

Project Governance and Decision-making Processes for the
Coleman National Fish Hatcher Adaptive Management Plan

Fourth Draft August 29, 2012
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Clear and effective project governance and decision-making processes are essential to the success of any adaptive management plan. Project governance is defined as the management framework within which project information is assimilated and converted into knowledge and project decisions are made. The role of project governance is to provide a decision-making framework that is robust, transparent, and credible. Decision-making processes more specifically define the steps and responsibilities necessary to assimilate information arrive at a decision. These processes also describe how a decision is made (e.g., by consensus, majority rule, or individual authority).

In the context of the CNFH-AMP, project governance and decision-making processes are central to accomplishing the tasks of assessment, evaluation, and adaptation (Figure 1).

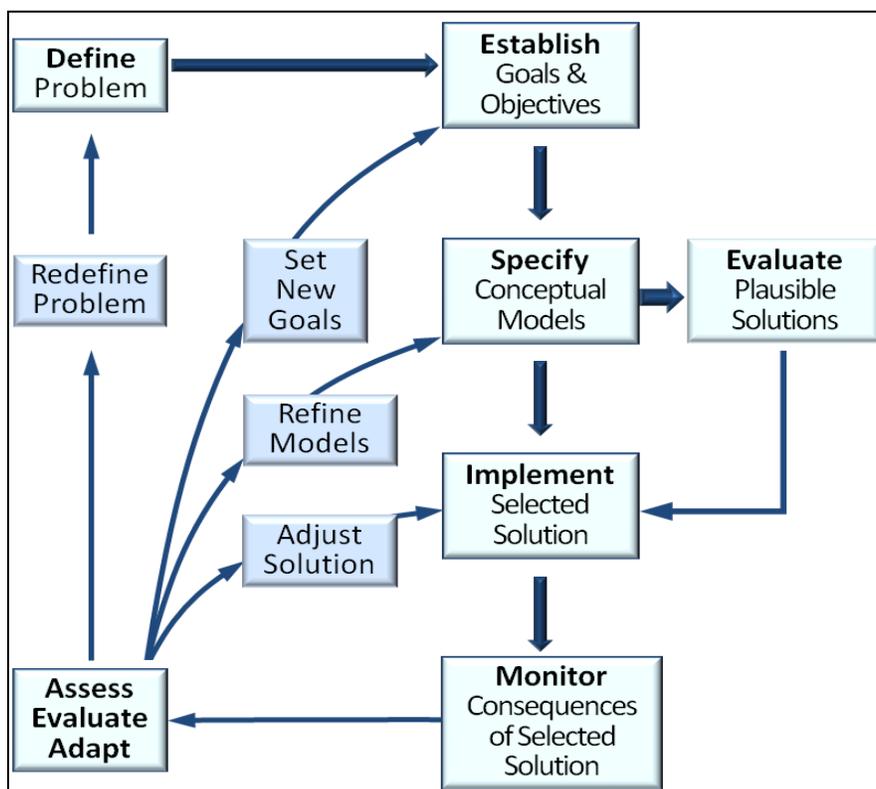


Figure 1. A graphic representation of the adaptive management cycle used in the CNFH-AMP. This cycle generally follows the adaptive management cycle developed for use in the CALFED Ecosystem Restoration Program and is adapted from Healey et al., 2008.

Project governance outcomes include decisions that result in program adaptations (i.e., redefine problems, set new goals, refine models, or adjust solutions). Outcomes also include decisions and recommendations having other program implications (e.g., funding requests or allocations, modifications to monitoring efforts, or requests for new studies). Thus, effective project governance and decision-making processes are crucial to determining whether an adaptive management plan becomes operational or sits on the shelf.

Developing a project governance structure and decision making processes that are compatible with both the BCRP-AMP and the CNFH governance and decision-making
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processes is an important objective for the CNFH-AMP. Ensuring ongoing interactions and effective communications occur between the existing governing bodies will directly contribute to attainment of the CNFH-AMP goal: maximizing CNFH compatibility with the BCRP.

The next section of this write-up briefly reviews the current project governance and decision-making processes for the CNFH and the BCRP-AMP. The final section describes a proposed project governance structure and decision-making processes for the CNFH-AMP.

Existing Project Governance and Decision-making Processes

Both the CNFH and the BCRP-AMP have established project governance and decision-making processes. The CNFH governance and decision-making processes have been in operation for years. The BCRP-AMP governance and decision-making processes are well described, but have yet to be implemented pending completion of the restoration project.

Coleman National Fish Hatchery Governance and Decision-making Processes

The CNFH project governance structure consists of four decision-making groups (Figure 2). The hatchery project leader assumes primary responsibility for communicating information and decisions among the different groups, although some individuals may have a role in more than one group. The categories of activities and decisions assigned to each group are as follows:

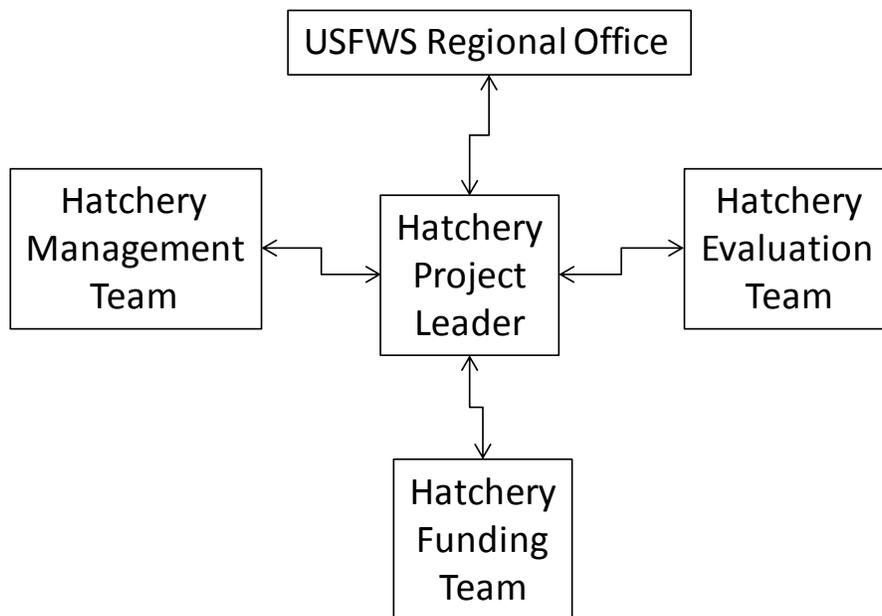


Figure 2. The five groups (outer boxes) comprising the management structure for CNFH project governance. The Hatchery Project Leader assumes primary responsibility for communication and coordination among the various groups.

- 1) On-station decisions. These are mainly day-to-day operational decisions, including (1) ongoing hatchery operations and juvenile fish rearing activities, which occur throughout the year, and (2) broodstock collection and spawning operations, which occur between October and March. On-station decisions cover fish barrier & ladder operations, hatchery operations, and water treatment operations. Decisions are generally made by one or more members of the Hatchery Management Team (HMT), which includes the fish production supervisor, the maintenance supervisor, the deputy project leader, and the project leader. Many decisions are made by the appropriate

supervisor, although some issues and decisions may be elevated to the deputy project leader or project leader depending on circumstances and availability.

- 2) Programmatic decisions. These decisions deal with issues that require coordination with other USFWS offices or programs and/or are related to interagency or interdisciplinary activities. The Hatchery Evaluation Team (HET) deals with many of the programmatic decisions and primarily consists of personnel from the CNFH Complex, the Red Bluff Fish and Wildlife Office and the California Nevada Fish Health Center. . Examples of programmatic decisions include: (1) design and implementation of hatchery evaluations, (2) research coordination, (3) development and implementation of spawning schedules, (4) development and implementation of juvenile fish tagging and release schedules, (5) addressing fish health issues, and (6) interagency coordination for permitting and regulatory requirements with agencies such as NMFS and CDFG. Interagency meetings or stakeholder meetings also are convened as necessary to facilitate interagency communication and coordination and to vet or discuss programmatic decisions. The USFWS also may use other venues (e.g., the Greater Battle Creek Watershed Working Group meetings) to accomplish interagency and/or stakeholder communication and coordination related to Coleman NFH Complex hatchery issues/activities. Issue specific technical teams may also be established to guide projects resulting in physical modifications to the hatchery (e.g., barrier weir and fish ladder modification or water intake modifications).
- 3) Policy decisions. These decisions deal with issues that affect hatchery policies and practices. A change to production release points is an example of a hatchery policy decision. The USFWS regional office management is engaged to make policy decisions.
- 4) Funding decisions. The Hatchery Funding Team (HFT) is responsible for issues and decisions related to hatchery funding and budgets. The HFT is comprised of the hatchery project leader and the designated USBR point of contact at the Northern California Area Office..

A consensus-based approach is generally used for decision-making within each of the groups, although the USFWS has the final say in most cases. A notable exception to this includes issues requiring regulatory actions (e.g., waste discharge permit or the hatchery biological opinion). There are no formal processes for information sharing among the groups, and in most cases the individual participants are unique to each group. Communications and information sharing among the teams is mainly the responsibility of the hatchery project leader. No regular processes for public/stakeholder engagement exist, although any discretionary actions requiring review under NEPA would include public disclosure.

Battle Creek Restoration Project Governance and Decision-making Processes.

The memorandum of understanding from the Battle Creek Restoration Project (BCRP-MOU) sets forth the basic project governance structure, which consists of the Adaptive Management Policy Team (AMPT) and the Adaptive Management Technical Team (AMTT). The AMPT and the AMTT will be responsible for implementing the Adaptive Management component of the Restoration Project (i.e., the BCRP-AMP) upon approval by FERC. The BCRP-MOU (1999) describes the roles and responsibilities of the two teams:

The AMPT is a management level cooperative group that will make all final decisions regarding the implementation of the Adaptive Management component of the Restoration Project. The AMPT will have a representative from each of the Resource Agencies [USFWS,

NMFS, and CDFG) and PG&E. The members of the AMPT will be familiar with Adaptive Management methodologies adopted by CALFED. Interested persons may attend any AMPT meeting and contribute to discussions. Specific notice, in addition to any general notice, of any such meetings will be sent to: (1) the Battle Creek Watershed Conservancy; (2) CALFED; and (3) any person requesting such notification.

The AMPT provides policy direction and resolves any disputes forwarded by the AMTT through Consensus. In the event that the AMPT is unable to reach Consensus within 30 days, dispute resolution procedures described in the BCRP-MOU are followed.

The AMTT guides the monitoring and assessment functions of the BCRP-AMP. The AMTT develops recommendations for substantive adaptations (e.g., a change in in-stream flow levels) for AMPT consideration. Voting members of the AMTT include a representative from each of the Resource Agencies and PG&E with appropriate training and experience to effectively address the technical aspects of implementing the BCRP-AMP.

The Chairperson of the AMTT will rotate regularly as agreed upon by the AMTT members. Interested persons may attend any AMTT meeting and contribute to discussions. Specific notice, in addition to any general notice, of AMTT meetings will be sent to: (1) the Battle Creek Watershed Conservancy; and (2) any interested person requesting such notification.

More details regarding the roles and responsibilities of the entities participating in the AMPT and the AMTT can be found in Terraqua (2004).

Coleman National Fish Hatchery Adaptive Management Plan Governance Structure and Decision-making Processes

It is not possible to develop a single project governance structure for both the CNFH and BCRP adaptive management plans because the CNFH and BCRP operate under different authorities and responsibilities. Further, there are no compelling reasons to create new project governance structures. Instead, the proposed project governance structure for the CNFH-AMP utilizes all of the groups with existing roles and responsibilities for CNFH governance and BCRP governance (Figure 3). The functions and responsibilities of these groups and their respective decision-making processes would remain the same. The inter-program coordination and agency-stakeholder communication roles of the Greater Battle Creek Watershed Working Group (GBCWWG) are emphasized as the main way to ensure ongoing communication and maximizing the compatibility of the CNFH with the BCRP.

The Greater Battle Creek Watershed Working Group (GBCWWG) would serve as the forum to allow entities overseeing the CNFH and BCRP adaptive management plans to communicate activities and issues on both projects to agency partners, stakeholders, and the interested public. The GBCWWG MOU (Appendix 1¹) currently considers the BCRP, the CNFH, and the compatibility of the two projects while respecting individual project goals. Thus, no modification of the MOU is considered necessary to support the communication and coordination functions identified here. The GBCWWG also would allow the interested public and stakeholders to communicate their individual opinions and advice directly to government representatives. The intent would be to obtain information or viewpoints from individual representatives as opposed to advice, opinions, or recommendations from the group acting in a collective mode. The GBCWWG could not serve as a source of consensus advice or recommendations unless it became chartered as a Federal Advisory Committee.

¹ The GBCWWG Memorandum of Understanding is from Jones and Stokes 2005b.
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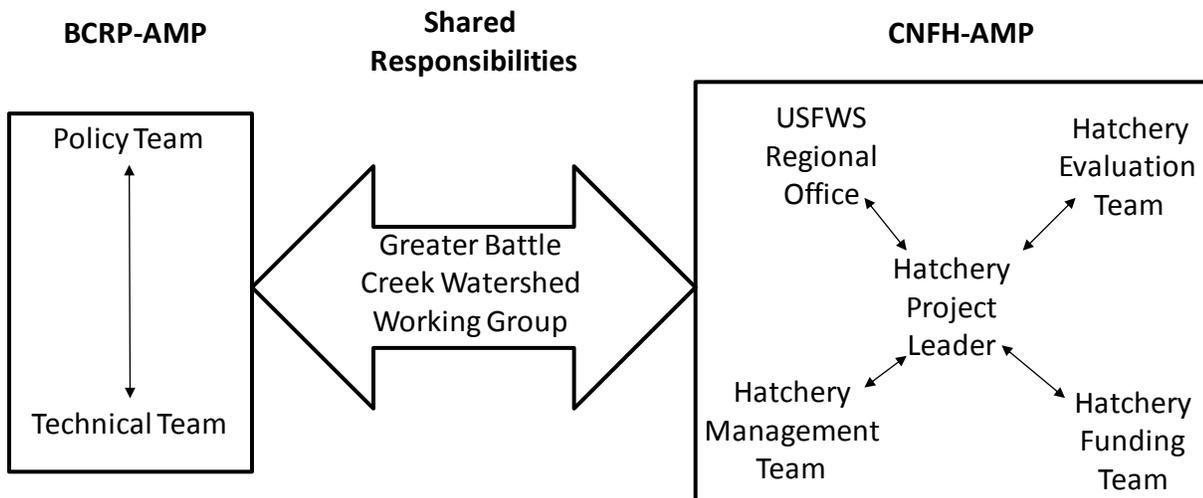


Figure 3. Proposed project governance structure for the BCRP-AMP and CNFH-AMP. One group identified under 'Shared Responsibilities' is proposed to ensure continued coordination and communication between the CNFH and the BCRP projects.

Primary functions and responsibilities associated with implementation of the CNFH-AMP adaptive management cycle (Figure 1) would be allocated as follows:

- The USFWS Regional Office and Hatchery Project Leader would provide overall policy direction. They would be responsible for decisions to establish or change project goals and objectives, authorize implementation of recommendations from other groups (see below) and work to resolve any disputes that may arise.
- The Hatchery Evaluation Team (HET) would assume responsibility for defining or redefining problems (AKA issue statements), specifying and updating conceptual models, working with the Hatchery Management Team to identify and evaluate plausible solutions, recommend and guide ongoing monitoring and assessment efforts, define and prioritize diagnostic studies, and develop recommendations for CNFH adaptations based on evaluations of existing and new information. Recommendations developed by the HET would be considered for authorization by the USFWS Regional Office and/or Hatchery Project Leader (see above). Recommendations requiring additional or modified funding would be presented to the HFT first.
- The Hatchery Management Team would assume responsibility for the implementation of any selected solutions, provide data and information on the performance of the selected solution, and recommend adjustments to the solutions for consideration by the HET.
- The Hatchery Funding Team (HFT) would retain responsibilities for CNFH funding, including authorization for additional or modified funding to support CNFH-AMP implementation.
- The Hatchery Project Leader would retain responsibilities for communication and coordination among the various groups, including the GBCWWG. The project leader may also communicate directly with the BCRP AMPT to help maintain compatibility between the two programs and pursue opportunities for synergy and resource sharing.

Literature Cited

BCRP-MOU. 1999. Memorandum of Understanding by and Among the National Marine Fisheries Service, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, California Department of Fish and Game, and Pacific Gas and Electric Company to memorialize the CNFH-AMP Governance and Decision-making

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agreement regarding the proposed Battle Creek Chinook salmon and steelhead restoration project, located in the Battle Creek watershed in Tehama, and Shasta Counties, California. 62p.

Healey, M.C., M.D. Dettinger, and R.B. Norgaard, eds. 2008. *The State of Bay-Delta Science, 2008*. Sacramento, CA. CALFED Science Program. 174 pp.

Jones and Stokes. 2005b. Battle Creek salmon and steelhead restoration project final environmental impact statement/environmental impact report. Volume II, Appendices.

Terraqua Inc. 2004. Draft Battle Creek salmon and steelhead restoration project adaptive management plan. 238 pp.

Appendix 1

GREATER BATTLE CREEK WATERSHED WORKING GROUP MEMORANDUM OF UNDERSTANDING

VISION

The signatories of this Memorandum of Understanding (MOU) recognize the value of coordinating the planning, implementation, and evaluation of all fisheries, restoration and watershed projects among public agencies, nonprofit organizations and private landowners within the Greater Battle Creek Watershed in order to maximize restoration of all naturally produced anadromous fish and maintain, and restore, as necessary, a healthy watershed and landscape. They seek to formalize the previously established Greater Battle Creek Watershed Working Group (GBCWWG or Working Group) that:

- Identifies proactive approaches to resource management on an ecosystem basis using principles of adaptive management;
- Utilizes sound scientific information and full consideration of public input in order to maintain and restore a healthy watershed and landscape that provides for robust, sustainable populations of naturally produced anadromous fish, including steelhead, fall -run, late fall run, spring-run and winter-run Chinook salmon;
- Recognizes the federal mandates and commitments to: 1) restore naturally produced salmon and steelhead in the Battle Creek Watershed, 2) mitigate for anadromous fish habitat lost above Shasta Dam, 3) rebuild depleted anadromous fish populations and 4) maximize the compatibility of the Coleman National Fish Hatchery (CNFH) and the Livingston Stone National Fish Hatchery (LSNFH) with other watershed projects including the Battle Creek Restoration Project;
- Commits to extensive communication and education programs;
- Considers local economic and societal impacts of proposed actions; and
- Supports traditional land uses that contribute to the maintenance and enhancement of the watershed and its native species.

PURPOSE

The purpose of this MOU is to formalize a previously established forum for identifying, reviewing and coordinating various watershed activities in the Greater Battle Creek Watershed and evaluating the activities' consistency with a Greater Battle Creek Watershed strategy. The signatories seek to encourage projects that are consistent with a community- and science-based greater watershed strategy and that (1) incorporate the principles of adaptive management to be adopted by the Working Group and (2) establish programmatic linkages between the major actions in the watershed, on the stream course and with CNFH and LSNFH. Working Group members will provide advice and recommendations on plans or projects reviewed by the Working Group on behalf of the MOU signatory represented by the member, including public agencies and nonprofit organizations.

Signatories also support implementation of the Multi-Species Conservation Strategy; Central Valley Project Improvement Act (CVPIA) doubling goals of naturally produced salmonids pursuant to the Anadromous Fish Restoration Project (AFRP); Federal Energy Regulatory Commission (FERC) policy regarding hydroelectric project compatibility with comprehensive plans; CALFED ecosystem restoration goals to restore and enhance habitat, ecosystem functions and processes; and Battle Creek Watershed Conservancy (BCWC) community strategy goals. The goals and objectives of these programs are summarized in Appendix A, attached and incorporated herein by this reference.

For the purposes of this document, Greater Battle Creek Watershed means the entire Battle Creek watershed from its confluence with the Sacramento River to its headwaters and its major tributaries and associated riparian and upland areas as well as the upper Sacramento River to the extent that the LSNFH is connected to the Battle Creek hatchery program.

OBJECTIVES

- Provide a transparent, balanced, collaborative, respectful and inclusive forum for communication that coordinates activities within the watershed, and ensures that goals, objectives and evaluative processes of agencies and organizations are coordinated.
- Take necessary steps to develop a comprehensive greater watershed strategy to ensure that fisheries, habitat restoration or watershed projects support and make important contributions to the recovery of, and has no long term adverse effect on, listed species (winter-run and spring run Chinook salmon and steelhead), the restoration of non-listed naturally produced runs (fall run and late fall-run Chinook salmon), production of Chinook salmon for sport and commercial uses, production of steelhead for in-river sport uses as well as continued health of the riparian and upland habitat.
- Identify specific needs for new projects based on the comprehensive greater watershed strategy and current or planned activities within the watershed.
- Adopt and apply principles of science and, as appropriate, adaptive management processes to actions considered and undertaken in the comprehensive greater watershed strategy.
- Engage agencies, organizations and the public to provide information on the comprehensive greater watershed strategy and adaptive management processes, identify and communicate issues and proposed projects, and maximize compatibility of activities of the CNFH, LSNFH, the Battle Creek Restoration Project and other agencies, private industries and nonprofit organizations operating within the Greater Battle Creek Watershed.
- Establish and implement a review process for fisheries, restoration and watershed projects undertaken within the Greater Battle Creek Watershed that may result in endorsement by members of the Working Group.
- Formalize administrative processes to guide the Working Group in accomplishing its objectives effectively and efficiently.
- Review and propose communication and education programs for the Battle Creek community.

ORGANIZATIONAL STRUCTURE

1. General. The Working Group meetings are open to participation by the general public, and by any agency, organization or individual involved in the Greater Battle Creek Watershed. All Greater Battle Creek Watershed Working Group meeting notices will be made available to the general public and the meeting agendas will include a time for the general public to provide comment on issues before the Working Group for consideration or that relate directly to the purposes of the Working Group.

2. Greater Battle Creek Watershed Working Group Membership. To accomplish the objectives of this MOU, there will initially be no more than 16 signatory members of the Greater Battle Creek Watershed Working Group to be comprised of no more than 8 public agencies and no more than 8 non-public entities, all of whom shall be signatories to the MOU. Initial signatories include:

Non-Public Entities:

Battle Creek Watershed Conservancy
Pacific Gas and Electric Company
The Nature Conservancy
Central Valley Project Water Association
Pacific Coast Federation of
Fishermen's Associations
Nor-Cal Fishing Guides and
Sportsmen's Association
Friends of the River

Public Agencies:

U.S. Fish & Wildlife Service
CA Department of Fish and Game
U.S. Bureau of Reclamation
National Marine Fisheries Service
CA Department of Water Resources
U.S. Forest Service
U.S. Bureau of Land Management

The initial signatories shall each appoint one primary representative and at least one alternate to the Working Group. An entity or public agency wishing to become a signatory member of the Working Group subsequent to the Working Group's initial formation shall submit a letter of commitment to the Working Group that describes the organization's commitment to ongoing involvement in the Working Group and discusses the organization's consistent and significant involvement and knowledge of Battle Creek issues and of the Working Group in the previous four consecutive meetings. If attendance records show consistent attendance and involvement for the previous four consecutive meetings and upon submission of the letter, the entity or agency may become a provisional member of the Working Group for the ensuing four consecutive meetings. If the provisional member regularly attends meetings and is consistently involved in the Working Group for the four meeting period, the provisional member may become a signatory member. Because the Working Group signatory members strive to achieve balance between the public agency and non-public entity representation, at no time shall the number of public agency signatory members or the number of non-public entity signatory members total more than one additional member than the other group.

Signatory members are expected to regularly attend meetings of the Working Group. The signatory members shall annually review attendance and if a signatory member has missed meetings for four consecutive meetings, the signatory member shall become a provisional member and is subject to the provisional membership provisions described above. A signatory member may withdraw as a member of the Working Group at any time, and for any reason, by submitting a written letter to the Working Group expressing the desire to no longer be a member. A withdrawing signatory member shall incur no liability to the Working Group or its other signatory members as a result of such withdrawal. If such a withdrawal creates an imbalance between the number of public agency and non-public entity members, the Working Group shall seek another signatory member to rebalance the membership, or if no additional signatory member is available, the Working Group shall maintain the imbalance until another signatory member is available to reestablish the balance.

No later than twenty (20) working days after the final execution of this MOU, each initial signatory shall notify the other signatories of the names, addresses, email addresses, telephone numbers and facsimile numbers of that signatory's primary and alternate representative. Signatories shall notify the other signatories of any changes in their representatives.

At the first meeting of the Working Group under this MOU, signatory members shall nominate and elect a chairperson, vice chairperson and secretary for a one-year term. Future communications regarding Working Group meetings shall be addressed to the primary and alternate representatives, as well as through the public notice described above. The signatory members will determine how information will be disseminated in the future. For the chairperson or the vice chairperson positions, one shall be from a non-public entity and one shall be from a public agency which is not a federal agency. The Working Group shall hold an annual meeting. Additional meetings may occur, as the Working Group deems necessary.

The signatory members of the Working Group may revise, as necessary, the vision, purpose, objectives and organizational structure for the Greater Battle Creek Watershed. In addition, the signatory members shall:

- a. Provide a forum for discussing current and proposed projects that impact the Greater Battle Creek Watershed.
- b. Identify linkages for current and proposed fisheries and restoration actions and ensure that current and proposed actions appropriately coordinate activities with agencies and organizations based on the linkages.
- c. Review and comment on current and proposed actions by signatory members regarding their consistency with the greater watershed strategy.
- d. Review and comment on conceptual models, hypotheses, and adaptive management experiments for proposed actions based on the greater watershed strategy and sound scientific principles.
- e. Review and evaluate indicators and measures of success regarding program performance for implemented actions in regard to the greater watershed strategy.
- f. Develop proactive responses to address regulatory requirements.
- g. Determine how best to accomplish the administrative activities of the Working Group.

3. Project Review. The signatories to this MOU agree that the Working Group will review and discuss Battle Creek projects of signatory members for consistency with the greater watershed strategy prior to a signatory member submitting a project proposal for public funding to any federal, state or local government agency. The Working Group shall prepare a written statement providing a synopsis of all comments on the project by the signatory members and the proposing signatory member shall respond to all the comments. Comments from provisional members or members of the public shall be summarized in the statement. No comment by the members of the Working Group can require any signatory to violate any laws, license agreements or adopted agency policies and procedures. The signatory recommending a project for review by the Working Group agrees to provide a copy of the Working Group's comments and the signatory's response to such comments, along with any proposal the signatory submits for public funding from a federal, state or local government agency.

4. Committees. The Working Group may establish such committees as are necessary to assist in fulfilling the objectives of this MOU.

OPERATING PRINCIPLES

1. Members of the Working Group shall respect the viewpoints of others, and expect that their viewpoints will be respectfully heard and considered. They understand that they each are responsible for maintaining an atmosphere where ideas and positions can be freely exchanged

and discussed. They refrain from personal attacks on others, avoid hidden agendas, and conduct themselves in a manner that fosters group building.

2. This MOU is a dynamic document; it may, through a written document, be amended, repealed or altered by a unanimous decision of all the signatory members attending any duly organized Working Group meeting provided that notice of the proposed change(s) is included in the meeting notice and agenda prior to the meeting.
3. Nothing in this MOU may be the basis of any third party challenges or appeals. Nothing in this MOU may be the basis of any legal challenges, causes of actions or appeals.
4. Nothing in this MOU is intended to expand or limit the legal authority or obligation of any signatory, agency, entity or organization.
5. In establishing meeting schedules, the Working Group shall try to accommodate all members' schedules.
6. No Member or Delegate to the Congress, Resident Commissioner, or official of the United States shall benefit from this agreement or receive any benefit other than as a landowner or member of a corporation in the same manner as other landowners and general beneficiaries.

FUNDING

1. Each signatory of this MOU and any participant of the Working Group is responsible for costs associated with their participation in meetings resulting from this MOU. Additionally, each Federal signatory or participant shall provide funds or in kind support for the Working Group meetings only as is necessary for its own participation in the activities of the Working Group. A Federal signatory or participant can still provide funds to an individual signatory for restoration projects in the Battle Creek watershed.
2. Participation in the Working Group and performance of activities by any non-federal participant of the Working Group is subject to customary appropriations or allotment of funds. No liability shall accrue to the non-federal participant, or his/her agency, in the event funds are not appropriated or allotted.
3. Implementation of this agreement by the signatory federal agencies is subject to the Anti-Deficiency Act, 31 U.S.C. Section 1341, and the availability of appropriated funds. This agreement is not intended and will not be construed to require the obligation, appropriation, or expenditure of any money from the U.S. Treasury. The signatories acknowledge that the federal signatories will not be required under this agreement to expend any federal agencies' appropriated funds unless and until an authorized official of that agency affirmatively acts to commit such expenditures as evidenced in writing.

APPENDIX A

REFERENCES

Introduction

This appendix is meant to present the goals and objective statements of some of the public agencies, non-government organizations and other interested entities engaged in planning and implementing federally and state mandated restoration programs and community based conservation programs in the Greater Battle Creek Watershed which are likely to advance natural fish and wildlife populations, habitat health, and ecosystem functions while at the same time acknowledging resource and economic constraints.

The Battle Creek Watershed Conservancy Community Strategy goal is to preserve the environmental and economic resources of the Battle Creek watershed through responsible stewardship, liaison, cooperation and education.

CALFED ecosystem restoration goals for the North Sacramento Valley are to restore important fishery, wildlife and plant communities to a healthy condition. Comprehensive watershed management plans should be developed and implemented to restore important ecological processes that create and maintain habitats for fish, wildlife and plant communities. For Battle Creek specifically, objectives are to develop and implement a comprehensive watershed management plan, increase flows, improve the water supply to Coleman National Fish Hatchery, remove diversion dams or install new ladders, and install positive-barrier fish screens to protect juvenile Chinook salmon and steelhead. It is envisioned that Battle Creek will provide much-needed habitat for spring-run and winter-run Chinook and steelhead, in addition to maintaining its existing importance to fall- and late-fall Chinook.

CVPIA's Anadromous Fish Restoration Program (AFRP) is a set of actions developed by USFWS and USBR to help guide the Department of Interior to make all reasonable efforts to at least double the natural production of anadromous fish in Central Valley streams and rivers on a sustainable long-term basis. CVPIA Central Valley doubling goals are based on population averages for the baseline time period 1967-1991 for fall-run, late fall-run, winter-run, and spring-run Chinook salmon and steelhead. Production targets for Battle Creek and its tributaries are not available for all the runs because population estimates did not exist for 1967-1991 for each run. However fish population increase estimates were made in the AFRP Working Paper (USFWS 1995, adopted 2001). These estimates are based on the amount of potential spawning substrate in river reaches where salmon and steelhead spawn in the Battle Creek watershed. The anadromous fish population increase estimates are as follows: 4,500 for fall-run, 4,500 for late fall-run, 2,500 for winter-run, 2,500 for spring-run Chinook salmon and 5,700 for steelhead.

The Multi-Species Conservation Strategy (MSCS) for the CALFED Bay-Delta Program is an approach that entities implementing CALFED actions may use to fulfill the requirements of the federal Endangered Species Act, California Endangered Species Act and Natural Community Conservation Planning Act. The MSCS analyzes CALFED's effects on species and communities, identifies species and community goals and conservation measures to achieve the goals. The measures are incorporated into the CALFED Ecosystem Restoration Program Plan.

FERC policy in section 10 of the Federal Power Act concerns hydroelectric project compatibility with comprehensive plans. Licenses issued pursuant to section 10 require projects be part of a comprehensive plan, some of the conditions of which include providing for the adequate

protection, mitigation, and enhancement of fish and wildlife (including related spawning grounds and habitat) and for other beneficial public uses.

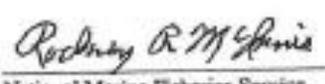
For the purpose of this MOU, the signatories consider naturally produced fish or natural fish to be the offspring of naturally spawning parents.

SIGNATURES

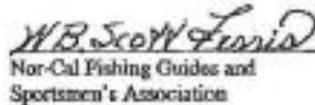
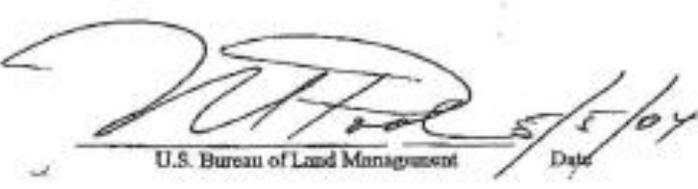
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Pacific Estuary Watershed Conservancy Date
1 April 2004  _____
U.S. Fish & Wildlife Service 4/14/04 Date

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Pacific Gas and Electric Company 4/15/04 Date
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CA Department of Fish & Game 4/11/04 Date

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The Nature Conservancy 4/15/04 Date
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U.S. Bureau of Reclamation 4/16/04 Date

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Central Valley Project Water Assoc. 3/31/04 Date
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National Marine Fisheries Service 3-17-04 Date

Pacific Coast Federation of Fishermen's Associations Date
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CA Department of Water Resources 4/16/04 Date

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Nor-Cal Fishing Guides and Sportsmen's Association 4-19-04 Date
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U.S. Bureau of Land Management 5/5/04 Date

Friends of the River Date
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U. S. Forest Service 5.21.04 Date
Lassen National Forest