60	200
	Coffee Creek	400	30	100
	Deadfall Lake Lower	400	30	100
	Deadfall Lake Middle	400	30	100
	Deadfall Lake Upper	400	30	100
	Deer Lake	800	30	200
	Eleanor Lake	400	30	100
	Foster Lake	400	30	100
	Grizzly Lake	400	30	100
	Grouse Lake	400	30	100

County	Water	Annual Fishing Days	Fishing Days Displaced Per Year	
			Alternative 2	Alternative 3
	Highland Lake	400	30	100
	Holland Lake	400	30	100
	Horseshoe Lake	800	60	200
	Landers Lake	400	30	100
	Marshy Lake Big	400	30	100
	Marshy Lake Little	400	30	100
	McDonald Lake	400	30	100
	Mumbo Lake	500	38	125
	Papoose Lake	400	30	100
	Seven Up Lake	400	30	100
	Slide Lake	400	30	100
	Smith Lake	400	30	100
	Stoddard Lake Lower	400	30	100
	Stoddard Lake Upper	800	30	100
	Sugar Pine Lake	400	30	100
	Tamarack Lake	1,600	120	400
	Tamarack Lake Lower	400	30	100
	Tangle Blue Lake	1,600	120	400
	Trinity River above reservoir	1,600	120	400
	Twin Lake Lower	400	30	100
	Union Lake	400	30	100
	Ward Lake	400	30	100
Subtotal		**70,300**	**4,609**	**14,845**

County	Water	Annual Fishing Days	Fishing Days Displaced Per Year	
			Alternative 2	Alternative 3
Region 2				
Alpine				
	Meadow Lake	400	30	60
Amador				
	Amador Lake	3,000	180	600
Butte				
	Paradise Pond	800	60	120
	Paradise Reservoir	800	60	120
	Thermalito Forebay	2,000	150	300
Calaveras				
	Angels Creek	2,000	333	666
	Schaades Reservoir	1,000	167	333
	White Pines Lake	2,000	333	666
Colusa				
	Letts Lake	2000	333	666
El Dorado				
	American River SF Coloma	3,000	500	1,000
	American River SF Riverton	3,000	300	600
	American River Silver Fork	3,000	500	1,000
	Jenkinson Lake	5,000	500	1,000
	Lumson Pond	1,200	120	240
	Stoney Ridge	1,200	120	240

County	Water	Annual Fishing Days	Fishing Days Displaced Per Year	
			Alternative 2	Alternative 3
	Stumpy Meadows Reservoir	1,200	120	240
	Taylor Creek	1,200	120	240
	Wrights Lake	1,200	120	240
Lake				
	Cache Creek	800	60	120
Nevada				
	Bear River	800	36	120
	Beyers Lake	400	18	60
	Boca Reservoir	5,000	360	1,200
	Bowman Reservoir	800	36	120
	Coldstream Pond	800	36	120
	Donner Lake	5,000	375	1,250
	Fordyce Lake	800	36	120
	French Lake	3,000	375	1,250
	Martis Creek Reservoir	1,600	72	240
	McMurrey Pond	800	36	120
	Prosser Reservoir	5,000	375	1,250
	Rollins Reservoir	1,600	240	72
	Scotts Flat Reservoir L	1,600	120	400
	Scotts Flat Reservoir U	1,600	120	400
	Spaulding Reservoir	800	60	200
	Squirrel Creek	400	18	60

County	Water	Annual Fishing Days	Fishing Days Displaced Per Year	
			Alternative 2	Alternative 3
Placer				
	Coldstream Creek Pond	1,200	72	240
	Halsey Forebay	1,200	72	240
	Lake Valley Reservoir	1,200	72	240
	Sugar Pine Reservoir	1,200	72	240
	Truckee River	3,000	180	600
Plumas				
	Spanish Creek	1,200	90	180
	Warner Creek	1,200	90	180
Sacramento				
	Lake Natoma	3,000	250	450
Sierra				
	Coldstream Creek	800	60	120
	Yuba River North Fork (Downieville)	1,600	120	240
	Yuba River North Fork (State Route 49)	1,600	120	240
Yuba				
	Englebright Reservoir	3,000	180	600
Subtotal		**90,000**	**7,428**	**19,121**

County	Water	Annual Fishing Days	Fishing Days Displaced Per Year	
			Alternative 2	Alternative 3
Region 3				
Contra Costa				
	Lafayette Reservoir	30,000	1,88	6,000
	Lake Refugio	2,000	120	400
	San Pablo Reservoir	12,000	720	2,400
Marin				
	Alpine Lake	3,000	300	600
Napa				
	Hennessey Lake	10,000	1,665	3,300
Santa Clara				
	Cottonwood Lake	5,000	300	1,000
	Coyote Reservoir	11,000	660	2,200
	Lexington Lake	5,000	300	1,000
	Stevens Creek Reservoir	5,000	300	1,000
Santa Cruz				
	Loch Lomand Reservoir	45,000	7,500	15,000
Solano				
	Putah Creek	10,000	1,665	3,330
	Solano Lake	4,000	666	1,332
Subtotal		**142,000**	**15,332**	**36,245**

County	Water	Annual Fishing Days	Fishing Days Displaced Per Year	
			Alternative 2	Alternative 3
Region 4				
Fresno				
	Coronet Lake	800	60	120
Kern				
	Kern River sec. 0-4	30,000	3,750	7,500
Madera				
	Nelder Creek	800	60	120
	Sotcher Lake	800	60	120
	Willow Creek North Fork	800	60	120
Mariposa				
	Bull Creek	800	48	160
	Jordan Pond	800	48	160
Merced				
	Los Banos Detention R	10,000	600	2,000
San Benito				
	San Justo Reservoir	1,600	160	533
San Luis Obispo				
	Atascadero Lake	4,000	666	1,332
	Lopez Lake	1,600	266	533
	Nacimiento River Lower	1,600	266	533
	Rancho El Chorro Pond	1,600	266	533

County	Water	Annual Fishing Days	Fishing Days Displaced Per Year	
			Alternative 2	Alternative 3
Tulare				
	Deer Creek	1,200	180	90
	Freeman Creek	1,200	180	90
	Kaweah River	1,200	180	90
	Kern River sec 5, 6	10,000	1,250	2,500
	Poso Creek	2,000	150	300
	South Fork Kern River	1,200	90	180
	White River	2,000	150	300
Tuolumne				
	Basin Creek	2,000	150	300
	Deadman Creek	2,000	150	300
	Herring Creek Reservoir	2,000	150	300
	Stanislaus River South Fork	2,000	150	300
	Sullivan Creek	800	60	120
	Tuolumne River North Fork	2,000	150	300
Subtotal		**86,000**	**3,375**	**9,103**
Region 5				
Los Angeles				
	Big Tujunga Creek (upper)	1,200	90	180
	Big Tujunga Creek (lower)	1,200	90	180
	Little Rock Reservoir	1,200	90	180
	Piru Creek (Frenchman's Flat)	1,600	120	240
	San Gabriel River, East Fork	1,600	120	240
	San Gabriel River, West Fork	1,600	120	240
Santa Barbara				

County	Water	Annual Fishing Days	Fishing Days Displaced Per Year	
			Alternative 2	Alternative 3
	Lion Canyon Creek	800	48	160
Ventura				
	Rose Valley Lake		300	600
Subtotal		**13,200**	**978**	**2,2020**
Region 6				
Inyo				
	Pine Creek	800	60	120
San Bernardino				
	Cucamonga Creek	800	60	120
Subtotal		**1,600**	**120**	**240**
Total		**403,100**	**37,570**	**91,940**

Sources: TCW Economics 2005; Aguilar, Brooks, Eaker, Ecdao, Georges, Hill, Lee, Kollenborn, Lee, Long, and Whelan (pers. comms.)

Of the 42 counties where stocking would be suspended at selected waters, the recreation impacts would be most intense in the following groups of counties:

- Siskiyou, Trinity, and Nevada Counties, where stocking would discontinue at a large number and a large proportion (one-third or more) of formerly stocked waters, and where recreation and tourism are important economic sectors;
- Calaveras, Colusa, Napa, Santa Cruz, Solano, San Benito, and San Luis Obispo Counties, where five or fewer waters were formerly stocked and stocking would continue at only one or zero waters;
- Kern and Tulare Counties, where stocking would discontinue at the heavily fished Kern River; and
- eleven additional counties (Mendocino, Amador, Butte, Placer, Yuba, Contra Costa, Santa Clara, Mariposa, Monterey, Merced, and Santa Barbara) where stocking would be suspended at one-third or more of the formerly stocked waters.

These county groups are discussed below.

Counties with Stocking Suspended at a Large Number and at Least One-Third of Formerly Stocked Waters

Siskiyou

Under this alternative, fish stocking would be suspended at 44 of 103 formerly stocked Siskiyou County waters, including 14 of 24 popular waters listed in Table 5-2. Three waters where stocking would be suspended are streams: Antelope Creek, Butte Creek, and the south fork of the Sacramento River (a popular fishery). The remaining affected waters are HMLs, 13 of which are classified as popular fisheries. Most of the affected HMLs are wilderness lakes accessed by trail by back packers, day hikers, and equestrians. Two affected lakes, Gumboot and Kangaroo Lakes, are accessed by roads and consequently support high levels of fishing use. Fishing use at all the affected waters primarily occurs during a 2- to 3-month summer season, depending on elevation.

The extent to which discontinuing stocking would result in the loss of fishing opportunities and use depends on whether the fisheries would remain viable without stocking, and on the abundance of substitute fishing locations. None of the affected fisheries provide significant opportunities to fish for species other than trout. Determining whether a specified water would sustain a viable fishery in the absence of stocking generally requires habitat analysis and in most cases is not yet known. However, limited suitable trout spawning habitat would probably reduce or eliminate fishing opportunities at many HMLs within a few years, and the 13 popular Siskiyou County HML fisheries listed in Table 5-2 were all ranked as being highly or totally dependent on stocking (Aguilar pers. comm.). On the other hand, the recreation impact from discontinuing trout stocking would be limited by the roughly 55 HMLs where stocking would continue. Similarly, abundant stream fishing opportunities in Siskiyou County would provide substitutes for displacement of fishing on the three affected streams. This assessment assumes that 80% of the estimated baseline fishing use at the affected waters would transfer to substitute Siskiyou County waters, while 20% of the baseline fishing use would initially be displaced. It further assumes that 70% of the use initially displaced from Siskiyou County would be recovered in the county within two years as a result of resuming or establishing stocking in other waters.

Under Alternative 2, a short-term loss in fishing recreation would occur for two years while additional waters suitable for establishing trout fisheries are evaluated and stocked. Following the establishment of additional fisheries, a smaller long-term loss in fishing use would persist. In Siskiyou County, the short-term loss of fishing recreation is estimated at 8,700 days per year; the long-term (i.e., after two years) loss is estimated at 2,600 fishing days (Table 7-4).

Trinity

In Trinity County, stocking would be suspended at 36 of 55 formerly stocked waters, including 11 of 15 popular fisheries. Two streams, the Trinity River above Trinity Lake (a popular fishery) and Coffee Creek, would be affected; the remaining affected waters are HMLs. Only two of the affected lakes (Tamarack and Tangle Blue Lakes) are accessible by road, both of which are classified as popular; the remaining affected lakes are accessible by trail. All of the affected HMLs are classified as highly or totally dependent on stocking.

Proportionately fewer Trinity County HMLs would continue to be stocked and thus provide substitute fishing opportunities than in Siskiyou County. Two streams (the east fork and Stuart Fork of the Trinity River) located near the affected streams would continue to be stocked. However, suspension of stocking would probably reduce the viability of the fisheries many of the affected waters (Aguilar pers. comm.). Because stocking would be suspended at roughly two-thirds of all formerly stocked waters, 25% of baseline fishing use was assumed to initially be displaced from Trinity County. Of this displaced use, 70% was assumed to be restored in Trinity County within two years as a result of resumption or establishment of stocking in county waters. The estimated short-term displacement of fishing use from Trinity County is estimated at approximately 5,500 days per year, while the long-term displacement is approximately 1,700 fishing days per year (Table 7-4).

Nevada

Stocking would be discontinued at 16 of 44 formerly stocked Nevada County waters including seven of nine popular waters (Table 5-2) under this alternative. All but two of these waters (Bear River and Squirrel Creek) are lakes. Included among the affected waters are several relatively large lakes that are popular for fishing, including Donner Lake and Boca, Prosser, Rollins, and upper Scotts Flat Reservoirs. Moreover, all but three of the remaining affected lakes (Beyers, Fordyce, and French Lakes) are accessible by road and hence receive substantial fishing use.

Approximately 30 relatively small lakes would continue to be stocked in Nevada County, thus providing substitute HML fishing opportunities. As suggested by the generally high hatchery-dependence rankings for affected popular waters (Table 5-2), cessation of stocking could result in substantial declines or elimination of catchable fish populations in affected waters. If such declines occurred in all the affected large lakes and reservoirs, a substantial share of the county's fishing use would probably be displaced. Consequently, a displacement factor of 25% was assumed for affected large lakes and reservoirs, while 15% displacement was assumed for other affected Nevada County waters. Of this initially displaced fishing use, Nevada County was assumed to recover 70% of this lost recreation within two years because of expansions in the stocking program. The estimated short-term displacement of fishing use from Nevada County under this alternative is approximately 7,900 days per year; the long-term loss is approximately 2,400 days per year (Table 7-4).

Counties Where Stocking Continues at One or Zero Waters

In Calaveras, Colusa, Napa, Santa Cruz, Solano, San Benito, and San Luis Obispo Counties, stocking would be suspended at a total of 13 waters, while stocking would continue at only five waters. Of the waters where stocking would discontinue, seven are considered popular fisheries, leaving only five popular fisheries with continued stocking in the seven counties. Among these counties, the proportion of formerly stocked waters where stocking would discontinue ranges from 50% (Napa and Santa Cruz Counties) to 100% (Colusa County). All the affected popular fisheries are ranked as highly or totally dependent on stocking, except Putah Creek in Solano County, which is ranked as moderately hatchery-dependent (Table 5-2). These counties have some public and private sport fisheries other than those stocked by DFG. However, for anglers who primarily seek stocked trout or inland salmon in public waters, discontinuing stocking at nearly all their preferred waters would displace a substantial share of county-wide fishing use.

Each of the counties in this group would likely experience increased congestion among anglers at its sole remaining stocked water after fishing opportunities decline at the formerly stocked waters, as anglers transfer their use to the remaining stocked water. After observing the congestion, some anglers are likely to decide to fish waters outside the county or reduce their fishing use. The only exception to this trend is Colusa County, which would have no remaining stocked water.

Based on these considerations, suspension of stocking under this alternative is assumed to initially result in displacement of 33.3% of baseline fishing use from the respective counties. Over the next decade, 50% of this initial loss of fishing use is assumed to be recovered as a result of future expansions in stocking to selected waters. Under these assumptions, county-level short-term losses in fishing days range from approximately 500 to 15,000 fishing days per year, and long-term losses range from approximately 160- 7,500 fishing among the seven counties in this group (Table 7-4). The most affected counties are Santa Cruz, Solano, Napa, and San Luis Obispo.

Kern and Tulare Counties

The Kern County reach of the Kern River between Lake Isabella and the mouth of the Kern River Canyon supports unusually high levels of water-based recreation use, including fishing, and offers a uniquely scenic recreation setting. Major sources of Kern River recreation use include local users from the Bakersfield metropolitan area and visitors from southern California. Based on information from recreation studies on the lower Kern River (TCW Economics 2005), baseline fishing use there was estimated at 30,000 days. Kern River is the only formerly stocked fishery in Kern County where stocking would be suspended; it would continue at nine other waters, all of which are classified as popular (Table 5-2). The Kern River fishery is classified as totally dependent on stocking. Based on these considerations, suspension of stocking at Kern River was assumed to initially result in displacement from Kern County of 25% of its baseline fishing use, with 50% of this displaced use eventually regained as a result of expansions in county fish stocking, possibly including sections of the Kern River.

The Tulare County reach of the Kern River upstream from Lake Isabella also supports relatively high levels of fishing use (Kollenborn pers. comm.), partly because six national forest campgrounds are located along the river. Annual use of this reach was estimated at 10,000 fishing days (Table 7-4). In addition to the Kern River, stocking would be suspended at six of 21 formerly stocked Tulare County waters, including two popular fisheries (Poso Creek and White River). Seventeen Tulare County waters unaffected by stocking are classified as popular fisheries (Table 5-2). Because of the upper Kern River's uniquely scenic setting, other fisheries in the county would probably receive only a

portion of the fishing use displaced from upper Kern River, for which an initial displacement factor of 25% was assumed. Because of the relative abundance of unaffected popular fisheries, 15% of the baseline use of other affected waters was assumed to be initially displaced from the county. Of this displaced use, 50% was assumed to eventually be recovered through future stocking expansions.

Under these assumptions, the estimated short-term losses in fishing use in Kern and Tulare counties are approximately 7,500 and 3,800 fishing days, respectively; the long-term losses are approximately 3,800 and 1,900 fishing days, respectively (Table 7-4).

Other Counties with Stocking Suspended at One-Third or More of Formerly Stocked Waters

In 11 additional counties stocking would be suspended at one-third or more of the formerly stocked waters. Included are Mendocino, Amador, Butte, Placer, Yuba, Contra Costa, Santa Clara, Mariposa, Monterey, Merced, and Santa Barbara Counties. Among these counties, the proportions of formerly stocked waters where stocking would be discontinued ranges from 33.3% (Mendocino, Butte, Yuba, Monterey, Merced, and Santa Barbara) to 62% (Placer). Popular fisheries would be affected in six of the eleven counties. All the affected popular fisheries are classified as totally dependent on stocking, except Englebright Reservoir in Yuba County, which is moderately dependent. Because stocking would be suspended at more than one-third of the formerly stocked waters in these counties, 20% of the baseline use level at affected waters was assumed to be initially displaced from the county. Of this displaced use, 70% was assumed to be recovered by the respective counties over the next two years corresponding to future stocking expansions.

Under these assumptions, estimated county-level short-term losses in fishing use range from approximately 160 fishing days per year in Monterey County to 8,800 fishing days in Contra Costa County; long-term annual losses are estimated to range from approximately 50 - 2,600 fishing days (Table 7-4).

Other Affected Counties

In addition to the 23 counties discussed above, stocking would be suspended at selected waters in an additional 19 counties under Alternative 2. In these counties, stocking would continue at more than two-thirds of the formerly stocked waters. Twelve affected waters in these counties are classified as popular fisheries: Jenkinson Lake in El Dorado County; Alpine Lake in Marin County; Basin Creek, Deadman Creek, Herring Creek Reservoir, south fork Stanislaus River, and north fork Tuolumne River in Tuolumne County; Little Rock Reservoir, Piru Creek, and the east and west forks of the San Gabriel River in Los Angeles County; and Rose Valley Lake in Ventura County. Of these counties, fishing opportunities would be most affected in El Dorado, Tuolumne, and Los Angeles Counties. It was assumed that 20% of the baseline fishing use at affected waters in El Dorado, Tuolumne, and Los Angeles Counties would initially be displaced from the county, while 15% of the baseline fishing use would initially be displaced from the other 16 counties in this group. It was further assumed that 50% of this displaced use would be recovered in the local county over the next two years as a result of stocking expansions.

Under these assumptions, the estimated county-level short-term annual losses in fishing use range from 60 days (Lassen, Tehama, and Alpine Counties) to 4,000 fishing days (El Dorado County) among the counties in this group. Long-term losses range from approximately 30-2,000 fishing days (Table 7-4).

Significance Criteria

Losses of fishing opportunities resulting from discontinuation of trout stocking under Alternatives 2 and 3 are considered significant if the lost opportunities would compose a substantial share of baseline-period trout and inland salmon fishing opportunities available in a county or group of counties. Estimated losses in fishing use and associated declines in fishing-related spending are indicators of lost fishing opportunities.

Impact REC-1: Adverse Impact on Recreational Fishing in Counties where Stocking Would Continue in One or Zero Waters

Under this alternative, the most intense losses in fishing opportunities would occur in the second group of counties discussed above, i.e., counties where few waters were stocked in the baseline period and at most one water would be stocked over the next two years. Santa Cruz County stands out in this regard, with an estimated short-term annual loss of 15,000 fishing days. Substantial, although smaller, losses in fishing use are estimated for Solano, Napa, San Luis Obispo, and Calaveras Counties. Lost opportunities in Colusa County are also notable because DFG would stock no waters there for the next two years. However, DFG expects to return nearly half of the affected waters to its fish stocking program over the next two years, with additional waters being added to the program over the next decade. Such expansions in stocking would partially restore fishing opportunities in these counties, although opportunities would generally still fall short of baseline conditions.

Because the short-term losses in fishing opportunities would diminish substantially within two years, this impact is less than significant.

Impact REC-2: Adverse Impact on Recreational Fishing in Counties with Stocking Suspended in Large Numbers and Large Proportions of Waters

Fishing opportunities in Siskiyou, Trinity, and Nevada County would be substantially reduced in the short term, because the fisheries at many formerly stocked waters are likely to decline substantially following cessation of trout stocking, particularly at HMLs in Siskiyou and Trinity Counties and large reservoirs in Nevada County,

In the absence of information on total baseline fishing use in these counties, the relative importance of recreation-use declines of this magnitude is not directly quantifiable. However, based on the relatively small economic impacts resulting from displacement of fishing-related spending in these counties (see “Economic Impacts”, below), the relative displacement of fishing in these counties is probably also small.

Because opportunities to fish for stocked trout and inland salmon in public waters would remain relatively abundant, the losses in fishing opportunities would diminish substantially within two years, and the associated losses in angler spending are small, this impact is less than significant.

Impact REC-3: Adverse Impact on Recreational Fishing in Kern and Tulare Counties

Short-term losses of fishing opportunities in Kern and Tulare Counties due to declines in the Kern River trout fishery would be of similar magnitude to those in Siskiyou, Trinity, and Nevada Counties, although estimated losses of fishing use in Kern County are roughly twice as large as in Tulare County.

Because opportunities to fish for stocked trout in public waters in these counties would remain relatively abundant, the losses in fishing opportunities would diminish substantially within two years, and the associated losses in angler spending are small, this impact is less than significant.

Impact REC-4: Adverse Impact on Recreational Fishing in Other Counties

Among the 30 additional counties where fish stocking would be suspended under Alternative 2, the resulting loss of fishing opportunities would be greatest in Contra Costa, Santa Clara, El Dorado, and Merced Counties. This impact is less than significant because most of the lost opportunities would be restored within two-ten years, some waters would be continue to be stocked, and the economic impacts associated with the recreation losses are minor.

Economic Impacts

The fishing opportunities displaced by suspension of stocking would be partially restored under Alternative 2. The counties that would be most affected under Alternative 2, either in terms of level of lost spending or percent of leisure travel spending lost, would also be the most affected under Alternative 3 (Table 7-5). Most notable in terms of level of spending are Santa Cruz, Contra Costa, Kern, Siskiyou, and Nevada Counties. The largest impacts in terms of relative loss of leisure travel spending are Trinity, Sierra, and Siskiyou Counties. The economy-wide effect on output that would result from displacement of re-spending by directly-affected businesses would not exceed 1.7 times the direct spending loss in each county. As with Alternative 2, in small counties, spending losses would be concentrated in relatively few businesses, and could affect some owners' ability to continue operating.

Impact ECON-1: Adverse Impact on State or Local Economies (Less than Significant)

Displacement of fishing-related spending is estimated at less than 0.8% of total leisure travel spending in each affected county in the short-term. This impact is less than significant, and would the impact would be lessened as the PSEP were implemented and stocking locations that are currently not stocked are brought back into the stocking program.

Alternative 3: Permanently Operate the Hatchery and Stocking Program as Directed in Interim Order Dated November 20, 2008

Alternative 3 is based on the Interim Order dictating specific guidelines for stocking inland and anadromous salmonids. This alternative would alleviate some of the biological impacts while others would persist. There would also be impacts associated with recreation and economics.

Biological Impacts

Impact BIO-279: Hatchery Operations Guidelines (Less than Significant)

All existing potentially significant impacts to biological resources can be fully addressed and reduced to less than significant by implementation of the identified mitigation measures BIO-8 to BIO-13. There are no further unmitigated impacts of implementing this Alternative.

Table 7-5. County Level Losses in Fishing Spending

County	Estimated Total Leisure Travel Spending (Thousand dollars /year)	Estimated Long-Term Loss in Trip-Related Fishing Spending			
		Alternative 2		Alternative 3	
		Thousand dollars/year	% of Total Leisure Travel Spending	Thousand dollars/year	% of Total Leisure Travel Spending
Humboldt	203,870	7.4	0.0036	14.8	0.0073
Lassen	45,095	1.5	0.0033	0.0	0.0001
Mendocino	229,100	2.4	0.0010	7.9	0.0034
Modoc	15,733	3.7	0.0235	7.4	0.0470
Shasta	257,303	5.2	0.0020	10.3	0.0040
Siskiyou	120,858	128.3	0.1062	427.8	0.3539
Tehama	83,448	1.5	0.0018	3.0	0.0035
Trinity	34,873	82.3	0.2360	272.3	0.7808
Alpine	20,010	1.5	0.0074	3.0	0.0148
Amador	81,708	8.9	0.0109	29.6	0.0362
Butte	181,105	7.4	0.0041	26.6	0.0147
Calaveras	108,823	41.0	0.0377	82.1	0.0754
Colusa	30,305	16.4	0.0542	32.8	0.1083
El Dorado	457,403	98.6	0.0215	197.1	0.0431
Lake	116,145	3.0	0.0025	5.9	0.0051
Nevada	194,083	116.8	0.0602	389.3	0.2006
Placer	504,673	23.1	0.0046	76.9	0.0152
Plumas	74,095	8.9	0.0120	17.7	0.0239
Sacramento	1,737,100	11.1	0.0006	22.2	0.0013
Sierra	12,543	14.8	0.1179	29.6	0.2357
Yuba	56,405	8.9	0.0157	29.6	0.0524
Contra Costa	906,250	130.1	0.0144	433.7	0.0479
Marin	471,758	14.8	0.0031	29.6	0.0063
Napa	644,598	82.1	0.0127	164.1	0.0255
Santa Clara	2,777,475	76.9	0.0028	256.3	0.0092
Santa Cruz	450,225	369.2	0.0820	739.2	0.1642
Solano	401,578	82.1	0.0204	229.7	0.0572
Fresno	764,150	3.0	0.0004	5.9	0.0008
Kern	835,925	184.8	0.0221	369.6	0.0442
Madera	141,810	8.9	0.0063	17.7	0.0125
Mariposa	208,148	4.7	0.0023	7.9	0.0038
Monterey	1,479,725	3.5	0.0002	11.8	0.0008
Merced	143,043	33.1	0.0232	98.6	0.0689
San Benito	55,898	7.9	0.0141	26.3	0.0470
San Luis Obispo	785,900	72.2	0.0092	144.4	0.0184

County	Estimated Total Leisure Travel Spending (Thousand dollars /year)	Estimated Long-Term Loss in Trip-Related Fishing Spending			
		Alternative 2		Alternative 3	
		Thousand dollars/year	% of Total Leisure Travel Spending	Thousand dollars/year	% of Total Leisure Travel Spending
Tulare	262,740	94.1	0.0358	188.2	0.0716
Tuolumne	114,405	39.9	0.0349	79.8	0.0698
Los Angeles	16,142,850	31.0	0.0002	62.1	0.0004
Santa Barbara	1,046,175	2.4	0.0002	7.9	0.0008
Ventura	930,175	14.8	0.0016	29.6	0.0032
Inyo	131,878	3.0	0.0022	5.9	0.0045
San Bernardino	2,579,550	3.0	0.0001	5.9	0.0002
Sources: California Tourism 2006, Dean Runyon Associates 2008					

Impact BIO-280: Trout Stocking Program Guidelines (Less than Significant)

Under the current Interim Order decisions would be made regarding trout planting following the guidelines outlined in the interim order. Implementing trout program guidelines as described in the PSEP, described in Appendix K, would ensure that stocking would not result in any significant impact on those species. However, implementation of Alternative 3 would leave certain mitigation measures unimplemented, and therefore some impacts would continue. Under this alternative, no ABMP's would be developed, and additional habitat managed specifically for decision species will be developed as part of the hatchery and stocking program. Certain waters with high value for impacted species would not be identified because the PSEP would not be implemented. It is estimated that up to 40% of the waters that were previously stocked with trout will have self sustaining fisheries. These fisheries would continue into the future regardless of the impact to the decision species because the only mitigation is to cease stocking if a decision species is present. No other measures are required. Any impacts associated with anglers pursuing trout would also continue in to the future.

Impact BIO-281: Impacts due to Anglers on Vegetation and the Spread of Invasive Species (Significant and Unavoidable)

Mitigation Measure BIO-122 proposes to maintain and improve the existing program to minimize introduction of invasive species by anglers. However, the impact is still expected to be significant and unavoidable.

Impact BIO-282: Salmon and Steelhead Stocking Program Guidelines (Significant and Unavoidable)

Salmon and steelhead stocking would continue as is in to the future as these hatcheries are not subject to the prohibition from stocking. Although these impacts would continue, DFG is currently operating a number of anadromous hatcheries according to draft HGMP's, and would continue to work with the NMFS to approve these HGMP's and develop others. While all of the impacts associated with anatropous hatcheries would continue to be significant and unavoidable, the same framework for addressing concerns with anadromous fisheries would be implemented.

Impact BIO-283: Classroom Aquarium Education Project (Less than Significant)

There are no further guidelines developed for the Classroom Aquarium Education Project because the guidelines that are being implemented for this program limit the impacts to less than significant.

Impact BIO-284: Fishing in the City Program (Less than Significant with Mitigation)

The principal concern with the Fishing in the City Program is stocking in waters used by decision species and their habitat, and the principal remedy is a protocol analogous to the PSEP, modified somewhat to meet the requirements of the existing Fishing in the City program (mitigation measures BIO-226 and BIO-233b). Implementing this protocol would reduce the impact to Less than Significant.

Impact BIO-285: Private Stocking Program Guidelines (Significant and Unavoidable)

Private Stocking Program, these impacts would continue as the private stocking permit program is exempted from action in the Interim Order. These impacts would continue to be significant and unavoidable.

Recreation Impacts

Under Alternative 3, a total of 187 waters that were stocked with trout and inland salmon by DFG during the baseline period would not be stocked in the future. The affected waters are the same waters where stocking would be suspended under Alternative 2. In contrast to Alternative 2, however, under Alternative 3 stocking would be permanently terminated, as opposed to temporarily suspended. No future resumptions or introductions of fish stocking would restored or add fishing opportunities. Losses of fishing opportunities and use from affected counties would be the same as those occurring in the short term (i.e., the next 2 years) under Alternative 2. Estimated water-specific and county-level reductions in fishing use are shown in Table 7-4.

Impact REC-5: Adverse Impact on Recreational Fishing in Counties where Stocking Would Continue in One or Zero Waters (Significant and Unavoidable)

As with Alternative 2, under Alternative 3, the most intense losses in fishing opportunities would occur in Santa Cruz, Solano, Napa, San Luis Obispo, Calaveras, Colusa Counties. Opportunities to fish for stocked trout in these counties would permanently be limited to one or zero waters. Unusually popular waters would probably be lost to trout fishing in Santa Cruz, Contra Costa, Solano, and Napa Counties.

This impact is significant. Because no expansions in fish stocking could occur under this alternative, it is also unavoidable.

Impact REC-6: Adverse Impact on Recreational Fishing in Counties with Stocking Suspended in Large Numbers and Large Proportions of Waters (Less than Significant)

Fishing opportunities in Siskiyou, Trinity, and Nevada County would be substantially reduced because the fisheries at many formerly stocked waters are likely to decline substantially following cessation of trout stocking, particularly at HMLs in Siskiyou and Trinity Counties and at large reservoirs in Nevada County. Based on the small economic impacts resulting from displacement of fishing-related spending in these counties, however, the relative losses in fishing use in these counties is probably also small.

Because many opportunities to fish for stocked trout and inland salmon in public waters would persist and because of the relatively small economic impacts associated with lost fishing, this impact is less than significant.

Impact REC-7: Adverse Impact on Recreational Fishing in Kern and Tulare Counties (Less than Significant)

Under this alternative, the unique fishing opportunities provided by the Kern River trout fishery would be lost. However, because opportunities to fish for stocked trout in public waters in these counties would remain relatively abundant and because the associated losses in angler spending are small, this impact is less than significant.

Impact REC-8: Adverse Impact on Recreational Fishing in Other Counties (Less than Significant)

Among the remaining counties where fish stocking would be suspended under Alternative 3, the resulting loss of fishing opportunities would be greatest in Contra Costa, Santa Clara, El Dorado, and Merced Counties. This impact is less than significant because some waters would be continue to be stocked and the economic impacts associated with the recreation losses are minor.

Economic Impacts

Economic impacts associated with losses of fishing recreation and related spending under Alternative 3 are the same as those that would occur in the short-term under Alternative 2. The fishing opportunities displaced by suspension of stocking that would be partially restored under Alternative 2 would be permanent under Alternative 3. Thus the long-term county-level impacts on fishing-related spending would be 2-3 times larger under Alternative 3 than Alternative 2. The counties that would be most affected under Alternative 2, either in terms of level of lost spending or percent of leisure travel spending lost, would also be the most affected under Alternative 3 (Table 7-5). Most notable in terms of level of spending are Santa Cruz, Contra Costa, Kern, Siskiyou, and Nevada Counties. The largest impacts in terms of relative loss of leisure travel spending are Trinity, Sierra, and Siskiyou Counties. The economy-wide effect on output that would result from displacement of respending by directly-affected businesses would not exceed 1.7 times the direct spending loss in each county. As with Alternative 2, in small counties, spending losses would be concentrated in relatively few businesses, and could affect some owners' ability to continue operating.

Impact ECON-2: Adverse Impact on State or Local Economies (Less than Significant)

Displacement of fishing-related spending is estimated at less than 0.8% of total leisure travel spending in each affected county. This impact is less than significant.

Preferred Alternative

Alternative 2is DFG's preferred alternative and will allow DFG to continue stocking fish for the express purposes of providing recreational opportunities to anglers. Alternative 2 provides a mechanism for DFG to implement guidelines that will allow for the protection of native species by identifying those species prior to continuing stocking. The PSEP includes steps to provide for restoration of native species in those areas where stocking is not consistent with DFG's goals to manage and protect multiple species. This Alternative also provides a mechanism for continuing to

improve the management of DFG operated anadromous hatcheries to minimize impacts to salmon and steelhead, as well as other native species. Alternative 2 includes steps to reduce impacts from the private stocking permit program by eliminating permit exclusions and requiring certification for hatchery operations as well as species survey's at planting locations. Alternative 2 does not change any of the requirements for the Classroom Aquarium Education Program as there are no significant affects from implementing this program.

Implementation of Alternative 2 is also the USFWS preferred alternative, and is the NEPA Environmentally Preferable Alternative. Alternative 2 reduces most of the impacts to less than significant and will provide the most protection to the decision species.